

IRON AND STEEL PRODUCTION IN ARGENTINA c.1920-1952:
ATTEMPTS AT ESTABLISHING A STRATEGIC INDUSTRY

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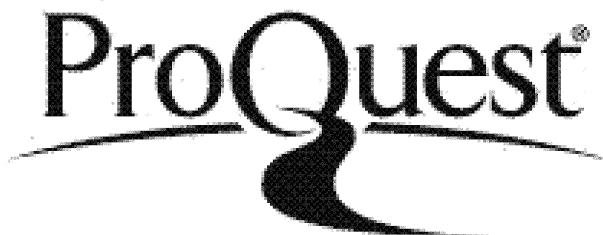


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THESIS ABSTRACT

This thesis examines the political economy of the initial development of the Argentine iron and steel industry between circa 1920 and 1952. It analyses the reasons for the failure of those initiatives and shows that the main impetus to establish the industry was provided by the Second World War, not the Great Depression. The thesis accounts for the adverse impact of domestic factors such as the predominance of military strategic demands over business considerations, inadequate national supplies of raw materials, output bottlenecks, demand constraints and the politics of the period which frustrated policy continuity. The unfavourable effects of the international conjuncture are also assessed. These include the role of the International Steel Cartel in inhibiting the growth of domestic iron and steel production through a web of controls prior to 1939, and wartime constraints and the US embargo which limited access to essential capital goods and technology thereby frustrating positive incentives for the development of heavy industry.

For most of the period, Argentina was one of the few 'open' markets for iron and steel products. The depth of the market and its ability to sustain domestic production is assessed through three case-product studies: rails, construction materials and rural implements. The research shows that demand was associated with traditional economic sectors. Organisational structures also frustrated development. The thesis proves that the history of the sector was characterised by organisational instability: a small number of ephemeral firms specialised in the production of a small number of items. Attempts to foster efficiency through large-scale integrated industrialisation involving State and private capital in a mixed corporation failed because the project was tailored to security rather than market requirements.

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LIST OF ABBREVIATIONS

ACINDAR	Industria Argentina de Aceros S.A.
AHMSA	Altos Hornos de México S.A.
AHZ	Establecimiento Altos Hornos Zapla
ARBED	Aciéries Réunies de Burbach-Eich-Dudelange
ARMCO	American Rolling Mill Company
BCRA	Banco Central de la República Argentina
BHP	Broken Hill Proprietary Company
BLPES	British Library of Political and Economic Science
DE	Desarrollo Económico
DGCSM	Dirección General de Combustibles Sólidos Minerales
DGFM	Dirección General de Fabricaciones Militares
DOT	Board of Trade, Department of Overseas Trade
ECA	Economic Cooperation Administration
ECSC	European Coal and Steel Community
EIA	Entente Internationale de l'Acier
FO	Foreign Office
GDP	Gross Domestic Product
GOU	Grupo de Oficiales Unidos
IAPI	Instituto Argentino para la Promoción del Intercambio
INDAC	Industria de Aceros Chilenos
IRMA	International Rail Makers' Association
ISC	International Steel Cartel
IWEKO	International Wire Export Company
JLAS	Journal of Latin American Studies
PRO	Public Records Office
PSA	Plan Siderúrgico Argentino

RRP	The Review of the River Plate
SOMISA	Sociedad Mixta Siderurgia Argentina
SRA	Sociedad Rural Argentina
TAMET	Sociedad Anónima Talleres Metalúrgicos San Martín TAMET
UCR	Unión Cívica Radical
UD	Unión Democrática
UN, ECAFE	United Nations, Economic Commission for Asia and the Far East
UN, ECE	United Nations, Economic Commission for Europe
UN, ECLA	United Nations, Economic Commission for Latin America
US / USA	United States / United States of America
USSR	Union of Soviet Socialist Republics
YPF	Yacimientos Petrolíferos Fiscales

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DEDICATION

To Luisa, the most perfect mother and friend

INTRODUCTION

Two of the big questions about Argentina are how and why did the country, which most economists in the first three decades of the twentieth century would have placed among the most advanced economies, go wrong.¹ Traditionally, *Peronista* policies of the Forties and Fifties are blamed for the ills that beset the Republic. Although the Peróns played a significant part, the roots of failure lie much deeper. Argentine economic growth, which had enjoyed high rates during the first two decades of the century, slowed down long before the advent of *Peronismo*. Constraints arose from the consequences of the agro-exports model and the expansion of the Pampas frontier. Limits to growth surfaced as the best land was taken up and increases in productivity were gradually reduced, and there were also problems inherent in the system which were not dealt with.² Yet, by the point when the weaknesses of the agro-exports model became apparent in the second quarter of this century, the country was in a position where the degree of industrialisation should, apparently, have been deeper. It had attained various basic traits of economic progress often declared as 'prerequisites' of modern industrialisation - eg, a large unified territory, and a legal system assuring the rights of the individual and satisfactory protection of property.³ Furthermore, the economy had a diversified production structure and had reached some thresholds characteristic of a semi-industrial country.⁴ Nevertheless, thorough industrialisation had not taken place.

Reflecting the truncated and incomplete nature of Argentine industrialisation, this thesis assesses attempts to foster domestic iron and steel production between the Twenties and Fifties. However, its scope is far broader than merely mirroring general trends of economic development. The dissertation contributes

¹ Carlos F. Díaz Alejandro, *Essays on the Economic History of the Argentine Republic* (New Haven, 1970), p.1.

² Héctor L. Dieguez, 'Argentina y Australia: algunos aspectos de su desarrollo económico comparado', *Desarrollo Económico (DE)* 8 (1968-1969) No.32, p.552; Túlio Halperín Donghi, 'Canción de otoño en primavera: previsiones sobre la crisis de la agricultura cerealera argentina (1894-1930)', *DE* 24 (1984-1985) No.95, pp.367-386.

³ Alexander Gerschenkron, *Economic Backwardness in Historical Perspective* (Cambridge, Massachusetts, 1962), pp.32,33.

⁴ For example, a level of income sufficient to support a shift towards manufacturing. Hollis Chenery, Sherman Robinson and Moshe Syrquin, *Industrialization and Growth* (Washington, 1986), pp.84,85.

to the knowledge of constraints, both external and domestic, affecting the development of heavy industry in a 'small, late developing' economy. Two types of external constraints are identified: (i) those which arose from the policies of major iron and steel producer-exporters, which aimed to retard the growth of iron and steel manufacturing in traditional export markets, and (ii) those which arose from circumstancial factors. The first category comprises the deliberate attempts to prevent the expansion of overseas production by Continental European producer-exporters before 1939 and by the USA thereafter, fearful of competition against their own industries as export markets shrank. European steelmakers tried to achieve their goals through an International Steel Cartel (ISC) that aimed to control worldwide iron and steel production and distribution by means of a most complex web of controls and oligopolistic practices. The cartel collapsed at the outset of the Second World War, and the Europeans did not regain their prewar predominance nor control over the trade. However, they had been replaced by a United States of America which was unwilling to promote industrialisation in Latin America and provide the necessary capital and technology. Although Washington promoted some industrial projects south of the Río Grande during the war owing to strategic considerations, it was disinclined to meet Latin American expectations that wartime hemispheric cooperation extend into peacetime economic collaboration. In the Argentine case, there was an additional incentive: the rift with Buenos Aires over its wartime neutrality and the conflation of post-1943 Argentine régimes with fascism.

The circumstancial factors affecting the advancement of heavy industry arose from the Second World War and its aftermath. The Great Depression, which is traditionally regarded as a 'window of opportunity', did not encourage the development of iron and steel production. The national economy rapidly recovered and the market for iron and steel was well served by ISC members. Therefore this thesis argues that, unlike other import substituting industries, the impetus to establish steelmaking was provided by the outbreak of the Second World War, which brought about the collapse of the ISC and severe import shortages. The few existing local metallurgical manufacturers, aided by the competence and ingenuity of their engineers who copied old foreign machinery designs and adapted second-hand equipment, engaged in steel production for 'in house' consumption. However, as manufacturing had been undertaken with relatively obsolete equipment and shielded from competition by the war, production capacity and plant

would have to be upgraded in the postwar period. This was not possible as the Americans would not supply the required technology and *Peronista* policies were not concerned with the promotion of basic industries.

As this thesis shows, external constraints combined with adverse domestic political and economic factors to conspire against the establishment of a successful iron and steel industry. Political determinants manifested themselves in the form of instability and subsequent discontinuity in policy-making, and the powerful role acquired by the Armed Forces in the aftermath of the 1930 military coup. Three political groups were in power during the period, and all were unwilling or unable to introduce the necessary structural changes in the configuration of the economy that would have facilitated industrialisation. The Radicals, who held office in the Twenties, had come to power owing to their commitment to extending democracy, and strove for accommodation within the existing system as the export-led growth model appeared to serve the country well. With the onset of the world crisis and the overthrow of the Radicals in a civilian-military conspiracy in 1930, the Conservatives were returned to power. Forced to deal with the effects of the Depression, they introduced economic measures which were not bold but designed to overcome the crisis. The Conservatives, which lacked any political legitimacy and struggled to cope with the economic difficulties caused by the Second World War, were in turn overthrown by the Army in 1943. The military régime paved the way for the 1946 election of the labour-based *Peronista* government. The latter, favoured by highly auspicious economic conditions, had possibly the best opportunity to introduce the necessary economic reforms, but squandered the opening by implementing erroneous populist policies. It should be noted that, although Perón was re-elected in 1952 and he remained in office until ousted by the military in 1955, this dissertation does not extend beyond his first presidency. Implicit in the varied nature of the three régimes in power during the second quarter of the century, the reason is that Perón attempted to overcome severe economic difficulties in his short-lived second presidency not through a distinctive programme of his own but by reverting to policies more in tune with those of the Conservatives (a group he hated intensely).

Political turmoil had resulted in a new and powerful role for the Armed Forces. In the absence of any government attempt to deepen industrialisation, the military became crucial to the development of heavy industry. Concerned with establishing 'strategic' industries related to national defence since the Twenties,

the Army made most progress in the field during the early Forties. A vast military-industrial empire known as the Dirección General de Fabricaciones Militares (DGFM) was set up in 1941, whose cost to the Argentine economy is unknown to this day. Of the various industries controlled by the DGFM, only the Fábrica Militar de Aviones has been studied - within the limits imposed by official secrecy.⁵ This thesis, which provides new insights into private sector steelmakers, aims to expand the knowledge about the DGFM iron and steel industry project, which was far more significant to the national economy than aircraft-making. However, the focus is on the preparatory phase of the ambitious Plan Siderúrgico Argentino (PSA) as the Plan was not implemented on schedule by the early Fifties.

The PSA appeared sound on the surface, since it proposed economically competitive production based on the use of both national and foreign raw materials, which aimed to satisfy domestic requirements. This project would comprise three industrial units: a resource-oriented pig iron plant near the Zapla iron deposit in northwestern Argentina, a market-oriented integrated steelworks in the industrial belt along the Paraná river, and existing manufacturers of finished goods located in the Buenos Aires metropolitan area. However, once closely scrutinised, it is clear that the PSA was flawed from its inception. As argued in the thesis, it was tailored to military rather than basic development considerations and took no account of three critical domestic economic factors that would ultimately impede its successful implementation. First, production targets were guided by self-sufficiency goals and bore no relation to the size of the market. As the growth of manufacturing was restricted to light industries, most demand for iron and steel arose from small-scale finishers supplying highly segmented markets. Construction alone accounted for over $\frac{1}{2}$ of total consumption. Yet the DGFM designed the PSA centrepiece, the integrated steelworks project, to produce every iron and steel good conceivably required by the national economy. Given the nature of demand, this military goal did not justify the use of the most modern, large-scale methods of production. The manufacture of a wide range of items in relatively small amounts only resulted in inefficient use of equipment and increased costs of production and delivery prices. Nevertheless, this thesis argues that there were two alternatives that could have prevented these difficulties. One would have been for the PSA to

⁵ See María del Carmen Angueira and Alicia del Carmen Tonini, *Capitalismo de Estado (1927-1956)* (Buenos Aires, 1986), and Ricardo Burzaco, *Las alas de Perón* (Buenos Aires, 1995).

incorporate the development of other associated industries. This would have deepened industrialisation and increased iron and steel consumption, but might have only succeeded with a different economic policy to that pursued by Perón. The second option was a specialisation in certain product lines, which was feasible and would take into account both costs and market considerations.

The second factor adversely affecting the PSA was the inadequacy of domestic raw material supplies. Nevertheless, in the wartime military drive for self-sufficiency, national iron and coal deposits were discovered and developed. The difficulty was that their exploitation was far from economic, since deposits were situated in remote areas, the quality of the minerals was poor, and reserve levels were insufficient. This dissertation, which discloses extensive new information on national minerals, reveals the extent of the unsuitability of local iron and coal resources and exposes the obstinacy of the military in employing such raw materials. In the case of Zapla, a wartime project processing ores from a nearby iron deposit, total reliance on domestic resources was initially inevitable despite the high costs - but in peacetime should have employed foreign raw materials. The problem was more severe in the case of the integrated steelworks. Although the DGFM accepted the need to use a mix of foreign and national raw materials in order to reduce costs, it remained insistent on the utilisation of a proportion of domestic inputs. In line with their goals, the military could increase this proportion in times of emergency or import shortages, thereby maintaining production at higher costs than were practicable.

The final factor conspiring against the PSA was the nature and timing of the project itself. Contrary to common assumptions, the integrated steelworks proposal is not an example of deliberate State intervention which is usually associated with the Perón régime. As is shown in the thesis, the DGFM sought the collaboration of private and even foreign interests in a *sociedad mixta* to attain its goals, given that it could not provide all the required capital from its budget and also lacked the necessary technical and commercial experience. Therefore, tenders were invited, and the successful one (which was tailored to military requirements) was presented by three leading national steel producers and the subsidiary of the US firm ARMCO. Launched in an age of increased economic nationalism, the proposal came under heavy fire - not least because of opposition to participation by the ARMCO subsidiary. The National Congress, in a

clear demonstration that it was not initially controlled by Perón despite the impressive scale of his election victory and his authoritarian tendencies, pushed to restrict private and foreign involvement in the project. The DGFM, determined to 'have' heavy industry and thereby desperate to salvage its Plan, yielded to congressional pressure and was landed with greater control over the steelworks than originally envisaged. The timing of the PSA also proved as fatal. Prepared in wartime, the project was not a priority for the peacetime elected *Peronista* government. Although Perón was himself a military man and had supported the PSA during his tenure as Minister of War under the military régime and at the start of his own presidency, he displayed little commitment thereafter as he had developed his own agenda. Even though this in itself had a negative effect on the implementation of the Plan, this thesis argues that the economic difficulties arising from government policies had an even more severe impact. The depletion of financial resources and foreign exchange reserves by the late Forties effectively prevented the execution of the project. The State could not provide its capital contributions or any other funds, and equipment purchases were impossible.

Having identified the various themes associated with the external and domestic constraints on the development of iron and steel production in Argentina, two items remain to be assessed. These are the sources of historiography on which the thesis is based, and the organisation of the dissertation.

The secondary and primary sources of historiography

Existing literature has dealt with the international and domestic contexts around the attempts to develop iron and steel production. On the subject of external constraints, there are few but nevertheless useful works on the steel cartel, and a wide range of sources on US-Argentine antagonism as well as steelmaking in other 'small' economies (which can provide counterfactuals). Scholars studying Argentina in this crucial period of its modern history have focused largely on the turbulent domestic politics and also dealt with the more controversial aspects of policy-making. Some attention has also been devoted to economic developments and the rise of manufacturing, with the debates about industrialisation being at the heart of the discussion. As will be seen in Chapter 1, major contributions have been made by Alejandro

E. Bunge, Adolfo Dorfman, Ricardo Ortiz, Raúl Prebisch, Aldo Ferrer, Guido Di Tella and Manuel Zymelman, and Ezequiel Gallo. With the exception of the works by Dorfman and Ortiz, insufficient emphasis has been placed on individual manufacturing sectors - not least iron and steel production. As will also be seen in Chapter 1, references to the latter in secondary sources are few. The leading private metallurgical firms that expanded into steelmaking are only considered by Jorge Schvarzer. The growth of military interest with industrialisation and the formation of defence-related industries, particularly with reference integrated steelworks project to be developed through a *sociedad mixta* between the DGFM and private enterprise, has been given more heed not only by Schvarzer but also Raúl Larra, Laura Randall and Robert A. Potash. In the relevant chapters, whose organisation is described below, the thesis extends the work of Schvarzer, Larra, Randall and Potash. Factual errors are corrected, and the issues pinpointed by these authors are the subject of detailed attention in the appropriate context. Information on these and other matters addressed in the dissertation were obtained from a fairly broad range of primary sources. However, there were two major limitations: (a) the failure to gain access to corporate documents of Argentine and international firms, and (b) the impossibility of holding interviews with any people involved with attempts to develop the Argentine iron and steel industry.

Although the severe industrial unrest afflicting steelmakers when fieldwork was undertaken in 1991 did not help, the key problem in Argentina was that neither private nor State companies would open their archives. La Cantábrica was rapidly heading towards bankruptcy, TAMET had destroyed its papers, ACINDAR only made available published material, and the DGFM wrapped itself under the banner of official secrecy. Although the Archivo General de la Nación was appointed the depository of documents belonging to the military-controlled iron and steel companies when these were privatised in 1992, it has not received any of the relevant papers to this day. It was also impossible to obtain access to the papers of ARBED-Terres Rouges and ARMCO. Attempts to shed any light on the operations of the Argentine subsidiary of British steelmaker Dorman Long, which might have been a useful source of comparison with the activities of firms like TAMET, also failed. The Dorman Long archives only hold papers relating exclusively to the parent company - eg, reports of annual general meetings, minutes of various company committees, and annual accounts files. Had access to ARBED-Terres Rouges and ARMCO been granted,

it might have been possible to uncover the true extent to which ARBED used its substantial shareholding in TAMET to advance ISC policies in Argentina and to clarify with precision some of the oddities surrounding ARMCO collaboration in the PSA. Nonetheless, some lines of argument in the thesis relating to ARBED and ARMCO can be sustained through well-informed inferences arising from information in published primary sources. In addition, research in the Public Records Office (PRO), the Bank of England Archive, and the British Library of Political and Economic Science (BLPES) unearthed a variety of important papers. The subjects of those available at the PRO and the Bank of England are associated mostly with external constraints affecting the PSA, such as the lengths to which the USA went to try and extend its embargo against Argentina in relation to sales of 'strategic' inputs, British assessments of ARMCO participation in the DGFM project, and the increasing British inability to supply Argentina with essentials such as coal. American documents available on microfilm in the BLPES reveal US official perceptions on DGFM projects and information about one of the few proven cases of corruption, implicating leading Argentine government officials and involving the award of contracts for SOMISA.

Combined with the unavailability of some corporate documents was the impossibility of holding interviews with any people associated with private steel manufacturers or the project for an integrated steelworks. The only surviving personage at the time was Arturo Frondizi, a Radical member of the Lower House of Congress and leading opponent to private sector participation in SOMISA, who had become far too senile. Although the inaccessibility to documents or first hand accounts is something of a setback, it has been partially compensated with printed primary sources. Comprehensive data on imports, the predominant Argentine source of iron and steel throughout the period under study, was obtained from two invaluable sources: (i) the highly detailed annual national trade statistics, and (ii) interwar period reports on Argentina by the British Board of Trade. As for domestic production and supplies of raw materials, there is an adequate range of printed materials. Those from the State sector include Army-backed Government reports promoting the possibilities of local steelmaking, published speeches outlining military ideology and 'visions' for the development of heavy industry, Congressional debates, the *Plan Siderúrgico Argentino* booklet supplementing the Draft Bill of the PSA, publications promoting the DGFM and its two iron and steel producing companies, official mining and industrial statistics, and pamphlets on domestic sources of

iron ore and coal published by the relevant State agencies. Printed primary sources from the private sector comprise company histories, annual reports, the TAMET 'in house' periodical, and a report prepared by the (then privately run) Banco Central de la República Argentina. These printed materials by both Government departments and private companies, despite an abundance of self-promoting rhetoric, contain much useful information and data. However, Argentine printed primary sources lack supplementary information and statistics necessary to extend and carry some of the arguments presented in the thesis. This problem has been solved by using relevant official publications from the United Nations and its various regional economic commissions. Finally, by drawing on printed primary sources of Australian, Brazilian and South Korean origin it was possible to gain additional insights into the Argentine case by constructing a counterfactual based on the experience of other 'small' developing economies.

Organisation of the thesis

The external and domestic constraints affecting the attempts to develop iron and steel production in Argentina are explored at length. As these constraints gave rise to a number of key themes over the period as a whole rather than to the years when national iron and steel manufacturing finally emerged, the thesis approaches the subject thematically through seven chapters.

Chapter 1 focuses on general issues regarding industrialisation, heavy industry and development, and also reviews both the debates on industrialisation in Argentina and the historiography on attempts to develop Argentine iron and steel production. The chapter is divided into three sections. The first of these reviews the issue of industrialisation and its role within the long-term process of economic growth, and assesses the notion that an iron and steel industry had a fundamental part in development, which was based on two elements: (a) historically, the sector had provided the lead during the industrial take-off of the major economies, and (b) the nature of the product that the industry provided. Since both these foundations are intertwined and arise in the technology of iron and steel production, the section also describes the process of iron and steel manufacturing - which is of an integrated nature and comprises three stages of production (pig iron production, steel production and rolling). In order to understand much of the subsequent discussion

in the dissertation, emphasis is laid on the processes relevant to the Argentine case. The second section evaluates the Argentine discussions on industrialisation, which in large measure responded to the fact that the export-led growth which had made Argentina so prosperous was not a sustainable economic strategy in the long-term. Finally, the chapter reviews the existing historiography on the focal subject of the thesis, which is limited but nevertheless provides helpful pieces of information around which the the frustrated efforts to develop modern steelmaking in the Republic can be discussed.

Chapter 2 sets out the historical context within which iron and steel production developed in Argentina, and is divided into two sections. The first of these examines the international context, and shows that the major iron and steel producer-exporters prevented the growth of production in overseas markets such as Argentina which would compete with their own industries. The second section surveys the domestic limitations on the development of an iron and steel industry arising from the configuration of the national economy. It shows that, although the country was undergoing change, rural production and exports retained a key function and thereby structural reform was not extensive - not least because of institutional failure.

Chapter 3 discusses the role of the State, the private sector and foreign interests in the development of the iron and steel industry. It examines the origins of the private sector metallurgical firms that expanded into steel manufacturing during the Second World War and their early organisational instability, the ideas behind the military drive to establish heavy industry, and the preparation of the two major projects of the period by the DGFM. The early organisation of the military integrated steelworks project in a *sociedad mixta* with private and foreign interests is assessed in detail, since it refutes traditional assumptions about excessive State intervention in the economy under Perón, as is the political failure of the proposal.

Chapter 4 addresses the critical issue of size of the market. Argentina already had the characteristics of a semi-industrial country and could have deepened industrialisation, thereby expanding the demand for iron and steel. The chapter argues that in terms of population, income and a shift from primary production towards manufacturing, this should have been possible - at least on paper. However, this does not occur and the problems are reflected in the nature of the market for iron and steel. Consumption of the

latter was largely by sectors whose requirements could not sustain domestic production. Demand by transportation (its largest source until the First World War) was affected by changed economic conditions after 1914 and the financial difficulties of the railway companies, which resulted in steadily falling purchases of new materials or renewals of permanent way. Construction, which had the largest share of the market, could not sustain production as the iron and steel content employed in the industry decreased. Demand by the emergent metallurgical sector was insufficient to sustain a domestic steel industry as its product-range was very wide and produced in relatively small volumes - which was inefficient and resulted in high costs.

Chapter 5 considers the many problems related to the supply of domestic and imported raw materials. It argues that, despite its many apparent advantages, scrap was far from an adequate resource on which to base domestic steel manufacturing as its sources were limited and stocks could not be easily replenished once used. Any shortfall in scrap had to be compensated with imported pig iron, whose supplies in this period fluctuated sharply (not least during the world economic crisis and the Forties). The chapter also evaluates the cost-effectiveness of domestic sources of minerals and fuels, and discloses the extent of their inadequacies. Finally, the option enshrined in the PSA - namely, the use of a mix of foreign and national inputs - is considered, and demonstrated to be somewhat unfeasible at the time as imported raw materials such as coal would not have been easily available.

Chapter 6 assesses the impact of two major international factors on technology transfers. These are the calculated attempts of the principal Continental steel producer-exporters to thwart growth in local production during the Twenties and Thirties, and American antagonism towards Argentina following the 1943 coup and the *Peronista* rise to power. However, the chapter reveals that three domestic factors had distinct repercussions on the availability of technology: (i) the skill of Argentine engineers to skirt restrictions on foreign technology transfers, as exemplified by the Fábrica Militar de Aceros in the Thirties; (ii) the little known matter of nationalist objections to participation by the subsidiary of the US firm ARMCO in the PSA, which arose critically during the Congressional debate on this project in 1947 as a result of US-Argentine antagonism; and (iii) the shortages of foreign exchange in the late Forties, which was essential to cover imports of equipment.

Finally, Chapter 7 examines the gap between the ideology behind the military heavy industry project and the economics of iron and steel production. It assesses the consequences of bad planning guided by national defence requirements, which entailed contrived projections, the use of expensive national resources and little regard for business considerations, and appraises alternatives that would have made the military proposals economically viable. It is this chapter which reflects the most important lesson from the Argentine experience with attempts to develop an iron and steel industry: that 'having' an industry to meet political objectives, even if the circumstances appear auspicious for such an undertaking, is not sufficient enough reason for its establishment.

Chapter 1

INDUSTRIALISATION, DEVELOPMENT AND HEAVY INDUSTRY: GENERAL AND ARGENTINE DEBATES AND HISTORIOGRAPHY

A key proposition in this thesis is that Argentina in the second quarter of the century failed to thoroughly transform its economic structure and achieve its aspiration of becoming what is now labelled a developed nation - a fact not least reflected in floundering attempts to establish a modern iron and steel industry. Rural production and exports retained a key function in the economy, notwithstanding that Argentina had acquired the characteristics of a semi-industrial country by the Twenties. As will be seen in Chapter 4, the economy had diversified its production and had attained several benchmarks which differentiated it from exclusively primary-oriented countries (ie, a minimum per capita income, shifts in production from the primary sector to manufacturing, and the contribution of industry to growth).¹ Although this should have enabled a deepening industrialisation, the Republic instead took what many describe as a wrong turn and set off on a perverse downhill course. This has given rise to much controversy, whose various facets are covered in the Argentinianist literature reviewed in the third section of this chapter. Such specific debates cannot be discussed without an understanding of the broader context of the roles of industrialisation generally and heavy industry in particular had in development. This chapter consists of four sections. The first defines the concept of *industrialisation*, which was one component in long-term economic growth, and appraises the key viewpoints on the opportunities to undertake the process. The second section assesses the perceived role of heavy industry in economic transformation, with attention being paid to the nature of iron and steel making as this influenced the ideas as to what could be achieved if there was domestic steel production. The third section evaluates the debates on Argentine industrialisation, which were in large measure responding to the fact that the export-led growth that had made the country so prosperous was not a sustainable economic strategy in the long-term. The final section of this chapter reviews the existing historiography on the central topic of this dissertation, which is limited but nonetheless provides useful pointers around which to discuss the frustrated attempts to develop modern steelmaking in Argentina.

¹ Hollis Chenery, Sherman Robinson and Moshe Syrquin, *Industrialization and Growth* (Washington, 1986), pp.84,85.

INDUSTRIALISATION: ITS FUNCTIONS IN DEVELOPMENT AND ECONOMIC GROWTH

The term *industrialisation* can be defined in two ways. (a) It is described as the establishment of a modern, integrated, urban-based manufacturing sector.² (b) More importantly from the perspective of this thesis, it is explained as the shift of the centre of economic gravity away from primary production towards manufacturing and the central factor in modern growth and in development - the latter being a successful structural transformation of the economy.³ Interpreting industrialisation in terms of the second definition, developing countries have sought the process as an essential component of the expansion, diversification and modernisation of their economies.⁴ Industrialisation was perceived to have three significant advantages. (i) It improved living standards. Rises in the shares of national income derived from manufacturing and of the working population employed in these activities led to increases in the per capita income of the population - excluding at times of cyclical interruptions.⁵ (ii) Economies of scale and growth in productivity became important and brought cumulative benefits in the form of external economies. This realisation arose from early arguments favouring industrialisation, which were largely based on the assumed properties of technology in manufacturing and related sectors.⁶ (iii) Industrialisation offset disadvantages of specialisation in primary production and the related deterioration in the terms of trade.⁷ As is shown below, the latter perceived benefit was heavily promoted in Argentine (and broader Latin American) debates

² Colin H. Kirkpatrick and Frederick I. Nixson, *The industrialisation of less developed countries* (Manchester, 1983), p.2.

³ Chenery, Robinson and Syrquin, *Industrialization*, p.ix; Simon Kuznets, *Modern Economic Growth* (New Haven, 1966), p.1.

⁴ John Cody, Helen Hughes and David Wall (eds.), *Policies for Industrial Progress in Developing Countries* (Washington, 1980), p.11.

⁵ See Bhabatosh Datta, *The Economics of Industrialization* (Calcutta, 1952); Kuznets, *Economic Growth of Nations* (Cambridge, Massachusetts, 1971).

⁶ See Paul N. Rosenstein-Rodan, 'Problems of Industrialization in Eastern and Southeastern Europe', *Economic Journal* LIII (1943) Nos.210-211, pp.202-211; Kurt Mandelbaum, *The Industrialisation of Backward Areas* (Oxford, 1945).

⁷ See H.W. Singer, 'The Distribution of Gains between Investing and Borrowing Countries', *American Economic Review* XL (1950) No.2, pp.473-485; United Nations (UN), Economic Commission for Latin America (ECLA), *The economic development of Latin America and its principal problems* (Lake Success, 1950).

as a justification to pursue industrialisation.

Since industrialisation is just one component in the long-term process of economic transformation, theories such as that developed by W.W. Rostow in the Fifties emphasize the stages of growth. The Rostowian model comprises the following five clearly identified phases. The first is one in which traditional society, whose structure developed within limited production functions based on pre-Newton science and technology, predominated. The second is one in which the preconditions for take-off evolved, with the insights of modern science being translated into new production functions in agriculture and industry in a setting given dynamism by the lateral expansion of world markets and international competition for them. Rostow believed that the arrival of new types of enterprising men, the appearance of banks and other institutions for mobilising capital, and increased investment in transport and communications as well as in raw materials of economic interest were necessary for an initial spurt in manufacturing. The third stage was that of the take-off, which was described as the interval when old blocks and resistances to steady growth were removed. The beginning of the take-off was traced to a sharp stimulus such as a technological revolution or an unfavourable shift in the terms of trade requiring the rapid development of manufactured import substitutes, and two conditions were required. (a) The existence or quick emergence of a political, social and institutional framework which exploits the impulses to expand the modern sector and give an on-going character to growth. (b) The development of one or more substantial manufacturing sectors with a high rate of growth - including the processing of agricultural products or raw materials by modern methods. Rostow argued that the key lead sector were railways, not only by providing forward transport linkages for many sectors but because of a 'backward' demand for coal and iron and steel (see below). The fourth stage identified by Rostow was the drive towards maturity, in which the make-up of the economy changed relentlessly as technology improved, new industries accelerated and older ones levelled off. The fifth phase of the stages of economic growth model was the age of mass consumption, in which the leading sectors shifted towards consumer durables and services and real income per capita had risen to the point where most people gained a command of consumption which transcended basic food, shelter and clothing.⁸

⁸ W.W. Rostow, *The Stages of Economic Growth* (3rd ed., Cambridge, 1990), pp.4-10,36-37,39.

Also in the Fifties, Alexander Gerschenkron elaborated a model of late-comer economic development whose appeal derives from its logical and consistent ordering of the process of European development, the conditional nature of its predictions, and its generalisability to the experience of late-comers in the present array of underdeveloped nations. Gerschenkron's hypothesis can be summarised in the following manner. (1) Relative backwardness creates a tension between the promise of economic development, as achieved elsewhere, and the reality of stagnation. Such a tension motivates institutional innovation and promotes locally appropriate substitution for the absent preconditions of growth. (2) The greater the degree of backwardness, the more interventionist was the successful channelling of capital and entrepreneurial guidance to nascent industries by agents such as the State. Also, the more coercive and comprehensive were the measures to reduce domestic consumption. (3) The more backward the economy, the more likely were an emphasis on producer goods rather than consumer goods, the use of capital intensive rather than labour intensive methods of production, the emergence of larger rather than smaller units of both plant and enterprise, and dependence on borrowed, advanced technology rather than indigenous techniques. (4) The more backward the country, the less likely was the agricultural sector to provide a growing market to industry through rising productivity and the more unbalanced the resulting productive structure of an economy.⁹

As from the late Sixties, led by analysts such as Simon Kuznets, Hollis Chenery and Moshe Syrquin, the debate on industrialisation focused on the issue of structural change. Kuznets identified, documented and analysed the emergence of a new stage in economic history which he defined as *modern economic growth*, in which there was a vast diversification away from primary, extractive sectors and a proliferation of industries and occupations. He argued that three conditions particularly set modern economic growth apart from previous forms of economic organisation. These were the growth rate of real per capita income, the industrial and occupational distribution of the labour force, and the form of population settlement. In economies experiencing modern economic growth, the rate of increase of real per capita income usually averaged 15% or more per decade over a century or longer periods - an unprecedented feat.

⁹ See Alexander Gerschenkron, *Economic Backwardness in Historical Perspective* (Cambridge, Massachusetts, 1962).

The shift out of agriculture led to a transformation in population distribution, characterised by the emergence and subsequent predominance of spatial concentration in cities and their suburbs. Underlying the acceleration in the growth rate of real per capita income and the associated reallocation of resources by industry, occupation and location was a technological revolution. The latter resulted in a reliance on inanimate sources of power, the growth in significance of minerals relative to fibres as raw material, the spread of mechanisation and an associated rise in the optimum scale for manufacturing production leading to factory organisation, and new forms of transport and communication. The analysis of modern economic growth enabled Kuznets to demonstrate that its features described above were essentially similar in large parts of the world (markedly in the developed nations and in incipient form in some underdeveloped countries), and he therefore subsequently contributed a major empirically founded comparative study of the economic growth of nations.¹⁰

Other structural change analysts such as Chenery and Syrquin assessed the process of economic transformation itself, and defined it in terms of only three periods. The first was identified by the predominance of primary production, and was followed by a phase of industrialisation in which the emphasis shifted towards manufacturing; the final stage was that of a developed economy. The initial period of transformation had three characteristics. (a) The share of agriculture and related branches in total national production was relatively high while that of the extended industrial sector - mining, manufacturing, construction, water, energy, transport and communications - was relatively low. (b) The nature of manufacturing activities was limited. (c) The presence of services such as trade, finance and real estate was of considerable significance. The initial rise of industry stemmed from growth in domestic demand, as rises in per capita income led to a fall in the share of food consumption and an expansion as well as change in the composition of non-food demand. Since initially there was no market for intermediate goods, industrialisation began with two types of industries: (i) those that transformed domestic or imported primary products into goods required by final demand (textiles, construction materials industries); and (ii) those that transformed imported semi-manufactures into goods needed by final demand (assembly and mixing plants, pharmaceutical laboratories, metal-fabricating industries). The result was a gradual shift away from primary

¹⁰ See the two major works by Kuznets, *Modern Economic Growth* and *Economic Growth of Nations*.

production, and the extent to which economies became semi-industrial is measured by a series of 'threshold' indicators - the point at which the contribution of manufacturing to growth exceeded that of primary production, a minimum per capita income as a proxy for domestic demand for manufactures, and a minimum share of manufacturing in production. As industrial activities increased purchases of manufactured commodities and substituted them for primary ones, demand for intermediate use goods expanded rapidly.

This led to the development of backward linkages.¹¹

Although the various works discussed above all viewed industrialisation as being one component in economic development, they differ in their interpretation as to how it occurred within the long-term process. While Rostow's model of stages of economic growth had discontinuities such as the 'take-off', Gerschenkron conceptualised industrialisation in late industrialising countries as a 'big spurt' (ie, the more backward the country, the more rapidly it wanted to catch up with advanced nations). Structural change analysts presented different perspectives on the economic process. While Kuznets identified, documented and analysed the features of modern economic development, Chenery and Syrquin concentrated on the actual transformation of an economy - ie, the shift of gravity away from primary activities towards manufacturing. However, there was a weakness inherent in the various propositions: they had to be adjusted to the realities of the development paths taken by underdeveloped countries. In the case with the Gerschenkron model, this was necessary because his concept which had been rooted in the special characteristics of the historical European experience. In the instance of the Rostowian and structural change paradigms, economic development was constrained in practice by international restrictions (access to capital and technology, foreign trade). As regards specifically the Rostowian model, Rostow's argument that it could be applied to all economies is at odds with conditions in a large number of underdeveloped countries. Many of these lacked well-integrated commodity and money markets, highly developed transport facilities, a well-trained and educated workforce, motivation to succeed, and an efficient government bureaucracy. Regarding the framework proposed by structural change analysts, it was affected not only by external constraints but also domestic limitations such as a country's physical size and its population, resource endowment, and

¹¹ See Chenery, Robinson and Syrquin, *Industrialization*, pp.56-57,62,72-73,85; Kuznets, *Modern Economic Growth*, p.409; Kirkpatrick and Nixson, *Industrialisation*, p.10; Albert O. Hirschman, *The strategy of economic development* (Boulder, 1988), pp.100,111.

institutional constraints. The latter were not only in the form of specific government objectives and policies. As Kuznets acknowledged, there were three minimum political requirements for modern economic growth. Foremost was the need for stability, as much growth could not be expected under turmoil conditions and unpredictable changes of régime. Second, governments had to resolve conflicts of interest that arose in the process of economic change. And third, a minimum level of representativeness was necessary.¹²

THE ROLE OF HEAVY INDUSTRY IN INDUSTRIALISATION

Of the various propositions discussed above, the one which is of the utmost importance to the thesis is the analysis of the actual process of economic change. A key underlying issue in this dissertation is that Argentina failed to achieve a thorough structural transformation of its economy, and that one of the reasons for this was institutional failure. However, a further observation must be made about Rostow's model. By incorporating the notion of lead sectors, the Rostowian concept of a take-off has major connotations in the perceived role of iron and steel production in economic development. Rostow has argued that, historically, in most major economies (and particularly the USA) the lead sector had been heavy industry complexes, whose growth can be traced directly to the building and maintenance requirements of the substantial railway systems that developed. His view was that, by giving impetus to the development of the modern coal, iron and steel, and engineering industries, the introduction of railroads had been the most powerful single initiator of a take-off. To a much lesser extent, the rise of heavy industry as a lead sector can be tracked to the enlargement and modernisation of Armed Forces, which required iron and steel military end-products.¹³ Although historically the role of modern armaments has been ancillary rather than central to the take-off being led by basic industries, more recently underdeveloped countries have made independence in economic and military matters a central theme of industrialisation. The problem with this strategy was that the political considerations of independence often ran counter to both economic efficiency and growth, as priority was given to self-sufficiency in basic and defence industries.¹⁴

¹² Kuznets, *Modern Economic Growth*, p.451.

¹³ Rostow, *Stages*, pp.55,56.

¹⁴ Cody, Hughes and Wall (eds.), *Policies*, p.18.

Although initially based on a limited range of markets, heavy industry satisfied the Rostowian requirements for a sector to lead by bringing in new production functions and backward, lateral and forward linkage effects.¹⁵ With time, the Rostowian argument was criticised on two accounts. (a) The empirical evidence gathered by historical research showed large differences over time and between different economies as regards the notion of heavy industry as a leading sector. (b) Railways had not been significant for the formation of US heavy industry in terms of a consumption of domestic iron and steel products. Although these criticisms are now widely accepted, Rostow's theories were in the vogue in the middle of this century and policy-makers acted on the assumption that his analysis was correct. Rostowian views influenced the notion, particularly in underdeveloped countries, that the undertaking of domestic iron and steel production was critical to economic development. Never consumed directly by man, steel was a means of production and industrial raw material that, after technical transformation, was incorporated in finished consumer goods and investment goods. The production of sophisticated goods in which steel was the essential input was argued to have spillover effects on the rest of the economy, transforming agriculture, construction, transport and other industries into highly productive sectors.¹⁶

To understand fully why these perceptions arose, one final item must be considered before going on to discuss the debates on Argentine industrialisation. This is the process of iron and steel production, which is of an integrated nature, and the technology involved. Iron and steel making is considered a heavy industry owing to the volume of inputs treated in gigantic installations, which in turn require particularly large investments. Based on iron ore, production consists of the reduction of iron oxides into a molten state and the subsequent refinement of the crude metal for the manufacture of various steel types dependent on the requirements of the finishing industry.¹⁷ This process comprises three integrated stages. The first stage is pig iron production in blast furnaces, and special attention is paid to charcoal-based production since this was the technique employed by the Altos Hornos Zapla in the Republic. The second stage is steel

¹⁵ Rostow, 'Leading Sectors and the Take-Off', in Rostow (ed.), *The Economics of Take-Off into Sustained Growth* (London, 1963), p.7.

¹⁶ Franco Peco, *L'acier face aux theories économiques* (Milan, 1971), p.27; Cody, Hughes and Wall (eds.), *Policies*, p.13.

¹⁷ Daniel Rivet, *L'acier et l'industrie sidérurgique* (Paris, 1978), pp.7,57.

production itself. Emphasis is laid on the most widely employed method: the basic open-hearth process, which had many advantages and was viewed as the most appropriate for the development of the Argentine industry. The third and final stage described is rolling of steel into finished goods. Distinction will be made between the two types of goods, non-flats and flats.

The first stage of iron and steel making: pig iron production in blast furnaces

Iron has been produced for many centuries. Originally, a spungy lump of iron was obtained in a crude furnace by blowing air with a pair of bellows through a mixture of iron ore and wood charcoal at high temperature. In time, the air was blown by mechanical means: this gave rise to the name 'blast furnace'.¹⁸ Although technological innovation resulted in the replacement of charcoal by coke in time, pig iron production remained charcoal-based in countries lacking access to other fuels.¹⁹ Blast furnaces employing charcoal had two advantages over those using coke. First, the pig iron manufactured was of a better quality, and had a low sulphur content. And second, their consumption of fuel was lower owing to the possibility of producing pig iron at a lower temperature, despite the greater losses of heat per ton of pig iron arising from irradiation, convection, etcetera.²⁰ However, charcoal had serious drawbacks. It was an expensive reducing agent and fuel, except in regions distant from coal supplies and/or exceptionally rich in forest resources.²¹ A huge volume of wood was required in its production: the cutting of 3 hectares of forest were needed to produce a mere 100 tons of charcoal, which in turn produced only 50 tons of pig iron. Therefore, 2 tons of charcoal were necessary to produce 1 ton of pig iron.²² Charcoal production was only possible so long as forests were available as sources of supply, and became increasingly problematic as

¹⁸ Douglas A. Fisher, *Steel Serves the Nation* (New York, 1951), p.119.

¹⁹ Kenneth Warren, *World Steel* (Newton Abbot, 1975), p.49.

²⁰ UN, ECLA, *A study of the iron and steel industry in Latin America*, Volume II (New York, 1954), p.157.

²¹ Kris E. Inwood, *The Canadian charcoal iron industry, 1870-1914* (New York, 1986), p.68.

²² Carlos Manuel Peláez, *História da Industrialização Brasileira* (Rio de Janeiro, 1972), p.157.

reforestation near plants was not regulated and occasional.²³ With the rapid depletion of timberland, the radius of wood collection widened and it became harder to secure steady supplies at economic prices.²⁴

Modern coke-fuelled blast furnaces, which became predominant in the world at large, date from 1859.²⁵ Their use had four great benefits. First, coke was a less expensive fuel and its production was more easily expanded in the long-run than that of charcoal.²⁶ Second, coke had better mechanical resistance than charcoal. Coke was hard and porous and thereby able to withstand the crushing load of materials in the furnace and allow the passage of the blast.²⁷ Third, coke-based furnaces required a smaller investment per ton of pig iron and had lower costs per ton. And fourth, large-scale production was possible. While charcoal-based furnaces had their size restricted by the low calorific value of charcoal, coke-based furnaces could be large as they incur less loss of heat per ton of pig iron.²⁸

Figure 1.1 shows the common shape of a blast furnace, and its components. The blast furnace functions as an exchanger between a descending flow of materials which turn from solids to liquids, and an ascendant flow of gas. The mineral is reduced into pieces of calibrated dimensions averaging 3 millimetres, which favours the passage of the gas, and are then agglomerated. The charge has an average weight of 60 tons (80% consisting of ore agglomerations, and 20% of fuel), and is received at the top of the blast furnace from an inclined hoist with either buckets or skip cars. After entry, the charge slowly sinks down the stack and passes through different zones of temperature produced by hot gas blown in from below. The cold material charge is pre-heated and rapidly absorbs the heat of the gas: as it descends the quantity of iron increases with the rise in temperature. Liquid pig iron is obtained in the belly of the furnace, but it only comprises 1/3 of the charge and is rich in impurities such as sulphur, phosphorus and manganese. In

²³ John Dearden, *Iron and Steel Today* (2nd ed., London, 1956), p.39; Peláez, *História*, p.159.

²⁴ Warren, *Steel*, p.49.

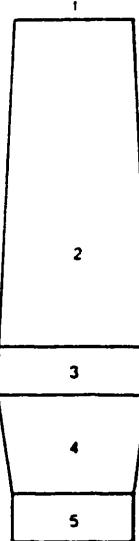
²⁵ Fisher, *Steel*, p.119.

²⁶ Inwood, *Charcoal*, p.68.

²⁷ Dearden, *Iron*, p.40.

²⁸ UN, ECLA, *Study*, Volume II, p.157.

Figure 1.1
THE BLAST FURNACE



1. Top, 2. stack, 3. belly, 4. bosh, 5. hearth.

Source: Ernest Arthur Boas, *Latin America's Steel Industry* (Berlin, 1968), p.42.

the bosh, which is located below the belly and where the heat is blown in, the temperature of the gas is over 2,000°C and improves the chemical composition of the pig iron through oxidation of the impurities, which are separated from the pig iron at the hearth.²⁹

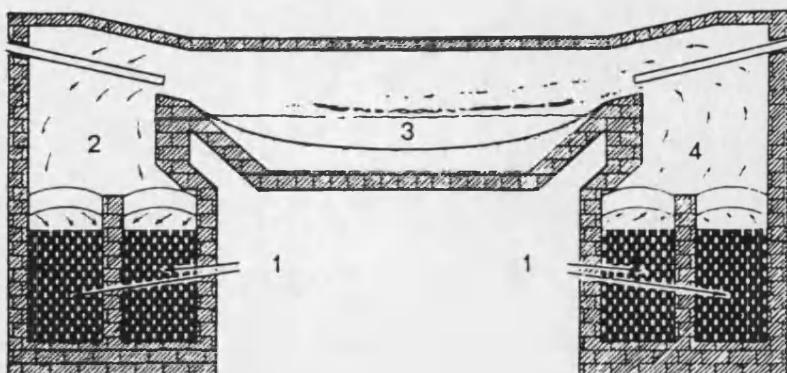
The second stage of iron and steel making: steel production and the basic open-hearth furnace

Since pig iron contains many impurities (particularly carbon) as it comes out of the blast furnace, it must be refined in the mill. The most common steel manufacturing method is the basic open-hearth process, whose share in total world steel production increased from 11.9% in 1880 to 41.5% in 1900, 72.2% in 1929 and 79.0% in 1950.³⁰ Figure 1.2 shows a Siemens-Martin open-hearth furnace. Heated with either liquid or gaseous fuel, it is a reverberating furnace that functions on the principle of the pre-heating of the

²⁹ Rivet, *Acier*, pp.22,23,28.

³⁰ UN, Economic Commission for Europe (ECE), *Comparison of steel-making processes* (New York, 1962), p.1.

Figure 1.2
THE SIEMENS-MARTIN OPEN-HEARTH FURNACE



1. Checkers, 2. burnt gases, 3. molten steel, 4. air, 5. fuel.

Source: Boas, *Industry*, p.61.

air for the combustion and also of the fuel gas. Pre-heating takes place in the checkers, chambers lined with refractory brick checker work that are made hot by the heat still remaining in the burnt gases as they leave the furnace.³¹ The burning fuel causes flames to surge from the sides of the furnace walls and sweep over the surface of the charge, which is contained in a large, shallow furnace. This exposure of the charge to the flames is what gives the name 'open' to the process. The charge also includes fluxes such as lime and limestone for the formation of slag, which is to contain all the impurities to be removed from the liquid metal. The molten steel is poured into a refractory-lined ladle and lifted by crane to the pouring platform, where the steel is poured into moulds.³²

Since the source of heat in this process is outside the charge, its advantage was that it could produce steel using inputs other than hot iron.³³ This was quite crucial for countries lacking adequate coal and iron resources. Siemens-Martin furnaces could utilise large volumes of cheap low-grade scrap, cast-iron and wrought-iron scrap, which could be obtained in three forms. First was that produced in the steelworks, in the shape of crop ends, shearings and rejected materials. Second was 'home brought' scrap arising from

³¹ Ernest Arthur Boas, *Latin America's Steel Industry* (Berlin, 1968), p.61.

³² Werner Baer, *The Development of the Brazilian Steel Industry* (Nashville, 1969), pp.11,12.

³³ UN, ECE, *Comparison*, p.2.

iron and steel goods that had outlived their usefulness. And finally there was imported scrap.³⁴ However, the major drawback was that production could not depend excessively on scrap. Although it was cheaper than pig iron, scrap was often relatively scarce and if the available supply was insufficient to maintain the desired level of ingot production, output could only be sustained through additional pig iron capacity to replace the scrap shortage.³⁵ Such a disadvantage did not discourage 'small' countries determined to develop domestic steel production. From their viewpoint, the open-hearth process had important advantages: there was flexibility in both the combination of inputs employed in the metallic charge and the quality of ores used in the pig iron included in the charge.

The third stage of iron and steel making: the rolling of finished goods

In this phase, which is illustrated in Figure 1.3, the steel is processed into finished products in rolling mills which form part of the steelworks. The molten steel is poured into ingot moulds of various shapes and sizes. After the necessary solidification, ingots are removed from their moulds by cranes and placed into soaking pits. The latter are heated with liquid or gaseous fuel and give the ingots a uniform temperature. The ingots are then lifted by crane from the soaking pits on to the rolling mills, which are highly specialised departments. These are generally known by the name of the product upon which they are engaged, the principal ones being bar, rail, rod, wire, plate, structural, sheet, strip and pipe mills.³⁶ Initially, ingots are rolled into two kinds of shapes, blooms or slabs. Blooms are usually square or rectangular in cross section, and are used for making non-flat products. Slabs are usually wider and thinner than a bloom, and are utilised in making flat products.³⁷ As is seen in Figure 1.3, in the blooming or slabbing mill the ingot is passed between two huge steel rollers, passing back and forth as the rollers are brought closer together. The good is then sheared into shorter lengths while still red hot.

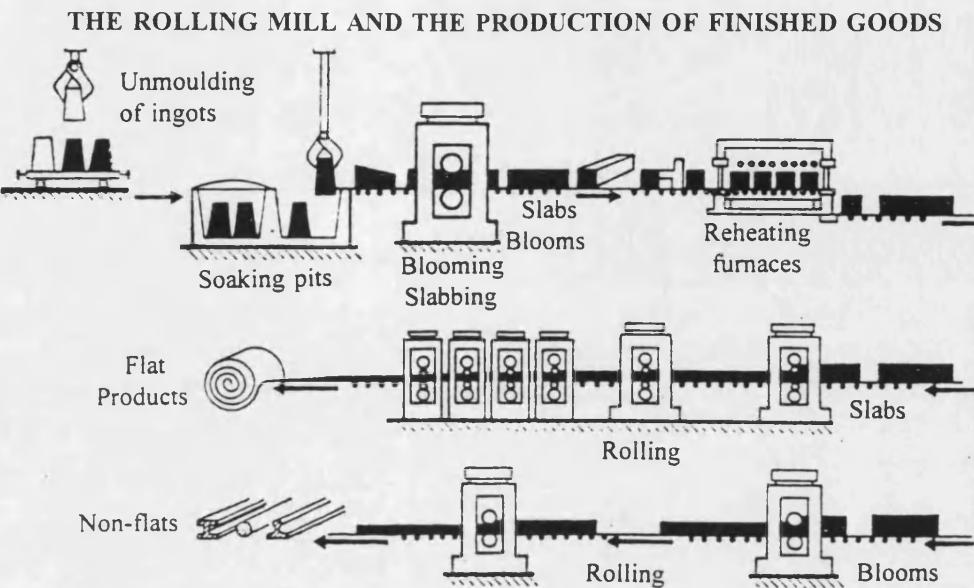
³⁴ Dearden, *Iron*, p.107.

³⁵ UN, ECLA, *Study*, Volume II, p.244.

³⁶ E.D. McCallum, *The Iron and Steel Industry in the United States* (London, 1931), pp.81,82; Warren, *Steel*, p.64.

³⁷ Baer, *Development*, pp.13,14.

Figure 1.3



Source: Daniel Rivet, *L'acier et l'industrie sidérurgique* (Paris, 1978), p.33.

Blooms are produced in the blooming mill and then delivered to billet mills for billet production. Billets are generally square in cross section, with their size depending on the bloom from which they originated, and are an intermediary form of steel.³⁸ Billets are then processed into rails and heavy structural materials, bars for use in metallurgy and engineering, and light structural materials (ie, rods that may be used to reinforce concrete but are largely drawn into wire, strip that is used for welded tubes, and various shapes).³⁹ Originally, the reduction of billets was done by reversing the matel through the same rolls again and again. As this method was slow and expensive, it was substituted with continuous mills.⁴⁰ As seen in Figure 1.3, these mills are continuous finishing trains consisting of a series of rollers placed in tandem, with the semifinished steel emerging straight from one set of rolls to another. Each stand of rolls constitutes one pass for the billet, and the number of stands in the mills were dictated by the number of

³⁸ Ibid., p.14.

³⁹ William A. Johnson, *The Steel Industry of India* (Cambridge, Massachusetts, 1966), p.6; P.W.S. Andrews and Elizabeth Brunner, *Capital Development in Steel* (Oxford, 1951), p.66.

⁴⁰ Norman J.G. Pounds, *The Geography of Iron and Steel* (revised 5th ed., London, 1971), p.53.

passes required to obtain individual final products.⁴¹

Slabs are produced in the slabbing mill and then processed into flat products such as plates, sheets, hoops, strips, cold-rolled sheets and tinplate.⁴² As with blooms, the reduction of slabs was originally done by reversing - ie, passing the semifinished steel through the same rolls again and again.⁴³ The process was revolutionised with the introduction of the continuous wide-strip mills, which are of two types (fully continuous and semicontinuous) and used for producing hot-rolled flat products. Fully continuous mills comprise a roughing train of two or more stands of rollers placed in tandem and a finishing train of several stands placed in tandem, with the steel travelling continuously through the roughing and finishing trains without reversing at any stage. Semicontinuous mills comprise a reversing roughing train of one or two stands and a continuous finishing train of various stands placed in tandem. For cold-rolling, two types of cold-strip mills are used: (a) continuous, and (b) reversing. In the continuous mill, the strip is cold-rolled in coils in a train of mills consisting of several stands placed in tandem. In the reversing mill, the strip is cold-rolled in coils through reversing in a single stand.⁴⁴ Flat products produced in wide-strip and cold-strip mills are used in a wide range of goods such as automobiles, kitchen white goods, and office furniture.

INDUSTRIALISATION IN ARGENTINA: DEBATES AND HISTORIOGRAPHY

One of the earliest works on Argentine economic conditions and the state of industrialisation was *The Economic Development of the Argentine Republic in the Last Fifty Years*, published by the Tornquist group in 1919. Largely comprising detailed statistics, it was influenced by the existing framework of export-led growth and provides useful insights from the perspective of interests largely associated with banking, foreign trade and sugar mills. Industry was still regarded in terms of processing arable and pastoral commodities. This is reflected in the manner the work classifies particular sectors in the statistics, eg what

⁴¹ Dearden, *Iron*, p.166.

⁴² UN, ECE, *The European steel industry and the wide-strip mill* (Geneva, 1953), p.1.

⁴³ Pounds, *Geography*, p.53.

⁴⁴ UN, ECE, *Wide-strip mill*, p.98.

is currently termed as food-processing industries appeared as 'extractive' industries. Moreover, further industrialisation was envisaged through the use of raw materials such as fibre, which were in abundant supply and used to manufacture sacks, vegetable oils, wood-pulp, and woollen and cotton yarns.⁴⁵

However, there was growing concern and dissent over the path the country had taken. The determinants of pre-1914 growth had been the rise of world demand for food and availability of fertile land in the Pampas. In statistical terms, the economy in the Twenties appeared to behave much the same way as in the past.⁴⁶ However, conditions at that time had changed. According to the literature, they manifested themselves in three ways. First, Argentina was surpassed by Canada as the major exporter of wheat, a key cereal export.⁴⁷ Second, the value of the close Anglo-Argentine economic and political links was decreasing, not least because the heavy reliance on Britain as an export market could not be reciprocated.⁴⁸ The final and perhaps most important condition were the inherent problems in the process of horizontal expansion across the Pampas, which remain a critical issue although the interpretation of their nature is changing. Traditionally, three factors are blamed for the failure of export-led growth to translate into sustained development: land concentration, the tenancy system, and the fact that the domestic market was no substitute for exports.⁴⁹ Recent historiography has argued that the real problems were the

⁴⁵ See Ernesto Tornquist & Co., *The Economic Development of the Argentine Republic in the Last Fifty Years* (Buenos Aires, 1919), especially pp.xviii,36-37.

⁴⁶ See the data on exports in Vernon Lovell Phelps, *The International Economic Position of Argentina* (Philadelphia, 1938), pp.136,141; and in Ministerio de Hacienda, Dirección General de Estadística de la Nación, *Anuario del Comercio Exterior de la República Argentina*, volumes for the period 1920-1930.

⁴⁷ For a detailed explanation as to why this occurred, see John Fogarty, 'Staples, Super-Staples and the Limits of Staple Theory: the Experiences of Argentina, Australia and Canada Compared', in D.C.M. Platt and Guido Di Tella (eds.), *Argentina, Australia and Canada* (London, 1985), pp.27-30.

⁴⁸ Callum A. MacDonald, 'End of Empire: the Decline of the Anglo-Argentine Connection 1918-1951', in Alistair Hennessy and John King (eds.), *The Land That England Lost* (London, 1992); Pedro R. Skupch, 'Deterioro y fin de la hegemonía británica sobre la economía argentina (1914-1947)', in Marta Panaia, Ricardo Lesser and Pedro Skupch (eds.), *Estudios sobre los orígenes del peronismo*, Volume 2 (Buenos Aires, 1973); Roger Gravil, *The Anglo-Argentine Connection, 1900-1939* (Boulder, 1985).

⁴⁹ See Tilio Halperín Donghi, 'Canción de otoño en primavera: previsiones sobre la crisis de la agricultura cerealera argentina (1894-1930)', *Desarrollo Económico (DE)* 24 (1984-1985) No.95, for an account of contemporary perceptions; also see Fogarty, 'Staples', p.20, and Roberto Cortés Conde, 'Export-Led Growth in Latin America: 1870-1930', *Journal of Latin American Studies (JLAS)* 24 (1992) Quincentenary Supplement, p.169.

unforeseen consequences of the horizontal expansion, which only surfaced when the frontier closed, and the unwillingness of landowners and tenants to accept the necessary reforms in property relations. Historians such as Jeremy Adelman found claims that land was monopolised by the few and that the *estancia*-based régime was retrograde as deceptive. It is argued instead that the tenancy system suited both landowners and tenants and was the victim of its success, particularly as immigrants continued to converge on the Pampas once the open frontier evaporated.⁵⁰ As regards the domestic market, the literature has demonstrated the inaccuracy of the assertion that imports entering the country as a result of the increase in exports hampered the rise of domestic manufacturing by being cheaper than national production. As is fully discussed in Chapter 4, some industry had arisen on account of the expansion of agro-exports, rapid population growth (particularly in the urban sector), and a shift in the nature of foreign investments following the First World War.⁵¹ Furthermore, there was pressure from within the Army for the establishment of essential strategic industries (see below).

The earliest writings advocating the need for a reappraisal of the development model and for industrialisation were those of Alejandro E. Bunge. In 1914 he began writing a series of books and articles describing and analysing the economic scene, and in 1918 he founded the *Revista de Economía Argentina (REA)*, which soon became a vehicle to promote his views. Bunge, convinced that the un settlement created by the First World War underlined the need for a major effort to reduce dependence on foreign markets, criticised the existing structure of the economy and the control of trade by foreigners. Bunge believed that the pre-1914 system of trade could not be restored, as the United Kingdom was moving towards a policy

⁵⁰ Jeremy Adelman, *Frontier Development: Land, labour and capital on the wheatlands of Argentina and Canada, 1890-1914* (Oxford, 1994).

⁵¹ See Carlos F. Díaz Alejandro, *Essays on the Economic History of the Argentine Republic* (New Haven, 1970), p.211; Bill Albert, *South America and the First World War* (Cambridge, 1988), pp.215-217; Colin M. Lewis, 'Railways and Industrialization: Argentina and Brazil, 1870-1929', in Christopher Abel and Colin M. Lewis (eds.), *Latin America: Economic Imperialism and the State* (London, 1985), pp.215,217, and 'Immigrant Entrepreneurs, Manufacturing and Industrial Policy in the Argentine, 1922-28', *The Journal of Imperial and Commonwealth History XVI* (1987-1988) No.1, p.78, on the impact of export-led growth and urbanisation; see Eduardo F. Jorge, *Industria y concentración económica* (Buenos Aires, 1971), pp.90,98; Mira Wilkins, *The Maturing of Multinational Enterprise: American Business Abroad from 1914 to 1970* (Cambridge, Massachusetts, 1974), pp.60,62; Jorge G. Fodor and Arturo A. O'Connell, 'La Argentina y la economía atlántica en la primera mitad del siglo XX', *DE* 13 (1973-1974) No.49, p.19 on the shift in the nature of foreign investment.

of imperial preference and the USA was no substitute market given the protectionism aimed at defending American farmers. His solution lay in a programme of diversification through import substitution and the growth of manufacturing. He argued that reforms to the existing tariff structure, which he regarded as inadequate, would encourage 'natural' industrialisation and the export of manufactured goods. In addition, Bunge and his 'disciples' envisaged increased investment and an expanded role of the State in the economy.⁵²

The ideas espoused by Bunge and the group coalescing around the *REA* had some relevance to military thinking. Leading members of the Army, increasingly discontented over the precariousness of the traditional economic system and the Argentine international economic position, became interested in the possibilities of economic change and industrialisation as a result of import shortages during the First World War, the restricted nature of existing industry and an increase in the labour supply resulting from rapid urbanisation. Technocrats from the Army Engineering Corps, convinced that they possessed the necessary technical skills to attain this goal, began to champion industrialisation and self-sufficiency as essential foundations for national defence and economic security. Furthermore, they initially believed that the State should intervene in critical industries such as steel and oil with military assistance.⁵³ Although the Army would remain guided by preoccupations with strengthening national defence by achieving self-sufficiency in key basic industries and the production of weapons, its perceptions on the role of the State would change. The military increasingly upheld the notion that the best solution to developing basic industries was not State monopolies but public-private *sociedades mixtas* (see Chapter 3).

With the exception of the Armed Forces, the ideas for change advanced by Bunge carried little weight. They had no bearing on government policy, at least until 1940. The *Unión Cívica Radical* (UCR),

⁵² Mark Falcoff, 'Economic Dependency in a Conservative Mirror: Alejandro Bunge and the Argentine Frustration, 1919-1943', *Inter-American Economic Affairs* 35 (1981-1982) No.4; David Rock, *Authoritarian Argentina* (Berkeley, 1993), especially p.70; many of these ideas were reprinted in Alejandro E. Bunge, *Una nueva Argentina* (2nd ed., Buenos Aires, 1984), originally published in 1940.

⁵³ Robert A. Potash, *El ejército y la política en la Argentina, 1928-1945* (10th ed., Buenos Aires, 1982), p.45; Benjamin A. Most, *Changing Authoritarian Rule and Public Policy in Argentina, 1930-1970* (Boulder, 1991), p.84; Carl E. Solberg, *Oil and Nationalism in Argentina* (Stanford, 1979), pp.76,82.

which governed from 1916 until it was overthrown in the 1930 coup, had no reason to overturn the existing strategy and merely strove for accommodation - a decision whose roots lay in the composition of the party and its limited objectives.⁵⁴ The Conservative-dominated Concordancia régime, which came to power in the aftermath of the 1930 coup and ruled through the so-called *década infame* of Argentine politics, had little scope for manoeuvre in policy-making as a result of the severe economic difficulties caused by the Depression. It implemented short-term policies which dealt effectively with the crisis and its only permanent achievement was the 'fiscal revolution' that made government reliant for the first time on direct rather than indirect taxation for its revenue.⁵⁵ Even without the economic difficulties it faced, the Concordancia could not have sought to change course during the Thirties. Raúl Prebisch, who held public office under this régime and generated major ideas on development in the Forties (see below), has revealed that the continuing prevalence of the international division of labour theory and the weight of public opinion forced government officials as himself not to speak openly about the need for industrialisation.⁵⁶

Renewed economic problems arising from the Second World War altered government perceptions. Many of the notions championed by Bunge were articulated in late 1940 in the Plan Pinedo, which aimed to reactivate the economy and whose most remarkable feature was a tacit acknowledgement that the existing framework was no longer functioning. It did not intend to foster industry as a short-term strategy. It

⁵⁴ See David Rock, *El radicalismo argentino, 1890-1930* (Buenos Aires, 1992), especially pp.15,16,20, 31,33,34-35,273,287; Oscar Cornblit, 'Inmigrantes y empresarios en la política argentina', *DE* 6 (1966-1967) No.24, pp.671,672,681; Peter H. Smith, 'Los radicales argentinos y la defensa de los intereses ganaderos, 1916-1930', *DE* 7 (1967-1968) No.25, p.798,804,805, and *Politics and Beef in Argentina* (New York, 1969), especially pp.48,50,280; John J. Johnson, *Political Change in Latin America* (Stanford, 1958), p.98; David Rock, *Argentina 1516-1987* (London, 1987), pp.184,185; Mark Falcoff and Ronald H. Dolkart, 'Political Developments', in Mark Falcoff and Ronald H. Dolkart (eds.), *Prologue to Perón* (Berkeley, 1975), pp.42, 43, on the composition of the party, its limited objectives and inability to formulate a programme.

⁵⁵ See Daniel Drosdoff, *El gobierno de las vacas (1933-1956)* (Buenos Aires, 1972); Peter Alhadeff, 'Public Finance and the Economy in Argentina, Australia and Canada during the Depression of the 1930s', in Platt and Di Tella (eds.), *Argentina*, and 'Dependency, historiography and objections to the Roca Pact', in Abel and Lewis (eds.), *Imperialism*; Roger Gravil, 'La intervención estatal en el comercio de exportación argentino entre las dos guerras', *DE* 10 (1970-1971) Nos.39-40, especially pp.400,408,410; Javier Villanueva, 'Economic Development', in Falcoff and Dolkart (eds.), *Prologue*, especially pp.62,63; Carlos F. Díaz Alejandro, 'An Interpretation of Argentine Economic Growth since 1930: Part I', *The Journal of Development Studies* 3 (1966-1967) No.1, pp.31,33, on Concordancia policies and achievements.

⁵⁶ Raúl Prebisch, 'Argentine Economic Policies since the 1930s: Recollections', in Guido Di Tella and D.C.M. Platt (eds.), *The Political Economy of Argentina, 1880-1946* (Basingstoke, 1986), p.134.

stressed the need to stimulate only sectors that had a plausible chance of evolving efficiently and at a low cost, and that the industries to be developed should be able to export substantially both to other Latin American countries and the US market. Whether this innovative Plan, which went beyond the wartime conjuncture, would have actually succeeded will never be known. Not only was it rejected by Congress in response to the increasingly transparent undemocratic nature of the Concordancia régime, but doubts also remain over its sustainability. Exports of manufactures could not include capital goods, a major import requirement in neighbouring Latin American countries, as domestic capacity to produce them was embryonic. Moreover, trade links with the USA would have been dependent on Argentine-American relations, which during the war and early postwar years were at an all-time low.⁵⁷

The writings of Bunge were not alone in their concern with industrialisation. There were two 'contemporary' standard works on the history of Argentine industry: (i) *Historia de la industria argentina* by Adolfo Dorfman, which outlined an overview of industrial development until 1930, and (ii) *Historia económica de la Argentina* by Ricardo Ortiz, which devoted several chapters to industry while covering Argentine economic history up to 1939 in its entirety. Although they were *ingenieros* rather than historians, Dorfman and Ortiz sought to understand contemporary reality by going back over the past. They adopted a path of systematic description in which individual sectors were evaluated, data supplied by both the State and private sectors as well as secondary literature was examined, government financial policies and their presumed impact on national manufacturing were investigated, and the features of the domestic market and its changes were pointed out. The difficulty was that Dorfman and Ortiz could not explain the importance and limitations of Argentine industrial development from their descriptions, and invariably resorted to prevailing views on the character of the countryside and the presence of a dominant landowning oligarchy to resolve this analytical problem.⁵⁸ Nevertheless, their work had one major legacy: it discussed and

⁵⁷ Juan José Llach, 'El Plan Pinedo de 1940, su significado histórico y los orígenes de la economía política del peronismo', *DE* 23 (1983-1984) No.92; Guido Di Tella, 'Economic Controversies in Argentina from the 1920s to the 1940s', in Di Tella and Platt (eds.), *Argentina*, pp.128-129; Gabriel Porcile, 'The Challenge of Cooperation: Argentina and Brazil, 1939-1955', *JLAS* 27 (1995) No.1, pp.154-155.

⁵⁸ See Adolfo Dorfman, *Historia de la industria argentina* (Buenos Aires, 1942) and Ricardo Ortiz, *Historia económica de la Argentina* (Buenos Aires, 1955).

processed information that was of permanent value to experts and researchers requiring such material.

The economic hardship endured in the early Thirties and early Forties encouraged further debate on development problems and their solution. Key to the discussions was Raúl Prebisch, who held public office in the Ministry of Finance and the Banco Central de la República Argentina under the Concordancia and went on to become closely associated with the Economic Commission for Latin America (ECLA) set up by the United Nations in 1948. Initially an advocate of orthodox economics, he shifted away from orthodoxy during the Thirties as he increasingly questioned issues in Argentine (and more broadly Latin American) development. His doctrine, which would subsequently be promoted by ECLA economists, was deeply rooted in an analysis of the Latin American experience. It began with a critique of theories of growth and international trade, showing to what extent the international division of labour had favoured the centre (i.e. the industrial nations) over the countries of the periphery. The latter had borne the repercussions of the deterioration of the terms of trade and the drawbacks of a lack of industrialisation, a process critical to improving the position of these countries in the international market as well as advancing in technical fields and consequently in productivity. Prebisch argued that industrialisation could only be accomplished through a series of State-sponsored measures. These included the use of modest and efficiently-managed tariff protection to overcome market failure, and of public foreign funds to ease bottlenecks and facilitate the process.⁵⁹ The most interesting feature in the Prebisch proposals was that they did not directly tackle the fact that policy options could be limited by external constraints. In practice this was unrealistic as external constraints did materialise, not least in terms of the availability of public foreign (and particularly US) money to finance industrial development - see Chapter 6.

The Prebisch critique engendered a number of Latin American economic histories written from a

⁵⁹ United Nations, Economic Commission for Latin America, *The economic development of Latin America and its principal problems* (Lake Success, 1950); Raúl Prebisch, 'Cinco etapas de mi pensamiento sobre el desarrollo', *El Trimestre Económico* 50 (1983) No.198, especially pp.1077-1082; Joseph L. Love, 'Raúl Prebisch and the Origins of the Doctrine of Unequal Exchange', *Latin American Research Review* 15 (1980) No.3, pp.45-72; E.V.K. FitzGerald, 'ECLA and the Formation of Latin American Economic Doctrine', in David Rock (ed.), *Latin America in the 1940s* (Berkeley, 1994); Rosemary Thorp, 'A Reappraisal of the Origins of Import-Substituting Industrialisation, 1930-1950', *JLAS* 24 (1992) Quincentenary Supplement, pp.188-189.

structuralist perspective. Attempting to analyse the formation of the Argentine economy, Aldo Ferrer published *La economía argentina* in 1963. His method of analysis was through the differentiation of four historical phases (regional economies of subsistence, transition, primary exports economy and non-integrated industrial economy) within which the economic system developed and conformed to certain patterns. The explanation of each stage was based on the examination of macroeconomic variables, particularly those emphasised in the ECLA model: aggregate demand, GDP, income distribution, investment, savings and terms of trade. Although Ferrer was concerned with industrialisation as a result of its perceived function in economic development, he devoted most attention to the subject in the fourth historic phase (post-1930). He labelled the latter as a non-integrated industrial economy because, although the economic structure had diversified, it depended on imported supplies due to the insufficient development of basic industries.⁶⁰ The only unfortunate aspect of *La economía argentina* is that, having its intellectual origins in a critique of neoclassical economics, Ferrer rejected the use of the strong analytical and quantitative tools of growth economics. He employed data selectively to support particular points and, in fact, his book contains few statistical tables.

In the late Sixties, the discussion on industrialisation was further influenced by the stages of economic growth model developed by W.W. Rostow. Given that Argentina satisfied Rostow's criteria for take-off by 1914, the debate centred on the issue of when the take-off actually occurred. The beginning of the take-off could be traced to a sharp stimulus, such as a war or an unfavourable shift in the terms of trade requiring the rapid development of manufactured import substitutes. Rostow himself argued that in one sense the take-off began during the First World War, but that it actually took place in the mid-Thirties as the growth of the sectors stimulated by the war slackened until the Depression because during the Twenties the country had sought a return to pre-1914 'normality'.⁶¹ Guido Di Tella and Manuel Zymelman used the stages model in their work on Argentine economic development, and added an extra phase extending from 1914 to 1933. Described as *la demora*, it was a period in which self-sustained growth was not achieved. They argued that industry established itself as the leading economic sector and force of self-

⁶⁰ See Aldo Ferrer, *La economía argentina* (Buenos Aires, 1963), especially pp.9,11-12.

⁶¹ W.W. Rostow, *The Stages of Economic Growth* (3rd ed., Cambridge, 1990), pp.37-38.

sustained growth in the mid-Thirties, but that the take-off was a drawn-out process. It was first stimulated by the world economic crisis, the deteriorating terms of trade and the shortage of foreign exchange. Further incentives were provided by the Second World War, when new industries were established owing to the scarcity of imported materials and strategic products, and by the advent of the *Peronista* régime after the conflict.⁶² In contrast to these authors, Javier Villanueva placed the take-off in the Twenties and bases his assertion on ECLA investment figures. He argues that the First World War cut off foreign investment and imports of capital goods, and that investment in industry rose again after the war.⁶³ However, the view that the take-off occurred in the Twenties is not sustainable, and was recently questioned by Paul H. Lewis. He argued that Villanueva's view is only true in terms of the scale of investment. Since the take-off means a great upward and onward thrust leading to self-sustained growth, the Twenties were a false start and a period of make-shift industrialisation. However, Lewis did acknowledge that some kind of industrial transformation was taking place even though it was difficult to identify precisely when the process reached the take-off point.⁶⁴

This line of debate proved rather inconclusive, and little new empirical evidence was produced. Moreover, given the reasoning that some sectors played a leading role in the take-off process, the various writings provided no detailed information or data on what could be regarded as key industries (eg iron and steel). In retrospect, the argument about Rostow's take-off seems to have been a futile exercise. However, also at the end of the Sixties, Ezequiel Gallo took a different approach in discussing industrialisation. He pioneered the revisionist concept that no contradiction existed between agrarian expansion and industrial growth, arguing against the following two interpretations: (i) that the development of manufacturing was impeded by the landowners, who enjoyed unchallenged political and economic power (in some form or another, Ferrer as well as Di Tella and Zymelman subscribe to this view); and (ii) that insufficient pressure was brought to bear on those social groups with a direct interest in the expansion of manufacturing. There

⁶² Guido Di Tella and Manuel Zymelman, *Las etapas del desarrollo económico argentino* (revised 2nd ed., Buenos Aires, 1973), pp.30,34-35,37.

⁶³ Javier Villanueva, 'El origen de la industrialización argentina', *DE* 12 (1972-1973) No.47, p.458.

⁶⁴ Paul H. Lewis, *The Crisis of Argentine Capitalism* (Chapel Hill, 1990), pp.38,45.

were three perceived adverse conditions supporting this latter view: (a) most industry was closely linked to the rural sector; (b) other manufacturing branches had developed in largely small establishments, thereby limiting their strength; and (c) a large share of foreign immigrants aloof from national politics predominated among the industrialists. In Gallo's view, there was no relation of acute conflict between the agro-export sector and industrial groups, as the expansion of industry depended on the successful performance of the export sector. Fostered by export-led growth, industry had made considerable progress in the field of import substitution, particularly in consumer goods. Gallo saw the tariff structure as the problem. Although this was not an unsurmountable obstacle, the predicament was two-fold. First, industries requiring imported raw materials paid higher duties on the inputs than the actual finished product. And second, the oligarchs that wielded strong clout before the First World War cannot be held responsible for the rigidity of tariff policy in the Twenties as political power was slipping from their hands.⁶⁵

Finally, there has been one recent major contribution to the historiography on industrialisation is *La industria que supimos conseguir*, published by Jorge Schvarzer in 1996. Schvarzer starts from the assumption that the exceptional circumstances and prosperity created by export-led growth were destined to end, and that therefore Argentina had to transform its economic structure and industrialise. He then narrates the history of manufacturing activities in the country until the present day, with an appropriate periodisation and contextualisation, and pays attention to some specific industrial sectors. Nevertheless, this work has significant faults. Data is used selectively in the narrative, and in fact the book does not include a single statistical table. This weakens the analysis of individual sectors, which consists of a general look at their evolution and lacks the mass of quantitative details that made the publications by Dorfman and Ortiz so valuable. Notwithstanding these problems, Schvarzer's work has an important merit. It is the first adequate book-length interpretation of the socio-political history of Argentine industry written since Dorfman issued his *Historia de la industria argentina* in 1942.

La industria que supimos conseguir is the most recent major contribution to the long-running

⁶⁵ See Ezequiel Gallo, 'Agrarian Expansion and Industrial Development in Argentina, 1880-1930', in Raymond Carr (ed.), *Latin American Affairs* (St. Antony's Papers, No.22, 1970).

debate on Argentine industrialisation, which has been pursued obsessively ever since the weaknesses of export-led growth were exposed during the First World War. In retrospect, this discussion seems to have been misdirected and thereby achieved little in real terms. As the recent historiographical essay by Juan Carlos Korol and Hilda Sábato acknowledges, all the various studies have produced is a divergence in interpretation. The critical controversy arose between those who believed that the industrialisation process was weakened from the outset by the obstacles it faced during the period of export-led growth, and those who affirmed that no contradiction existed between agrarian expansion and industrial growth.⁶⁶ Largely explaining national economic circumstances through foreign development models, the writings do not give a clear appraisal of what should have occurred in Argentina (a country which by the Twenties had already attained various characteristics of a semi-industrial economy and therefore could have apparently deepened industrialisation). Moreover, although a few works have produced some sectorial assessments, there has been no major specific studies on individual manufacturing activities (not least iron and steel production) and whether such industries could be successfully established domestically. And above all, the debate has blatantly ignored one of the most potent reasons why the country did not undergo thorough industrialisation. This was institutional failure, as the Republic did not meet the minimum political requirements for sustaining economic growth.⁶⁷ The politics of the period were characterised by instability, embodied in a succession of different governments (both constitutional and military), and the inability or unwillingness of the various régimes to resolve conflicts of interest arising from changed conditions as they represented specific groups. Political instability was reflected in a failure to deepen industrialisation and the frustration of attempts to establish a modern iron and steel industry (the central topic of this dissertation).

IRON AND STEEL PRODUCTION IN ARGENTINA, c.1920-1952: THE HISTORIOGRAPHY

Unlike other import-substituting industries, iron and steel production emerged not as a result of the consequences of the Great Depression but of those arising from the outbreak of the Second World War.

⁶⁶ Juan Carlos Korol and Hilda Sábato, 'Incomplete Industrialization: An Argentine Obsession', *Latin American Research Review* XXV (1990) No.1, pp.19,20.

⁶⁷ See Kuznets, *Modern Economic Growth*, pp.447-448 for the political characteristics, representativeness and leadership required for sustained economic growth.

A major external constraint preventing its earlier rise had been the oligopolistic trade practices of the leading West European steel producer-exporters, which were formalised in the International Steel Cartel (ISC). Literature on this particular aspect is somewhat restricted. It traces the origins of the cartel to the political and economic geography of the Continental coal and iron basin as well as changed conditions after the First World War leading to major organisational problems in the European steel trade. The five key producer-exporters (Belgium, France, Germany, Luxembourg and the Saar) suffered from both excess capacity and output as a result of frontier changes and could not market surplus production nationally at a time when many overseas markets began to develop their own industries.⁶⁸ Their response to these problems was the ISC, which was the most comprehensive attempt at controlling the international steel trade. The existing historiography has demonstrated that its controls went beyond general agreement, establishing subordinate sales *comptoirs* for specific products, dominating the distribution process in export markets, and dealing with competition from producer-exporters outside the cartel through market segmentation.⁶⁹ Since Argentina was one of the few 'open' markets at the time and satisfied its iron and steel requirements mostly through imports from participants in the cartel, it is little wonder that the latter effectively frustrated any opportunity, at least within the Argentine private sector, to develop steel production. Only with the collapse of the ISC at the start of the Second World War and the need to substitute previously imported steel with local production as a result of wartime scarcities did efforts to develop a domestic steel industry become possible.

⁶⁸ See Nicolas Morard, *Fonctionnement et perspectives de la Communauté Européene du Charbon et de l'Acier* (Fribourg, 1962), pp.26-27; William Diebold Jr., *The Schuman Plan* (New York, 1959), p.27; Alan Bullock, 'Steel and National Tensions', *Steel Review*, No.10, April 1958, pp.9-10; George W. Stocking and Myron W. Watkins, *Cartels in Action* (New York, 1946), p.173 on the political and economic geography of the Continental coal and iron basin; see League of Nations, Economic and Financial Section, *Memorandum on the iron and steel industry* (Geneva, 1927), p.6; Stocking and Watkins, *Cartels*, pp.173,174,179,180; Johan de Vries, 'Benelux 1920-1970', in Carlo M. Cipolla (ed.), *The Fontana Economic History of Europe*, Volume 6 (Glasgow, 1976), p.48; John Gillingham, *Coal, steel and the rebirth of Europe, 1945-1955* (Cambridge, 1991), pp.3,23; Paul Reuter, *La Communauté Européene du Charbon et de l'Acier* (Paris, 1953), p.10; Walter A. McDougall, *France's Rhineland Diplomacy, 1914-1924* (Princeton, 1978), pp.104,207,208 on changes in capacity and output in Luxembourg, France and Germany.

⁶⁹ See C. Nattan-Larrier, *La Production Sidérurgique de l'Europe Continentale et l'Entente Internationale de l'Acier* (Paris, 1929), pp.274-276; M. Kypriotis, *Les Cartels Internationaux* (Paris, 1936), pp.49, 73,74,76,78,81; Ervin Hexner, *The International Steel Cartel* (Chapel Hill, 1943); Henri Rieben, *Des Ententes de Maîtres de Forges au Plan Schuman* (Lausanne, 1954), p.255,256; Richard A. Lauderbaugh, *American Steel Makers and the Coming of the Second World War* (Ann Arbor, 1980), p.159; Gillingham, *Coal*, pp.28,29 on the various aspects of the cartel and its practices.

Knowledge on these efforts is somewhat limited, but what literature exists on the subject provides important pointers (albeit briefly) around which much of the detailed discussion in this thesis revolves. The most basic information is available in *La industria que supimos conseguir* by Schvarzer. Despite its many factual errors, this work is useful on two accounts. (i) It provides a brief early history of the leading private metallurgical firms that expanded into steelmaking after September 1939. (ii) It explains the growth of military preoccupation with industrialisation and the development of defence-related industries. Schvarzer raises the issue of the concept of a *sociedad mixta* between the Dirección General de Fabricaciones Militares (DGFM), which was established in 1941 to implement military industrial projects, and private interests to develop an integrated steelworks. However, he fails to provide a satisfactory explanation as to why the attempt to set up a genuinely 'mixed' Sociedad Mixta Siderurgia Argentina (SOMISA) floundered.⁷⁰ A biography of General Savio, head of the DGFM and key promoter of heavy industry, by Raúl Larra also takes up the issue of military concerns with industrial development and the establishment of defence-related industries, with the emphasis being laid on both SOMISA and the more modest Altos Hornos Zapla. Although the mass of detail in Larra's work is fairly reliable, there are many factual errors and the nature of the information is largely anecdotal. The main value of this biography is that it provides a useful insight on Savio, even though it deliberately overrates his achievements.⁷¹ Laura Randall in her book *An Economic History of Argentina in the Twentieth Century* places SOMISA within the broader context of government thinking at the start of the first Perón presidency, namely as an example of the idea to use mixed enterprises as a tool for promoting development. Nevertheless, her assessment of this particular venture is left hanging up in the air. She provides some details from the legislation aimed at establishing the corporation, but takes for granted that it is under those terms that the steelworks project was actually implemented over a decade later.⁷² This was certainly not the case, not least because Congressional objections to participation by the private sector led to the latter being squeezed out of the project. The only other secondary source with some information is the work by Robert A. Potash on the increasingly powerful

⁷⁰ See Jorge Schvarzer, *La industria que supimos conseguir* (Buenos Aires, 1996), pp.134,137-138,175-177,178-181,207-208.

⁷¹ See Raúl Larra, *Savio: el argentino que forjó el acero* (Buenos Aires, 1980).

⁷² Laura Randall, *An Economic History of Argentina in the Twentieth Century* (New York, 1978), pp.139-140.

political role of the Armed Forces after 1930. He provides a few points of detail (military willingness to accept foreign involvement in the SOMISA project, the thwarting of attempts by corrupt government officials to profiteer from the award of contracts, and the insufficiency of the authorised capital of SOMISA) which also have a bearing on the arguments being put forward in this thesis.⁷³

Table 1.1

ARGENTINE OUTPUT OF STEEL INGOTS AND ROLLED STEEL, 1937-1950
(in tons)

YEAR	CONSUMPTION	STEEL INGOTS	ROLLED STEEL*
1937	916,700	13,690	12,400
1938	586,700	16,300	11,300
1939	621,500	13,900	10,400
1940	577,500	12,200	18,100
1941	401,700	24,100	37,200
1942	219,200	62,510	43,500
1943	144,600	82,260	66,200
1944	219,500	129,260	107,800
1945	255,300	144,460	110,400
1946	607,300	124,000	126,250
1947	914,900	115,000	152,217
1948	973,800	113,000	162,646
1949	912,600	115,000	212,629
1950	911,000	118,000	264,021

* The data for the period 1937-1945 excludes re-rolling.

Sources: The figures for total Argentine iron and steel consumption were compiled from United Nations (UN), Economic Commission for Latin America (ECLA), *A study of the iron and steel industry in Latin America*, Volume I (New York, 1954), p.84; the production statistics were elaborated from Cuadros N°2 y N°4 in the Appendix of Eduardo A. Garimaldi, *Industria siderúrgica argentina* (Buenos Aires, 1947), and from UN, ECLA, *Economic Bulletin for Latin America* IV (1959) No.2, p.6.

What the historiography does not address is why the development of domestic iron and steel production does not make major progress after the Second World War. Table 1.1 shows total national iron and steel consumption between 1937 and 1950, and local output of steel ingots and rolled steel for those years. Although the production statistics are modest when compared to those of other larger steel producers, two significant features must be observed. First, local production rose sharply between 1941 and 1944.

⁷³ See Robert A. Potash, *The Army and Politics in Argentina, 1945-1962* (London, 1980), pp.62-63, 64-65, 80, 107-108, 163-164.

This increase arose from the growth in output capacity, which was due to the installation of steelmaking facilities by metallurgical firms and importers of finished items affected by wartime conditions. Second, domestic output covered a substantial share of national consumption of steel during the Second World War owing to the forced contraction of demand created by import curtailments. Although the data for the period 1946-1950 show levels of consumption restored to 1937 levels as a result of pent-up demand (that also implied the renewed availability of imports), they do not explain why national production levels stagnate. The answer lies in the literature on the economic policies of the *Peronista* administration in power at the time. Although as Minister of War during the military régime of 1943-1945 Perón had supported heavy industry projects, he developed his own agenda in his quest to take power. Elected in 1946, he missed one of the best opportunities to implement socio-economic reforms. In economic terms, Argentina had the means to achieve change. Foreign exchange worth US\$ 1,500,000,000 had accumulated in the form of blocked balances obtained from sales of supplies to the Allies during the war; industrial development had progressed; the prices of food and agricultural commodities were rising relative to those of industrial goods; and most productive equipment was run down or worn out in a way that there arose the opportunity to modernise.⁷⁴ Furthermore, stocks of exportables accumulated during the war were in high demand in the immediate postwar due to reduced European output capacity, and terms of trade improved in 1946-1947.⁷⁵

The fact that Perón squandered the chance to set in motion the process of change has been widely condemned. In his masterly biography of Perón, Joseph A. Page has argued that the policies pursued by the President reflected his own political priorities rather than guidance by economic considerations.⁷⁶ According to Harry S. Ferns, this resulted in errors and improvidences which were at first masked during the short-lived prosperity of the early postwar years but ultimately led to economic collapse by 1949.⁷⁷ David Rock has argued that all the first *Peronista* presidency achieved were pervasive economic decline and

⁷⁴ Harry S. Ferns, *Argentina* (New York, 1971), p.184.

⁷⁵ Eprime Eshag and Rosemary Thorp, 'Las consecuencias económicas y sociales de las políticas económicas ortodoxas aplicadas en la República Argentina durante los años de postguerra', *DE* 4 (1964-1965) No.16, p.293.

⁷⁶ Joseph A. Page, *Perón: a biography* (New York, 1983), p.174.

⁷⁷ Ferns, *The Argentine Republic* (Newton Abbot, 1973), p.150.

stagnation.⁷⁸ Félix Luna, one of the most prominent Argentine historians, has given the most sarcastic disapproval of the wastage of the period 1946-1949. He has portrayed that time as *una fiesta* with disastrous consequences for the country once it was over.⁷⁹ There is sufficient evidence to support such criticisms, not least when comparing what course the country should have taken and the path it actually followed.

Argentina should have undergone thorough industrialisation, a process that would have absorbed the manpower no longer required in primary production and supplied all those industrial goods which could not be imported owing to the relatively slow growth of exports. Import substitution industrialisation consisted of two stages. The first was the establishment of light industries, which resulted in an expansion of capital goods imports. Since such imports were vulnerable to shortfalls in export earnings, industrialisation had to be deepened. The second stage was the development of heavy and capital goods industries, in which iron and steel had a vital role. The iron and steel industry not only would satisfy rising demand for its products in sectors as construction and transportation, but also constitute the basis for other industries as the manufacturing of machinery.⁸⁰ Instead, given the populist tone of the régime, Perón encouraged over-emphasis on the light industries that had been developing rapidly before 1943 and were probably nearing maturity by the Forties. This excessive stress on the first stage of import substitution failed to deepen industrialisation, to generate sustained growth and to devote more attention to sectors struggling to emerge and the necessary social overhead capital. Furthermore, the promotion of mass consumption resulted in *Peronista* rural policy being aimed at ensuring cheap foodstuffs for urban workers. Export volumes of rural commodities declined and therefore opportunities to earn the foreign exchange to cover imports, not least of capital goods to modernise existing iron and steel producing facilities, were sacrificed. The wastage of exchange reserves on the nationalisation of run-down public utilities and the repatriation of the foreign debt only accelerated the dwindling of reserves and left the country exposed to cover unforeseen future problems in the balance of payments. Unsurprisingly, the economy showed increasing signs of

⁷⁸ Rock, *Argentina*, p.266.

⁷⁹ Félix Luna, *Perón y su tiempo* (2nd ed., Buenos Aires, 1993), pp.341-342.

⁸⁰ United Nations (UN), Economic Commission for Latin America (ECLA), *Problems of the steel making and transforming industries in Latin America*, Volume 1: Report of the São Paulo meeting (New York, 1958), pp.35-36.

incapacity to support the *Peronista* strategy.⁸¹ The consequent economic difficulties severely affected metallurgical enterprises and importers of finished goods that had undertaken steel production during the Second World War to compensate for shortages of overseas supplies. Domestic steel output was based on increasingly depleted sources of scrap (see Chapter 5) and in the postwar period could only be sustained with imports of essential inputs. The curtailment of imports resulting from the economic crisis led to severe raw material shortages.⁸² Unable to obtain import permits, many large firms cut back production. The problems became so extreme and vital imports of pig iron so scarce that steel production for construction, transportation and public works was threatened with paralysis.⁸³ These difficulties, combined with bad Argentine relations with the USA (the key source of capital and technology), ensured that further progress in the industry at the time became impossible.

CONCLUSION

This chapter has reviewed both the general and Argentine debates on industrialisation, as well as the historiography on the efforts to develop iron and steel production in the Republic. Although the various general writings on industrialisation viewed the latter as one element in a long-term process, it was seen that they differed in their interpretation as to how it occurred. One of these viewpoints, the Rostowian model, was particularly important as its notion of a take-off and the role of lead sectors within it (however discredited it may now be) influenced perceptions in developing countries on the role of heavy industry. As regards Argentine debates on industrialisation, they stemmed from the increasing concern and dissent over the path the country was taking. The divergence in the various writings was in their interpretations, but fundamentally all regarded industrialisation as a panacea. However, the discussion in Argentina did not

⁸¹ See Luna, *Perón*; Page, *Perón*, pp.168-175; Rock, *Argentina*, pp.266-280,289-302; Lewis, *Crisis*, pp.177-210; Mario J. Lattuada, *La política agraria peronista (1943-1983)*, Volume 1 (Buenos Aires, 1986), pp.81-88; Susana Novick, *IAPI: auge y decadencia* (Buenos Aires, 1986) for assessments of *Peronista* economic policy and its failure.

⁸² La Cantábrica S.A.M.I. y C., 'Memoria y balance general correspondiente al 48º Ejercicio cerrado el 30 de Junio de 1950', *Boletín de la Bolsa de Comercio*, 4 December 1950, p.1151; La Cantábrica, 'Memoria y balance general correspondiente al 50º Ejercicio cerrado el 30 de Junio de 1952', *Boletín*, 1 December 1952, p.499.

⁸³ *Metalurgia*, November 1951, p.14, and December 1951, p.7.

really address the issue. It tended to explain national economic circumstances through foreign development models, and failed to deal with some of the major reasons as to why a deepening industrialisation was not achieved. The critical frustrating factor, which is discussed in the next chapter, were the unstable politics of the period, in which specific groups had vested interests at different times. The inability or unwillingness to thoroughly transform the economic structure was reflected in the ultimate failure of efforts to develop domestic iron and steel production in this period. However, there is an important lesson to be drawn from this particular example. The problem was also one of what industries could have been fostered successfully. In the case of steelmaking, this thesis argues it was both a matter of timing and of how the industry was set up. Critical inputs were not obtainable in sufficient quantities from either domestic nor foreign sources, and it was not possible to upgrade the technology that enabled private sector firms to engage in steel production for 'in house' consumption during the Second World War. The major effort by the DGFM to establish a large-scale integrated plant was also unsuccessful, but its crucial problem was that it was unviable as the military emphasised strategic rather than economic considerations. Although this specific example mirrors the sorry state in which Argentine industry found itself, it was by no means a foregone conclusion that domestic steel production could not be developed successfully (see Chapter 7).

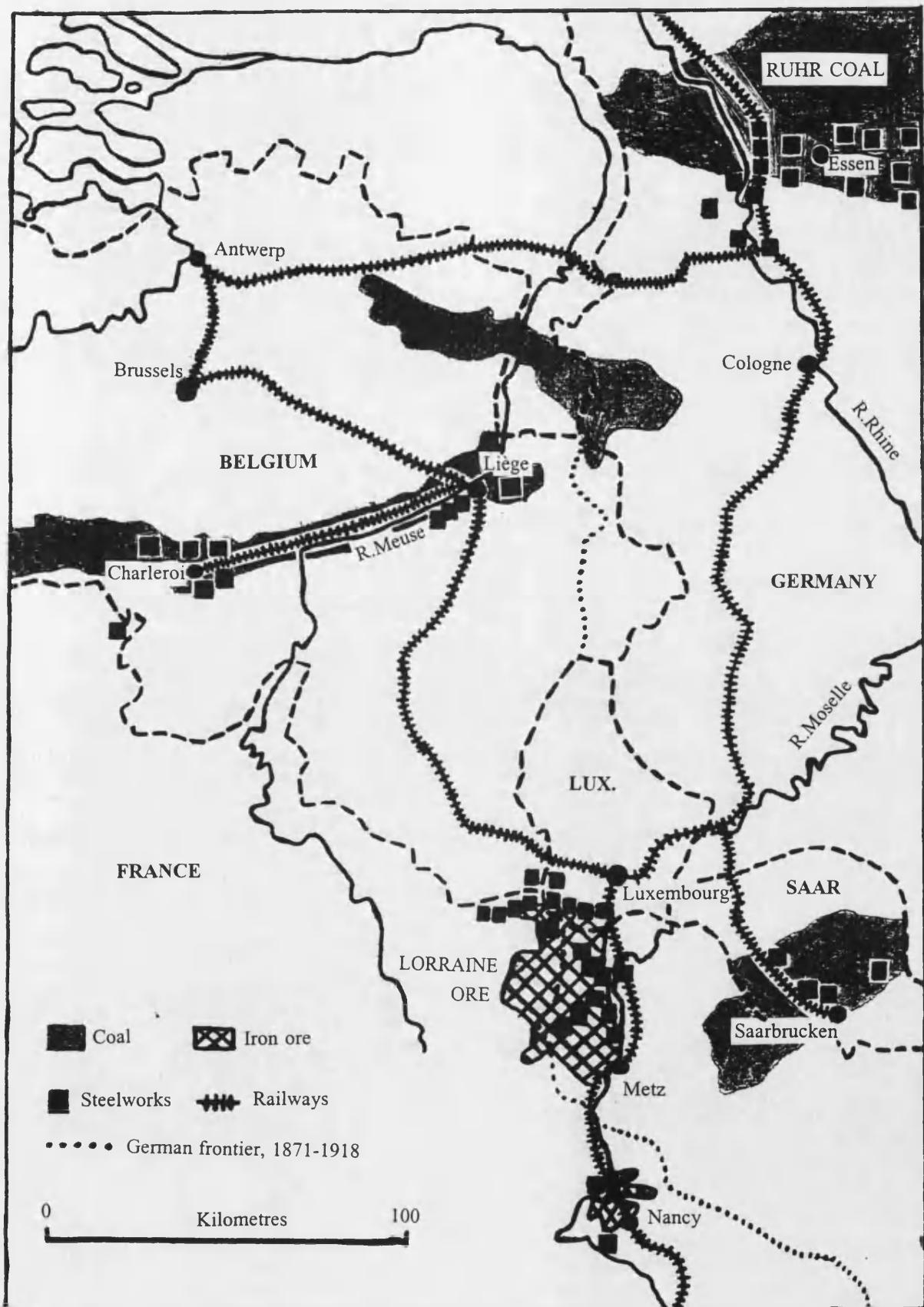
Chapter 2

ARGENTINE ATTEMPTS TO DEVELOP STEELMAKING: THE HISTORICAL CONTEXT

This chapter sets out the historical context within which heavy industry developed in Argentina in the second quarter of the century. It examines both external and domestic factors and the constraints they imposed, and is divided into two sections. The first of these discusses the international context, arguing that leading iron and steel producer-exporters prevented the growth of production in overseas markets such as Argentina, which would compete with their own industries. It shows that Continental European producer-exporters predominant before 1939 inhibited the expansion of heavy industry overseas in the Twenties and Thirties through an International Steel Cartel and that, although the Second World War provided a 'window of opportunity' for growth in domestic steel production, American policies subsequently hindered Argentine attempts to develop heavy industry - not least because of bad relations between Washington and Buenos Aires. The second section of the chapter examines the domestic limitations on the creation of an iron and steel industry resulting from the configuration of the national economy. It shows that, even though the Republic was already undergoing some kind of industrial transformation, rural production and exports retained a key function and thereby structural change did not go far enough. Although the section argues that the severe economic difficulties caused by the world crisis of the early Thirties and the Second World War reduced the scope for manoeuvre in policy-making, institutional failure is blamed for the Argentine inability to undertake economic structural reforms when conditions appeared to be good. The country did not meet the minimum political requirements to sustain economic growth. The politics of the period were characterised by instability and the inability or unwillingness of the various successive régimes to resolve conflicts of interest arising from changed conditions as they represented specific groups.

THE INTERNATIONAL CONTEXT: THE WORLD IRON AND STEEL TRADE

Before the Second World War, the world iron and steel trade was dominated by the West European producer-exporters. Although Britain was among their ranks, the undisputed leaders were Germany, France, Belgium, Luxembourg and the Saar. However, their success had a serious drawback. Despite substantial



Map 2.1 THE WEST EUROPEAN COAL AND IRON BASIN

volumes being supplied to overseas markets, the bulk of trade took place on the Continent as a result of the interdependence between the major producing and exporting countries of the West European coal and iron basin. Production was based on a common, single source of minerals concentrated approximately between Dortmund in western Germany, Strasbourg and Nancy in northeastern France, and Dunkirk in northern France.¹ Divided by national boundaries, coal districts required more iron ore than was available locally; iron ore regions also had to obtain coal from elsewhere. Therefore complex, complimentary interrelations developed. These were sustained by a transport system based on the Rhine and its tributaries, supplemented by canals and the railways built along the river valleys (see Map 2.1). Lorraine and Luxembourg supplied iron to the Saar, Belgium, the Ruhr and the Netherlands. The Ruhr (and alternatively the Meuse and Sambre basins in Belgium) provided coal for France, Belgium and Luxembourg. In addition, crude or semifinished steel goods produced in one country were sent to others for processing.²

Since this coal and iron ore producing region was criss-crossed by international borders, West European steel manufacturing had an unusual and striking political dimension. Heavy industry was at the centre of Franco-German confrontations, and the steel-producing areas in the Ruhr, Lorraine, Luxembourg, the Saar, and the Belgian industrial districts of Liège and Charleroi lie at around 100 miles at most on one side or the other of the heavily contested Franco-German frontier (see Map 2.1). Three major wars were fought across this border between 1870 and 1945, which modified political frontiers already reinforced by tariffs.³ These changes had serious implications for the steel trade of the countries concerned. They created surplus capacity whose excess output could not be marketed nationally at a time when many overseas markets began to develop their own steel industries. Continental steel producer-exporters responded to this problem with trade oligopolisation through the International Steel Cartel (ISC) in the late Twenties and Thirties. As will be argued below, although the ISC was a means employed to respond to organisational problems in the Continental iron and steel trade, it had adverse effects on 'small' economies such as

¹ Nicolas Morard, *Fonctionnement et perspectives de la Communauté Européene du Charbon et de l'Acier* (Fribourg, 1962), p.26.

² William Diebold Jr., *The Schuman Plan* (New York, 1959), p.22; Morard, *Fonctionnement*, p.27.

³ Alan Bullock, 'Steel and National Tensions', *Steel Review*, No.10, April 1958, pp.9,10.

Argentina by constraining production through a wide range of steel production and distribution controls which aimed to govern the international market.

The origins of the ISC, 1870-1926

In order to understand the problems which led to the creation of the ISC, attention must be paid to developments in the Continental iron and steel industry before the outbreak of the First World War. Germany increased its steelmaking capacity and replaced Britain as the leading world iron and steel exporter owing to technical and political changes. The technical change was the invention of the Thomas process, which enabled the commercial use of Lorraine ore for the first time. The political change was the frontier imposed by Bismarck on France following the Franco-Prussian War of 1870-1871. This boundary, which was drawn solely on military and political considerations, had major economic implications. It brought $\frac{1}{2}$ of the Lorraine deposits into the new German Empire, as well as the Saar coalfield. Furthermore, Luxembourg was at German disposal by remaining a member of the Zollverein even though it enjoyed a quasi-sovereign status.⁴

Well endowed with resources, Germany emerged as the leading European steel producer by 1883 and soon developed into a major exporter. German steel exports rose from 241,000 tons in 1871 to 1,136,000 tons in 1881, and continued to increase. With exports exceeding 5,000,000 tons (or 30% of its production) in 1913, Germany was the world's largest steel exporter on the eve of the First World War.⁵ However, the German industry was dangerously located in a disputed frontier region and based on an interdependent balance between Ruhr coal and Lorraine iron ore. Lorraine specialised in pig iron and heavy steel, and the Ruhr in coke, steel and finished products. While Ruhr coal moved as coke to blast furnaces in Lorraine, pig iron as well as some ore moved from Lorraine to Ruhr steel plants.⁶ When the First World

⁴ Ibid., p.10.

⁵ Robert C. Allen, 'International Competition in Iron and Steel, 1850-1913', *The Journal of Economic History* XXXIX (1979) No.4, pp.912,913; Ervin Hexner, *The International Steel Cartel* (Chapel Hill, 1943), p.69.

⁶ George W. Stocking and Myron W. Watkins, *Cartels in Action* (New York, 1946), p.173.

War broke out in 1914, it was largely fought in the contested area.

The difficulties of the West European steel industry that began with the First World War were not restricted to the control of the coal and iron basin. World market conditions changed drastically. Production was increased by the European powers, and developed or expanded in Continental and overseas countries that had hitherto depended on imports from West European suppliers. As steel was a key strategic commodity, the belligerent powers relentlessly increased output to meet wartime demands; there was an abnormal expansion in steel consumption.⁷ Simultaneously, export markets that expanded rapidly before 1914, with nations as Germany exporting around 30% of its steel in 1913 and Belgium around 50%, were severely disrupted. The volume of international transactions fell as some traditional European customers, deprived of their sources of supply by the war, developed or expanded their own steel production to meet their domestic requirements.⁸ However, Argentina was one country that deprived of foreign sources of supply could not develop or expand steel manufacturing. Lacking adequate raw materials, it was unable to take advantage of wartime opportunities. As late as 1914, Argentine iron resources had not been fully studied and were assumed to be scarce.⁹ When mineral deposits were found in the Andes, location factors, poor reserves and chemical properties discouraged the creation of a steel sector founded on domestic raw material supplies.¹⁰

The growth of domestic steel output in numerous former European export markets modified the world distribution of the iron and steel industry and had major consequences for West European producers. Increases in production capacity during the war was followed by further expansion after the conflict as a result of frontier changes. Under the Versailles Treaties, Germany lost Lorraine to France and Upper Silesia

⁷ Henri Rieben, *Des Ententes de Maîtres de Forges au Plan Schuman* (Lausanne, 1954), pp.217,218; Stocking and Watkins, *Cartels*, p.172.

⁸ Stocking and Watkins, *Cartels*, p.173; Rieben, *Ententes*, p.218.

⁹ José García Vizcaíno, *Tratado de política económica argentina*, Volume II (Buenos Aires, 1975), p.257.

¹⁰ Colin M. Lewis, 'Immigrant Entrepreneurs, Manufacturing and Industrial Policy in the Argentine, 1922-28', *The Journal of Imperial and Commonwealth History* XVI (1987) No.1, p.83.

to Poland, the Saar was incorporated into the French customs area, and Luxembourg was detached from the Zollverein. Because of these changes, Germany lost 80% of its iron ore supplies, 30% of its coal supplies, 75-80% of its blast furnace capacity, around 45% of its pig iron output, 30% of its steelworks, and approximately 30% of its rolling mills. However, the biggest blow was the loss of Lorraine, the key German source of iron ore and which incorporated 65 blast furnaces and 9 steelworks.¹¹ The alteration of German frontiers resulted in the creation of a surplus export trade capacity in neighbouring steel producers such as Luxembourg and France, which was further aggravated by new construction in Germany which attempted to recover national self-sufficiency.

Having lost its considerable degree of prewar integration with Germany, Luxembourg was hard hit by the changed circumstances of 1919. Cut off from its supplies of Lorraine ore and German coke, and deprived of export opportunities, the Grand Duchy was forced to reorientate its steel sector. Furthermore, steel was the dominant industry in Luxembourg and, since production outstripped domestic demand and 90% of its output was sold elsewhere, new markets had to be found. In order to resolve these difficulties, the Grand Duchy pronounced itself in September 1919 in favour of an economic union with France. Powerful industrial interests in the latter rejected the proposal due to prevailing conditions in the French iron and steel industry.¹² Barred from the French tariff area, Luxembourg had no choice but to conclude an economic union with Belgium in July 1921, which modified its conditions of supply of inputs, of production, and of markets. Before 1914, the steelworks of the Grand Duchy supplied pig iron and semifinished goods for further processing to Germany. During the Twenties, they developed from suppliers to integrated concerns, producing iron and steel goods for the world market. Emphasis shifted from blast furnaces to steel plants and rolling mills, and an extensive international network of sales outlets was established.¹³

¹¹ League of Nations, Economic and Financial Section, *Memorandum on the iron and steel industry* (Geneva, 1927), p.6; Stocking and Watkins, *Cartels*, pp.173,174.

¹² Johan de Vries, 'Benelux 1920-1970', in Carlo M. Cipolla (ed.), *The Fontana Economic History of Europe*, Volume 6 (Glasgow, 1976), p.48; John Gillingham, *Coal, steel, and the rebirth of Europe, 1945-1955* (Cambridge, 1991), p.23; Paul Reuter, *La Communauté Européenne du Charbon et de l'Acier* (Paris, 1953), p.10.

¹³ Reuter, *Communauté*, p.10; De Vries, 'Benelux', p.48.

While Luxembourg's problems originated in the detachment from the Zollverein in 1918, the French steel industry suffered from economic and political difficulties triggered by the recovery of Lorraine. The economic dimension is associated with overcapacity and dependence on German coal and coke. The political dimension was concerned with restraining German industrial might. France virtually doubled its iron ore production capacity, and increased its pig iron capacity by approximately $\frac{2}{3}$ and ingots and castings capacity by about $\frac{1}{2}$. This was the result of three factors. First, the recovery of Alsace-Lorraine. Second, plants were built during the war in districts other than the industrial areas of northern and eastern France to compensate for those captured or destroyed by Germany. And finally, works in the devastated districts were rebuilt, enlarged and modernised.¹⁴ Therefore, suffering from overcapacity and the loss of traditional markets by the plants acquired from Germany, the French steel industry was forced to export.

The Versailles Treaties broke the interdependence of the Ruhr and Lorraine. Since France had to renew this connection in order to procure cheap sources of coal and coke for its greatly expanded steel industry while simultaneously restraining Germany on national security grounds, the economic and political dimensions of the problem became intertwined. French policy towards Germany had two objectives. In the long-run, France wished to detach the Rhineland - either economically or economically and politically - from Germany. In the short-term, France sought to coerce Germany into accepting agreements that would serve the purpose of supplying immediate French industrial needs.¹⁵ The Versailles clauses were designed simultaneously to weaken German industry, whose steel capacity shrank by 30%, and ease the French incorporation of Lorraine. France was awarded a 15-year ownership of the mines in the Saar basin, and Germany was obliged to deliver 27,000,000 tons of coal annually (or its equivalent in coke) as reparations-in-kind at the internal price prevailing in Germany.¹⁶

Hence, the problems of the French steel industry were the need to find outlets for its enlarged capacity, and a heavy reliance on German resources dependent on the acquiescence of the powerful Ruhr

¹⁴ Stocking and Watkins, *Cartels*, pp.179,180.

¹⁵ Gillingham, *Coal*, p.3.

¹⁶ Walter A. MacDougall, *France's Rhineland Diplomacy, 1914-1924* (Princeton, 1978), p.104.

industrial barons. Difficulties were aggravated by the failure of French policy towards Germany, where the steel industry resurged in the Twenties. After 1918, the German government advanced huge sums of money to private business to compensate for losses resulting from the peace treaties. The Ruhr industrialists used their sudden liquidity to modernise and expand the German industrial base, now concentrated in the Ruhr, and they made good the losses in iron and coal.¹⁷ The issue of iron supplies was resolved with imports of Swedish ore, the more intense exploitation of deposits discovered in central Germany during the war, and the recovery of scrap. Having been able to dispense with the Lorraine ironfield, the Ruhr industrialists solved the problem of coal supplies by not executing reparation deliveries. France responded by occupying Düsseldorf, Duisburg and Ruhrort in March 1921 and then the whole of the Ruhr in 1923-1924, but such moves failed to intimidate the Germans from relaunching their steel sector.¹⁸ German output rose to levels contrasting favourably with those of 1913. Production of steel ingots and castings attained 16,246,078 tons in 1929 and was comparable to the 18,935,089 tons produced in 1913, and that of finished steel amounted to 11,291,968 tons in 1929, which was also comparable to the 13,898,089 tons produced in 1913.¹⁹

Table 2.1

**APPARENT CONSUMPTION AND PRODUCTION OF CRUDE STEEL IN THE MAJOR
CONTINENTAL PRODUCING-EXPORTING COUNTRIES IN 1929**
(in thousands of tons)

COUNTRIES	CONSUMPTION	PRODUCTION	SURPLUS
Germany	12,954	16,246	3,292
France/Saar	8,202	11,553	3,351
Belgium-Luxembourg	1,844	6,812	4,968
TOTAL	23,000	34,611	11,611

Sources: The data on consumption was obtained from United Nations (UN), Economic Commission for Europe (ECE), *Long-term trends and problems of the European steel industry* (Geneva, 1959), p.3, and that on production was compiled from UN, ECE, *European steel trends in the setting of the world market* (Geneva, 1949), p.120.

¹⁷ Ibid., p.207.

¹⁸ Ibid., pp.207,208; Bullock, 'Steel', p.11.

¹⁹ British Iron and Steel Federation, *Statistics of the Iron and Steel Industries, 1936* (London, 1936), pp.88,90.

The creation of surplus capacity and the regrouping of enterprises in the major West European producer-exporters arising from frontier changes increased the gap between supply and demand for iron and steel. The figures in Table 2.1, which show crude steel consumption and production in Germany, Belgium, Luxembourg, France and the Saar in 1929, are indicative of the extent to which output outstripped domestic steel requirements. To dispose of excess production, producers secured additional outlets by expanding exports through price cutting and the penetration of the few remaining open markets such as the Argentine, which lacked a domestic steel industry and was discouraged from establishing one as demand for iron and steel was satisfied by importing European products at prices lower than the estimated costs at which iron and steel goods could be manufactured locally. Export prices declined sharply as Continental producers competed against each other and also *vis-à-vis* Britain, the other leading exporter. Therefore, Continental producers were forced to combine into some sort of agreement to restore balanced market conditions. These arrangements frequently entailed the restoration of prewar international cartels and the establishment of new ones.²⁰ These agreements attempted to solve the problems of expanding overseas sales by controlling the worldwide trade in iron and steel goods.

The ISC and other agreements, 1926-1939

Though cartelisation in the iron and steel industry had already existed in some form before 1914, the cartel established by Germany, the Saar, Luxembourg, Belgium and France was (particularly after 1933) the most comprehensive attempt at controlling the international steel trade through general agreements and arrangements for specific products. The International Steel Agreement signed in Brussels on 30 September 1926 established the Entente Internationale de l'Acier (EIA), which embraced the domestic and export markets of Germany, the Saar, Belgium, Luxembourg and France.²¹ A similar arrangement had also been introduced by the smaller Central European steel producers, which faced problems common to Western

²⁰ United Nations (UN), Department of Economic Affairs, *International Cartels* (A League of Nations Memorandum, Lake Success, 1947), p.6.

²¹ Hexner, *Cartel*, p.72.

Europe as a result of the break-up of Austria-Hungary.²² The agreement between Austrian and Czechoslovak producers of 1 January 1924, which fixed prices and stipulated terms for exports to Italy, Poland and the Balkans, came to encompass Hungarian producers and included Rumanian and Yugoslav manufacturers as associate members. This Central European Group of Austrian, Czechoslovak and Hungarian producers entered the EIA on 4 February 1927.²³

The EIA countries accounted for over 70% of world steel exports between 1927 and 1930, and the centrepiece of their agreement was production of crude steel. By controlling crude steel, which is defined as the molten steel poured into moulds for the manufacture of castings or steel ingots and is the basic input for all steel products, the EIA hoped to regulate international production of all steel goods. However, the agreement had little effect on markets like Argentina as it was short-lived and collapsed before the Wall Street crash in October 1929. Disappointing growth in the export trade caused considerable capacity to remain idle, and the Continental industry failed to turn a profit. Prompted by rapid growth in the domestic market, German overproduction broke the EIA. Its cartel partners were displeased by sales that deprived them of desperately needed export markets, and compromise was impossible. With the collapse of the EIA in May 1929 and the downturn in the market for steel and other commodities associated with the onset of the world crisis, the need for cartelisation became even more urgent for producers.²⁴

To counteract the effects of the crisis, Germany (which also represented the Saar), Belgium, Luxembourg and France revived their cartelisation attempt more effectively in late 1932. A new comprehensive marketing control for steel was negotiated, and a general agreement was signed in Luxembourg on 25 February 1933. The volume of crude steel exports was regulated and exports of all steel commodities, which were evaluated in terms of an agreed-upon amount of crude steel needed for their production, were controlled.²⁵ This new marketing control, known as the International Steel Cartel or ISC,

²² League of Nations, Economic and Financial Section, *Memorandum*, p.6.

²³ M. Kypriotis, *Les Cartels Internationaux* (Paris, 1936), p.49; Hexner, *Cartel*, p.73.

²⁴ Hexner, *Cartel*, pp.73,75; Gillingham, *Coal*, pp.27,28.

²⁵ Rieben, *Ententes*, p.232; Hexner, *Cartel*, p.83.

represented a major advance on the EIA. Its controls went beyond general agreement, establishing subordinate international sales *comptoires* for specific products, dominating the distribution process in export markets, and dealing with competition from producer-exporters outside the cartel through market segmentation.

The ISC established ancillary sales *comptoires* for the following products: semifinished steel, structural shapes, merchant bars, thick plates, medium plates and universal steel. However, this arrangement was not as innovative as it first appeared as similar agreements effected before 1933 already applied to three major steel products - heavy rails, wire rods and wire products, and tubular products.²⁶ The cartel cooperated with these existing single commodity agreements, as they had also been designed to regulate exports of its members to overseas markets and served the ISC in its bid to control the steel trade. The most successful and best organised of these arrangements was the International Rail Makers Association (IRMA), originally founded in 1883 by British, Belgian and German producer-exporters of heavy rails to contain rising competition in export markets for these goods. Although it disintegrated in 1888, British, German, Belgian and Luxembourg producer-exporters relaunched the arrangement in 1904. American producers joined in 1905, and potential competition in the export market by smaller manufacturers was eliminated by the special agreements concluded with Austro-Hungarian, Russian and Italian steelworks in 1906. The accord collapsed again in 1914, but market conditions during the Twenties led to a new agreement (the European Rail Makers Association) between German, British, Belgian, French, Luxembourg and Saar rail producers on 12 March 1926. With the adherence of Austrian, Hungarian and Czechoslovak manufacturers on 1 January 1927 and of US producers on 1 April 1929, it became the International Rail Makers Association. Although in the form of a 'gentleman's agreement', the object of the IRMA was to stabilise export sales of heavy rails and their accessories by limiting the exports of its members. Renewed in 1929, it brought great stability to the market for these products.²⁷ The other two existing single steel commodity cartels were the International Wire Export Company (IWECO), and the International Tubes Cartel.

²⁶ Hexner, *Cartel*, p.86.

²⁷ Ibid., pp.18,19; Kyproitis, *Cartels*, pp.73,74; C. Nattan-Larrier, *La Production Sidérurgique de l'Europe Continentale et l'Entente Internationale de l'Acier* (Paris, 1929), pp.274-276.

Constituted as a cooperative society with an export sales *comptoir*, the IWEKO had been founded by German, Czechoslovak, Belgian, Dutch, Hungarian and Danish producers on 30 November 1931. The Tubes Cartel was originally established towards the end of the nineteenth century. American manufacturers joined in 1905, and it was reorganised by German, British, Austro-Hungarian and US producers in 1906. Having disintegrated in 1914, the Tubes Cartel was revived on 1 July 1926 by producers in Germany, Czechoslovakia, Poland, Hungary, France, Belgium, Luxembourg and Austria. Strong competition in export markets with non-members led to the adherence of British, US and Canadian producers in 1929. However, it came to a sudden end in March 1935. The collapse, which was formally ascribed to Franco-German differences over the reincorporation of the Saar into Germany, was caused by the failure to reach agreement on German export quotas.²⁸

The individual *comptoires* for specific goods were not the only means by which the ISC regulated export markets. The marketing process was controlled through licensed distributors. The latter operated from the producing-exporting countries, and in various instances had branch offices, agents or subsidiaries in importing countries.²⁹ Licensed distributors were required to observe fixed resale prices and terms and to handle only products of ISC members; in return, the cartel guaranteed them a fixed profit margin and a definite market share. The ISC allotted import quotas to markets organised in this manner, and assigned the distribution of this tonnage to local licensees.³⁰ In Argentina, there are two known examples of licensed distributors operating through local organisations. One was the Compagnie Luxembourgeoise Métallurgique or Columeta, the distributor set up by ARBED-Terres Rouges.³¹ Columeta operated through the major local firm Talleres Metalúrgicos San Martín TAMET. ARBED had a substantial shareholding in TAMET, which could thus be depicted as a potential Argentine domestic steel producer 'captured' by an ISC member to prevent the development of local steel production (see Chapters 3 and 6). The other example is Longovica, a subsidiary of the Aciéries de Longwy and Marine Homécourt. The French group

²⁸ Kypriotis, *Cartels*, pp.76,78,81; Nattan-Larrier, *Production*, p.276; Hexner, *Cartel*, p.160.

²⁹ Hexner, *Cartel*, p.164.

³⁰ Stocking and Watkins, *Cartels*, p.190.

³¹ Carlo Hemmer, *L'Économie du Grand-Duché de Luxembourg*, Volume 2 (Luxembourg, 1953), p.157.

operated through Hierromat S.A., a local licensee it had already established.³²

The cartel persistently tried to increase controls and expand the areas under its influence. The ISC dealt with competition from independent distributors or producers within export markets and from producer-exporters not participating in the cartel. If independent distributors or domestic steel producers operated in an 'organised' market, the ISC first tried to bring them into the control scheme through special accords. Examples of success of such arrangements are found in Switzerland and Brazil. In Switzerland, they terminated the independence of distributors. The ISC cooperated closely with the Eisen-Verband, a local syndicate that coordinated the links between the Swiss market and the various steel marketing *comptoirs*, regulated the sales of the four national associations of iron and steel merchants, and fixed prices and sales conditions in line with those of the cartel.³³ In Brazil, where steel production had been undertaken in the state of Minas Gerais, the accords joined producers in a steel trust dominated by the ARBED subsidiary Companhia Siderúrgica Belgo-Mineira. This firm was both the leading domestic steel producer and a major supplier of cartel products as local output did not keep pace with demand. To maintain its prominent position in the market, Belgo-Mineira organised an association with the other domestic producers which regulated output through quotas, set prices and even paid some blast furnaces not to operate.³⁴

If independent (or politically independent) producers could not be incorporated into the cartel or controlled by local production and distribution agreements, the ISC dealt with competitors in the following manner. It segmented export markets into three categories: (i) the domestic markets of cartel members, (ii) 'neutral' or non-steel-producing markets where the ISC had the edge, and (iii) markets dominated by 'outsiders'. The internal markets of cartel members were off-limits to competitors. The 'neutral' markets where the ISC had the advantage were stabilised at prices determined by the cartel and divided according to the market share that each participant would have been able to maintain under conditions of free competition. The markets dominated by 'outsiders' were those where ISC members could compete freely.

³² ACINDAR, *Historia de una Voluntad de Acero* (Buenos Aires, 1986), p.104.

³³ Rieben, *Ententes*, pp.255,256.

³⁴ John D. Wirth, *The Politics of Brazilian Development 1930-1954* (Stanford, 1970), p.88.

This complex but effective system enabled cartel participants to stabilise domestic prices at high levels and to maximise income from 'neutral' markets, and to put pressure on competitors to enter the ISC. It was to escape this kind of pressure that 'outsiders' joined the cartel.³⁵ Britain joined as an associate member on 30 April 1935 (though it was cooperating indirectly with the ISC through the IRMA), Poland, Hungary and Czechoslovakia became full members in 1936, and the USA affiliated in 1937. The cartel finally achieved its oilgopolistic objectives in 1938, when all the major steel producers excluding Japan and Sweden had joined. The ISC embraced practically the entire steel-producing world and controlled over 85% of the steel export trade while protecting the market share of its members.³⁶ However, the agreement was unstable and success was short-lived. Until its collapse at the outset of the Second World War, the cartel was marred by organisational change caused by the German annexations of Austria and the Sudetenland, the Polish acquisition of the Tesčin region, and the Nazi occupation of the remainder of Czechoslovakia. Following the *Anschluss*, the German export quota was increased by the ISC in proportion to the export quantities of Austria. Czechoslovakia resisted any change in the proportion of its quotas represented by the exports of the plants lost in the Sudetenland and the Tesčin region and, despite the German invasion of the country in March 1939, nominally remained a full cartel member.³⁷ The ISC ceased to exist when war broke out in September 1939, and the Düsseldorf meeting scheduled for October 1939 was never held.³⁸

The impact of the Second World War and its aftermath, 1939-1952

The Second World War severely disrupted West European iron and steel supplies to the world market, and its long-term impact was even more far reaching for three reasons: it provided 'small' economies with the opportunity to develop steel production, Continental producer-exporters lost control of the international steel trade, and the United States of America became the leading steel exporter and

³⁵ Richard A. Lauderbaugh, *American Steel Makers and the Coming of the Second World War* (Ann Arbor, 1980), p.159.

³⁶ Gillingham, *Coal*, pp.28,29.

³⁷ Hexner, *Cartel*, pp.90,91.

³⁸ Rieben, *Ententes*, p.237.

principal supplier of capital and technology. Countries like Argentina benefited from the collapse of the ISC as it brought an end to the web of trade controls. The wartime displacement of European producer-exporters from the trade system led to severe import shortfalls, thereby making domestic steel production the only alternative to overcome supply difficulties. Given that the growth of steel production in traditional European export markets was shielded from overseas competition during the war, new domestic firms faced the challenge of surviving the restoration of peacetime conditions. This depended in part on two factors: (a) the postwar shape of the West European iron and steel industry, and (b) the US role as a supplier of steel, capital and technology.

Concerning European producer-exporters, the war had detached Belgium, Luxembourg and France from their established trade currents owing to the Nazi occupation and prevented Germany and Britain from meeting their foreign commitments because of their domestic wartime requirements. The end of the conflict did not restore prewar conditions in the world steel trade, as these countries had to deal with the wholesale destruction of their economies. The threat of creation of excess capacity and a glut in the world steel market was revived by the scale of reconstruction required and the changed conditions in the international market in 1945. European states aspired to rebuild or develop their steel capacities to the maximum. France, Britain, Italy, Luxembourg, Belgium, the Netherlands, Austria, Sweden, Norway and eventually Germany hastily launched themselves into the realisation of investment plans. Such plans, by leaving no room for coordination and taking little or no account of changes overseas, entailed a danger of overproduction. As between 1914 and 1918, the Second World War had stimulated the development of protected steel industries in major prewar markets and enormously increased US output levels.³⁹ The problems soon became apparent. Belgium, Luxembourg, Britain and France were already exporters in 1948. West European exports, which also included contributions from Germany, Austria, Sweden and Italy, totalled 5,001,000 tons. As production increased while the market remained tight, disquieting signals multiplied. Demand slowed down, prices tumbled and stocks expanded.⁴⁰ A solution was urgently needed as European steel

³⁹ Rieben, *Ententes*, p.317; Morard, *Fonctionnement*, p.33; Alan S. Milward, *The Reconstruction of Western Europe, 1945-1951* (London, 1984), p.366.

⁴⁰ Morard, *Fonctionnement*, p.33.

production, which attained 48,000,000 tons in 1949, was forecast to reach 58,000,000 tons in 1953, a year when European steel consumption was calculated at 50,000,000 tons and a huge surplus exceeding 8,000,000 tons was expected. The latter would not be easily exportable, given increased US output and major growth in production overseas. Under the spectre of overproduction, European steel producers started talks in 1949.⁴¹ The result was not the revival of cartelisation, but the supranational European Coal and Steel Community or ECSC. In the changed circumstances of the Cold War climate, this was a radical solution not only to problems in the Continental steel industry, but also to the crucial matter of strengthening the weak European economies through economic integration and the long-standing issues of restraining Germany and control of the Ruhr.

Owing to pressure from within the Continent and from Washington, the French foreign minister launched a successful initiative on 9 May 1950 aimed at Germany but open to other European countries. Known as the Schuman Plan, it resulted in the Treaty of Paris, which was signed by France, Germany, the Benelux countries and Italy on 18 April 1951 and established the ECSC. A common market was created by placing the coal and steel resources of ECSC members under the control of a supranational High Authority, by banning any form of cartelisation, and through the free circulation of coal and steel within the Community. To fully implement the treaty, the High Authority enforced a Code of the Common Market regulating production and competition. From the production perspective, the Code dealt with raw material supplies and modernisation of the sector. From the competition viewpoint, the Code established its principles, the free choice of suppliers, the freedom of sales, the elimination of cartels, the abolition of special tariffs and subsidies, the harmonisation of transportation, an end to discrimination, a ban on dumping, and the publication of prices.⁴²

Although 'small' economies attempting to develop domestic steel production were no longer threatened by the policies of European producer-exporters, they faced new problems as the United States

⁴¹ Carlo Ramacciotti, *La Comunità Europea del Carbone e dell'Acciaio* (Rome, 1953), pp.28,29.

⁴² Communauté Européenne du Charbon et de l'Acier, *Nous sommes déjà 155.000.000...* (Paris, November 1951), unpaginated.

of America became the main supplier of iron and steel, capital and technology. The USA had emerged as a major steel producer by the late nineteenth century, and by 1913 it exported almost 3,000,000 tons per annum. However, these sales merely represented 9% of production as strong domestic demand and intense foreign competition ensured that, until 1939, US predominance in iron and steel production was not matched by a predominance in the world steel trade.⁴³ Steel output continually expanded as the United States of America was endowed with abundant resources, a numerous and qualified labour force, and a huge and wealthy domestic market in terms of both area and population. Crude steel production rose from 27,692,000 tons in 1913 to 42,807,000 tons in 1920 and 49,069,000 tons in 1926, and the US share of world steel production increased from 42.9% in 1913 to 61.3% in 1920.⁴⁴ Exports were limited, and their bulk went to adjoining markets where advantage could be taken of cheap water transport. Most trade was thereby done with North and Central American countries; the Far East and South America were secondary markets. Around 50% of total US steel exports went to British Commonwealth countries, Canada alone accounting for 40% of total exports.⁴⁵

With the outbreak of the Second World War, the United States of America became the leading steel exporter. However, it was unable to compensate for the shortfall in the world steel supplies caused by the contraction in West European exports. While iron and steel exports from Germany, Belgium, Luxembourg, Britain and France had averaged 12,500,000 tons a year in 1934-1938, US exports had amounted to 3,500,000 tons in 1935, 8,500,000 tons in 1937 and 6,800,000 tons in 1939.⁴⁶ Although they attained 12,000,000 tons in 1940, exports decreased as the US commitment to the war effort (particularly following Pearl Harbor) increased domestic demand for iron and steel. Exports dropped to 8,000,000 tons in 1941

⁴³ Allen, 'Competition', p.913; E.D. McCallum, *The Iron and Steel Industry in the United States* (London, 1931), pp.196,197.

⁴⁴ Rieben, *Ententes*, pp.217,218.

⁴⁵ McCallum, *Industry*, pp.201,202; William T. Hogan, *Economic History of the Iron and Steel Industry in the United States*, Volume 3 (Lexington, 1971), p.1091.

⁴⁶ Maurice Fontaine, *L'Industrie Sidérurgique dans le Monde* (Paris, 1950), pp.313,314; Hogan, *History*, Volume 3, p.1431.

and 5,200,000 tons in 1945.⁴⁷ Since the priority was to meet the requirements of the Allied war machine, this drop affected markets unrelated to the war effort. American steel exports were unevenly distributed across the world, with the lion's share of overseas sales going to Britain, Canada and the USSR.⁴⁸ Trade with the Allies comprised semifinished and finished products as well as concealed or indirect sales in the form of military equipment and supplies.⁴⁹ American steel exports averaged 7,300,000 tons annually in 1941-1945, which was well below prewar European average export levels. This resulted in an annual deficit of 5,200,000 tons in the steel market, which by the end of the war had accumulated to 31,000,000 tons and was only partially offset through increased domestic production in markets that had traditionally drawn on imports.⁵⁰

For countries like Argentina aiming to develop heavy industry, the role of the USA as a supplier of capital and technology was even more critical than that country's dominance of world export production. The Americans had traditionally favoured limited development in commodity exporting countries, with US capital being the source of investment in industries which did not compete with North American industry.⁵¹ However, owing to ulterior strategic motives, this policy temporarily shifted in wartime. To align the Americas behind the war effort, Under Secretary of State Sumner Welles committed the United States of America to supporting Latin American economic development at the Inter-American Conference held in Rio in 1942. All the Latin American republics except Argentina and Chile agreed to economic mobilisation and broke off relations with the Axis.⁵² Argentina would pay dearly for not cooperating with Washington.

The change in US policy towards industrialisation south of the Río Grande arose purely from

⁴⁷ Hogan, *History*, Volume 3, p.1433.

⁴⁸ Fontaine, *Industrie*, p.315.

⁴⁹ Hogan, *Industry*, p.1434.

⁵⁰ Ibid., p.1433; Fontaine, *Industrie*, p.314.

⁵¹ Gerson Moura, *Autonomia na Dependência* (Rio de Janeiro, 1980), p.182.

⁵² Stephen G. Rabe, 'The Elusive Conference: United States Economic Relations with Latin America, 1945-1952', *Diplomatic History* 2 (1978) No.3, pp.279,280.

wartime considerations. The priority was hemispheric unity in defence matters and Latin American collaboration in the Allied war effort through the supply of commodities. To attain these goals, Washington had to shift its policy towards the more strategically important countries such as Brazil and Mexico. Military considerations were at the heart of the American approach towards Brazil, and economic considerations were at the centre of the US attitude towards Mexico. In the Brazilian case, the timing of the Pan-American project coincided with continued nationalist pressure for the development of an integrated steelworks. A national steel policy was central to the *Estado Nôvo* régime, whose administrative programme hoped to achieve economic modernisation. Nevertheless, little progress had been made by the late Thirties.⁵³ The opportunity to secure US assistance arose when Washington sought Brazilian cooperation in defence. Brazil was politically and strategically important owing to its great northeastern 'bulge', which was mostly defenceless and stretched far into the Atlantic.⁵⁴ The establishment or use of naval and air bases in this region by American troops was critical to the hemispheric defence project, but was unacceptable to the Brazilians unless combined with US assistance for their steelworks project. The United States of America reluctantly agreed to cooperate in the Volta Redonda steelworks project, paying the price exacted by Brazil not to thwart the hemispheric defence project and remain neutral.⁵⁵

In the Mexican case, wartime economic needs encouraged positive US responses to industrialisation. The USA had to reduce the dependence of countries relying on it as a source of supply. Goods necessary for the war effort could not be diverted into the export trade, and scarce shipping was also vital. Mexico depended heavily on the United States of America for both basic foodstuffs and industrial goods, which Washington could not afford to provide in wartime.⁵⁶ Furthermore, the Americans required Mexican strategic materials whose output had to be increased. Growth in the production of these exportables could

⁵³ Various unsuccessful proposals for steelworks are assessed in Wirth, *Politics*, pp.90-113 and Werner Baer, *The Development of the Brazilian Steel Industry* (Nashville, 1969), pp.68-75.

⁵⁴ R.A. Humphreys, *Latin America and the Second World War*, Volume One: 1939-1942 (London, 1981), pp.138,139.

⁵⁵ Moura, *Autonomia*, pp.150,153,154.

⁵⁶ Luis G. Zorrilla, *Historia de las Relaciones entre México y los Estados Unidos de América 1800-1958* (Mexico, 1966), p.494.

only be attained with an economic expansion programme. Washington did everything possible to reduce Mexican dependency on US supplies and expand Mexican output of commodities essential to the war effort.⁵⁷ The growth of Mexican steel production suited American material requirements. Mexico easily obtained equipment which was unavailable owing to wartime restrictions, on condition that it was used to manufacture steel plates for the USA - where demand for this product was unusually high.⁵⁸

In sharp contrast, Argentina did not benefit from the wartime shift in US policy towards Latin America. The antagonism in Argentine-American relations, which intensified during the Forties as a result of US objections to the neutral stance adopted by Buenos Aires, was deep rooted. Three factors had played a part: (i) unrealistic Argentine perceptions of what export-led growth might achieve, (ii) the expanding US role in the Argentine economy, and (iii) strategic considerations influenced by events in the Thirties and Forties. The latter factor proved decisive to the breakdown in relations during the Second World War, as Washington and Buenos Aires had different concerns.⁵⁹ The USA capitalised politically on its increased influence over the Americas through the Good Neighbor Policy, whose basic principles were non-intervention in the affairs of any country by any other and the creation of permanent collective mechanisms to resolve the diplomatic, economic and military problems of the continent.⁶⁰ With increased German, Italian and Japanese aggression after 1936, Washington shifted the emphasis of the Good Neighbor Policy towards its military aspects and aimed to establish a collective security organisation. From 1936 to 1941, the Roosevelt administration attempted to persuade the republics south of the Río Grande to view their foreign policy interests as identical with those of the USA and to pledge to regard an attack on one as an attack on all.⁶¹

⁵⁷ Humphreys, *Latin America*, Volume Two: 1942-1945 (London, 1982), pp.46,47.

⁵⁸ William E. Cole, *Steel and Economic Growth in Mexico* (Austin, 1967), pp.12,14.

⁵⁹ See Chapter 6 for detailed information on these factors.

⁶⁰ Mario Rapoport, *Gran Bretaña, Estados Unidos y las Clases Dirigentes Argentinas: 1940-1945* (Buenos Aires, 1980), p.240.

⁶¹ Randall Bennett Woods, *The Roosevelt Foreign Policy Establishment and the 'Good Neighbor'* (Lawrence, 1979), p.7.

Argentina vigourously resisted the attempt to establish a Pan-American alliance and remained strictly neutral. In January 1942 it rejected the US initiative for a collective continental rupture with the Axis. The State Department became convinced that Argentine policy exposed a vulnerable flank in continental defences and that the Republic could become a Nazi base for espionage, subversion and financial machinations in the western hemisphere.⁶² To bring Argentina into line with the rest of Latin America, Washington resorted to economic and political pressure. By September 1942, the Board of Economic Warfare had introduced a number of arbitrary restrictions on exports of critical materials and equipment. In 1943 and 1944, American pressure on the Republic hardened due to the failure of selective coercion and the advent of a military régime with fascist leanings. The two key recommendations in the programme devised by Secretary of State Cordell Hull were the non-approval of development projects for Argentina, and the ban on exports for the Armed Forces.⁶³

At least on paper, these measures should have put paid to efforts by the Dirección General de Fabricaciones Militares (DGFM) to develop heavy industry. The problem for the State Department was that US big business did not accept the embargo imposed by Washington. The war provided export and investment opportunities in Latin American markets formerly supplied from Europe, and American enterprise engaged in manufacturing activities to meet domestic requirements previously satisfied by imports.⁶⁴ In Argentina itself, where the close economic ties with Britain were rapidly waning, US firms saw an opportunity to make substantial inroads by promoting industrialisation.⁶⁵ Among the American enterprises willing to take advantage of this opportunity was ARMCO, which boosted DGFM attempts to establish an integrated steelworks. The local ARMCO subsidiary became involved in the Plan Siderúrgico Argentino (PSA), a project entailing the creation of an integrated steelworks which was to be owned by a *sociedad mixta* controlled by the DGFM and private firms (see Chapter 3). However, the collaboration of US

⁶² Rapoport, *Gran Bretaña*, pp.248,250.

⁶³ Carlos Escudé, 'Boicot norteamericano contra la Argentina: 1940-1950', *Todo es Historia*, No.177, February 1982, pp.13,15.

⁶⁴ Mira Wilkins, *The Maturing of Multinational Enterprise: American Business Abroad from 1914 to 1970* (Cambridge, Massachusetts, 1974), pp.252,262.

⁶⁵ Rapoport, *Gran Bretaña*, pp.256,259.

interests did not guarantee the success of the scheme, for two reasons. (i) The preparation of the PSA coincided with sharp fluctuations in Argentine-American relations, which had a direct bearing on the project as ARMCO was involved in a 'sensitive' industry. (ii) Even without the difficulties in relations between Washington and Buenos Aires, the USA would not have favoured industrial development anywhere south of the Río Grande in the postwar period.

Regarding the issue of timing, the PSA was subject to a stop-go process which was initially the consequence of antagonism towards the United States of America but subsequently the result of national economic conditions. The submission of the project for government approval coincided with overt US interference in domestic politics, as Spruille Braden - the American Ambassador to Argentina and later Assistant Secretary of State for American Republics Affairs - intervened in the 1946 presidential election by conflating the outgoing military régime and Perón with fascism and openly but unsuccessfully opposing Perón's election (see Chapter 6). The PSA was temporarily shelved, and a US-Argentine *rapprochement* proved insufficient for it to make substantial headway. Though the project was approved by the President, it faced considerable hostility in Congress.⁶⁶ Following the enactment of the PSA into law in 1947, little progress then resulted from mounting problems arising from *Peronista* policies (see below) rather than US-Argentine antagonism.

Concerning postwar US attitudes towards Latin American development, the USA would not have supported projects such as the PSA. Washington was opposed to industrialisation in 'small' economies and, like the ISC, did not favour the development of steel production in overseas markets. Although this policy had shifted temporarily during the Second World War, the Americans were less inclined to promote economic modernisation south of Río Grande once the conflict had ended. However, Latin Americans expected that the USA would continue or expand its role in promoting industrial growth in the region and

⁶⁶ See Chapters 3 and 6 for details on objections from the UCR (the leading opposition party) and some *Peronista* 'extremists'.

as a source of development capital.⁶⁷ The Latin American countries requested an economic conference, which the US State Department did not want to convene. The dispute with Argentina, which Washington viewed as an obstacle to Inter-American cooperation, provided the USA with an excuse to stall demands for the conference.⁶⁸ However, the difficulties in US-Argentine relations ceased to be a useful ploy. Washington was increasingly concerned over the 'containment' of communism and wanted a collective defence pact for the Americas, which required the inclusion of Argentina. Relations between Buenos Aires and Washington were 'normalised' in 1947, and the Inter-American Treaty of Reciprocal Assistance was concluded in Rio.⁶⁹ With the Argentine problem resolved, there were renewed Latin American attempts to convene an economic conference.

The US State Department continued to resist meeting the Latin American request for the conference, which arose from some economic difficulties in Latin America. Demand and prices for the region's exports were uncertain, the inconvertibility of the sterling reserves accumulated by Latin American countries during the war continued, and the real value of dollar reserves in Latin America was being eroded due to world inflation. From the Latin American viewpoint, only the substantial transfer of US capital and technology would enable industrialisation.⁷⁰ Nevertheless, the Americans would not stimulate industrial development in the region for two reasons. First, Latin America had not suffered much during the war and emerged from the conflict in better shape economically than other parts of the globe. And second, owing to the onset of the Cold War, the American priority was the economic rehabilitation and security of Western Europe.⁷¹ Given these circumstances, the PSA or any other industrial development projects in the region could not expect any American assistance. By 1951, Latin America was the only region lacking a US

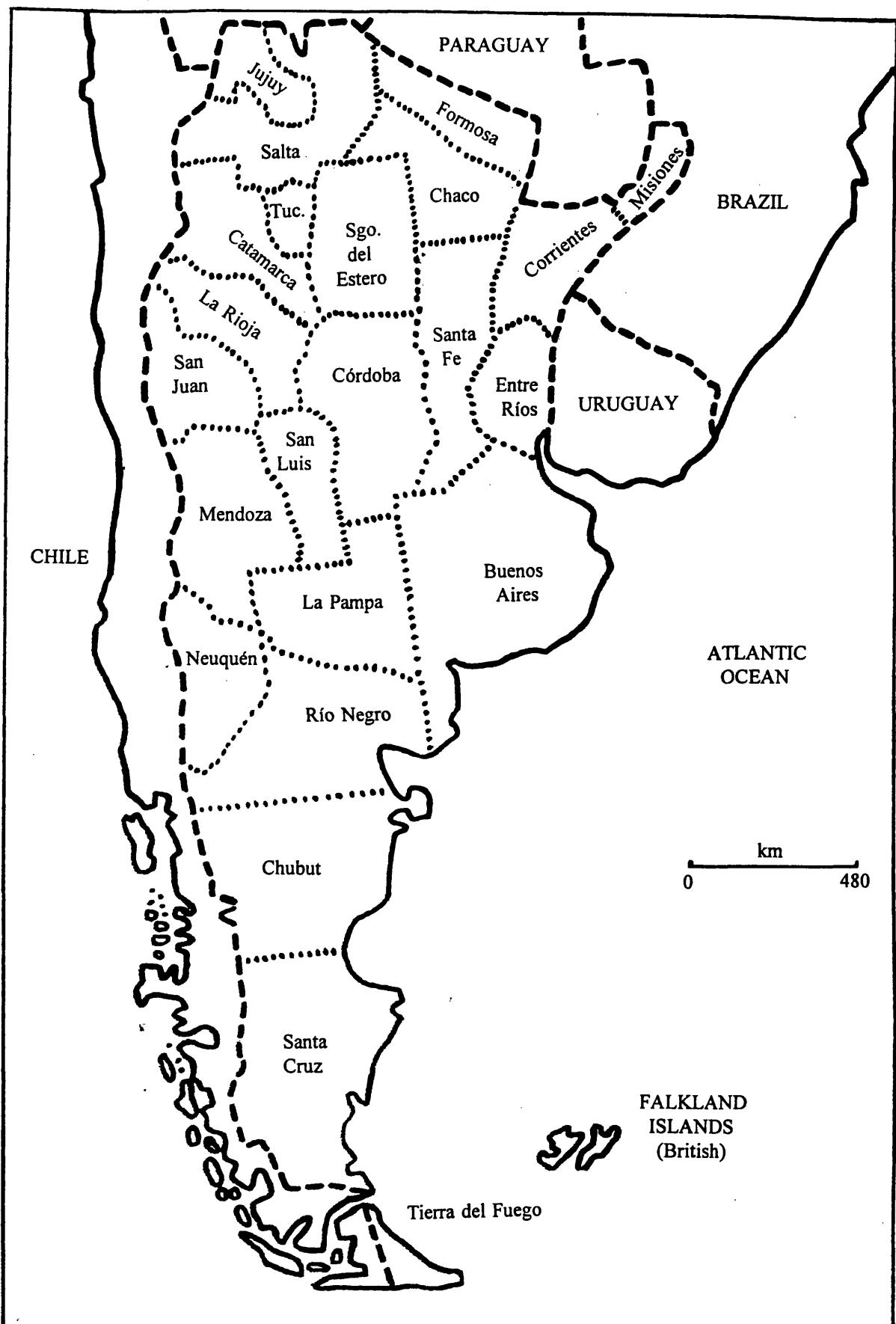
⁶⁷ Leslie Bethell and Ian Roxborough, 'Latin America between the Second World War and the Cold War: Some Reflections on the 1945-8 Conjunction', *Journal of Latin American Studies* 20 (1988) No.1, p.185.

⁶⁸ Rabe, 'Conference', p.283.

⁶⁹ Roger R. Trask, 'The Impact of the Cold War on United States-Latin American Relations, 1945-1949', *Diplomatic History* 1 (1977) No.3, p.277.

⁷⁰ Bethell and Roxborough, 'Reflections', p.185.

⁷¹ Ibid., p.186.



Map 2.2 THE ARGENTINE REPUBLIC, c.1950

assistance programme. Belgium and Luxembourg alone had obtained more direct aid between 1945 and 1950 than the whole of Latin America.⁷²

THE DOMESTIC CONTEXT: ARGENTINA, FROM ALVEAR TO PERÓN

External constraints on the development of heavy industry, which derived from the practices of the International Steel Cartel before 1939 and US unwillingness to promote Latin American industrialisation following the Second World War, were paralleled by domestic factors limiting the growth of a capital goods sector. The configuration of the national economy imposed limitations as the structural transformation that was taking place did not go far enough. The data in Table 2.2, which shows the structure of Argentine GDP during the second quarter of the century, indicates that the economy had diversified and was shifting away

Table 2.2

PERCENTAGE DISTRIBUTION OF ARGENTINE GDP AT FACTOR COST, 1920-1949*
(based on 1935-1939 price weights)

SECTORS	1920-24	1925-29	1930-34	1935-39	1940-44	1945-49
Agriculture	17.0	16.6	15.8	15.1	15.0	10.1
Livestock	12.8	11.0	10.5	10.6	11.1	9.4
Fishing	0.1	0.1	0.1	0.1	0.1	0.1
Mining	0.4	0.6	0.9	1.3	1.7	1.5
Manufacturing	12.6	13.9	14.0	15.6	16.2	18.1
Construction	2.3	2.9	2.3	2.5	2.4	2.6
Commerce	15.5	16.3	14.3	13.8	12.6	13.1
Transport and communications	8.2	9.5	10.0	9.5	9.9	11.0
Other public services	1.4	1.4	1.8	2.0	6.5	2.2
Housing and finance	13.5	12.5	13.5	12.6	12.4	12.4
Personal services	8.6	7.9	8.7	8.4	8.4	8.3
Government services	7.8	7.4	8.2	8.4	9.0	11.0
TOTAL (in millions of 1935-39 pesos)	6,053	7,749	8,074	9,413	10,860	13,479

* Totals do not always add up to 100% due to the rounding of decimals.

Source: Calculated from the data in Laura Randall, *An Economic History of Argentina in the Twentieth Century* (New York, 1978), pp.2,3.

⁷² Rabe, 'Conference', p.292.

from primary production towards manufacturing. Yet rural production and exports retained a key function, with agriculture and livestock accounting for approximately 25% of GDP (except in the years 1945-1949, as a consequence of *Peronista* policies), notwithstanding that Argentina had acquired the characteristics of a semi-industrial country. As will be seen in Chapter 4, the economy had attained several benchmarks which differentiated it from exclusively primary-oriented countries.⁷³ Although this should have enabled a deepening industrialisation, the Republic took what many describe as a wrong turn. It squandered opportunities and set off on a perverse downhill course which in the long-run resulted in a belated, weak, incomplete and truncated industrialisation process.⁷⁴ Growth in manufacturing had arisen initially from the demand effects of rising income, and was subsequently fostered by 'forced' import substitution resultant from the Depression and the Second World War.⁷⁵ However, the industrialisation process was not deep enough - a failure reflected in the manner that heavy industry emerged.

As is argued below, the incomplete alteration of the economic structure was the consequence of institutional failure. The country did not satisfy the minimum political requirements to sustain economic growth. Although the Great Depression and the Second World War restricted the scope for manoeuvre in policy-making, the three different political groupings (the *Unión Cívica Radical*, the *Concordancia* and the *Peronistas*) that governed in this period represented specific interest groups and made their decisions on economic policy accordingly.⁷⁶ Moreover, it was a time of considerable instability. The transfer of political power from one grouping to another coincided with particularly adverse conditions and was the result of military coups in 1930 and 1943 that overthrew politically weak régimes which were either unwilling or unable to combat the economic hardship confronting them.

⁷³ These were a minimum per capita income, shifts in production from the primary sector to manufacturing and the contribution of industry to growth. See Hollis Chenery, Sherman Robinson and Moshe Syrquin, *Industrialization and Growth* (Washington, 1986), pp.84,85.

⁷⁴ Juan Carlos Korol and Hilda Sábato, 'Incomplete Industrialization: An Argentine Obsession', *Latin American Research Review* XXV (1990) No.1, p.3.

⁷⁵ Guido Di Tella and Manuel Zymelman, *Las etapas del desarrollo económico argentino* (revised 2nd ed., Buenos Aires, 1973), pp.124,125.

⁷⁶ Laura Randall, *An Economic History of Argentina in the Twentieth Century* (New York, 1978), p.6.

The economy on the eve of the world economic crisis

The Twenties are part of a phase that has been identified by Guido Di Tella and Manuel Zymelman as the *periodo de la demora*, which extended from the First World War to the Great Depression. Although some requisites necessary for industrial growth were present, the illusory restoration of pre-1914 conditions did not encourage industrialisation. The high rates of income in primary activities raised the opportunity costs of investing in industry, and what growth had taken place in manufacturing was based on rural exports and the expansion of a domestic trade reliant on imported capital and labour.⁷⁷ Moreover, the dominant classes displayed complacency under favourable circumstances and also disinterest in economic and political change.⁷⁸ This part of the chapter examines the inability of the Unión Cívica Radical, owing to the objectives and composition of the party, to introduce structural economic reforms in the face of increasingly transparent weaknesses inherent in export-led growth, and the nature and limits of industrial expansion generated by externally-oriented growth.

The determinants of pre-1914 growth had been the rise of world demand for food and availability of fertile land in the Pampas. In statistical terms, the economy in the Twenties seemed to behave much the same way as in the past. In 1925, Argentina ranked first in exports of maize, oats and linseed, and second or third in wheat and flour. It supplied 66% of world exports of maize, 72% of linseed, 50% of beef, 32% of oats, and 20% of wheat and wheat flour. Moreover, since 1914 it had overtaken the USA as the leading European source of beef.⁷⁹ However, conditions had changed and, as seen when discussing the various debates about the weaknesses of export-led growth in Chapter 1, they manifested themselves in three ways. (i) Argentina was surpassed by Canada as the major exporter of wheat, a key cereal export. (ii) The phase of horizontal expansion across the Pampas, which depended on the availability of new lands for exploitation,

⁷⁷ Jorge Schvarzer, *La industria que supimos conseguir* (Buenos Aires, 1996), p.80; Mónica Peralta-Ramos, *The Political Economy of Argentina* (Boulder, 1992), p.11.

⁷⁸ Di Tella and Zymelman, *Etapas*, p.67.

⁷⁹ Vernon Lovell Phelps, *The International Economic Position of Argentina* (Philadelphia, 1938), pp.136,141.

had come to an end as all available fertile land was exhausted.⁸⁰ Many of the unforeseen consequences of the process only became apparent once the open frontier evaporated. (iii) The Anglo-Argentine 'special relationship' was withering away, and yet the country continued to depend heavily on the United Kingdom as an export market and had no apparent substitute for the British role in its foreign trade.⁸¹

Although the agro-exports based model had weaknesses, it appeared to function well in the Twenties. Therefore, the government of the day had no reason to overturn the existing strategy. With hindsight, it can be argued that this was a mistake rooted in the Argentine failure to meet one of the basic political requirements for sustained economic growth - namely, that the national government represented specific interest groups. The *Unión Cívica Radical* (UCR), which had displaced the Conservatives from government in the 1916 elections and remained in power until the 1930 coup, strove for accommodation as a consequence of two intertwined factors: (a) the composition of the party, and (b) its limited objectives. *Radicalismo* was a coalition of two groups, the less influential members of the landowning élite and the urban middle class, made possible by Argentine socio-economic and political development.⁸² The sections of the élite that supported the Radicals were old aristocrats based in the Pampas who lost the power they wielded before Rosas fell in 1852, and landowners from the interior.⁸³ The old aristocrats aspired to regain their influence and the landowners from the interior yearned to overcome their political and economic weaknesses, which resulted from the concentration of power in Buenos Aires. The regional élites lacked the influence and wealth of Pampean oligarchs, which was determined by the proximity of their properties to the River Plate (the outlet for cereals and beef exports) and the quality of their land. The old aristocrats and landowners that strove to increase their leverage achieved their aspirations once the UCR was elected

⁸⁰ Schvarzer, *Industria*, p.120; Aldo Ferrer, *The Argentine Economy* (Berkeley, 1967), p.124.

⁸¹ Gabriel Porcile, 'The Challenge of Cooperation: Argentina and Brazil, 1939-1955', *Journal of Latin American Studies* (JLAS) 27 (1995) No.1, pp.131,132.

⁸² David Rock, *El radicalismo argentino, 1890-1930* (Buenos Aires, 1992), p.287.

⁸³ Oscar Cornblit, 'Inmigrantes y empresarios en la política argentina', *DE* 6 (1966-1967) No.24, pp.672,681; Peter H. Smith, 'Los radicales argentinos y la defensa de los intereses ganaderos, 1916-1930', *DE* 7 (1967-1968) No.25, p.798.

to office in 1916, and had no interest in reforming an economic model which suited their needs.⁸⁴ The old aristocrats were also members of the Sociedad Rural Argentina (SRA), which was founded in 1866 to defend the limited but powerful *estanciero* interests. Given that they exercised considerable power in the party, it is no surprise that the SRA continued to wield enormous political clout and enjoy remarkable representation in government once the Radicals came to power.⁸⁵ Approximately 45% of all UCR ministers, especially the Minister of Agriculture, were linked to the SRA between 1916 and 1930. Furthermore, President Marcelo T. de Alvear himself was an aristocrat and a member of the Sociedad Rural.⁸⁶ Such a strong presence of interests associated with the ruling classes in government only served to reinforce the agro-exports based model.

The landowners that supported the UCR were allied to the urban middle classes. The feasibility of this alliance was rooted in the economic model. The growth of the middle class was determined by the domestic requirements of the élite, which were for labour and services (eg, administration, the judiciary and education). White-collar workers from the middle class performed these jobs, which demanded certain education standards and professional skills. Social mobility depended on patronage from the élite, which regulated the rise to careers in public administration and other professions through the State apparatus. The élite controlled the universities and the public sector and hindered the mobility of members of the middle class during the years of Conservative rule by two means: (i) it constrained the number of civil servants, and (ii) it reserved places in education and administration for members of the oligarchy.⁸⁷ The middle class had to increase its political leverage to realise its social aspirations, which was attained with the Radical victory in 1916.

Concerning objectives, the UCR merely strove for the redistribution of economic power away from the Pampean oligarchy and towards its two groups of supporters. In order to achieve this end, the Radicals

⁸⁴ Rock, *Radicalismo*, pp.15,16,20.

⁸⁵ Peter H. Smith, *Politics and Beef in Argentina* (New York, 1969), pp.48,50.

⁸⁶ Smith, 'Radicales', pp.804,805.

⁸⁷ Rock, *Radicalismo*, pp.31,33,34,35.

had to challenge the political monopoly traditionally enjoyed by the Conservatives, who controlled the government through extensive electoral coercion.⁸⁸ Pressure by the Radicals to increase political participation made the ruling class conscious of changes arising from urban growth and the rise of new social classes. The élite embraced democracy in order to protect stability, control the effects of social change, and buttress its own position.⁸⁹ Electoral reform was attained with the sanction of the Ley Sáenz Peña in 1912, which made universal male suffrage compulsory and secret. As a result, the share of voters actually participating in elections increased from 20% in 1910 to over 60% in 1916.⁹⁰ Having succeeded in its political objectives and attained power, the difficulty for the UCR was that it lacked cohesion and was incapable of producing a formula that could conciliate the divergent interests within the party.⁹¹ By the mid-Twenties, the Radicals were gripped by bitter factionalism and had ceased to exist as a unified party. President Alvear resented the attempts of Hipólito Yrigoyen, his predecessor and party leader, to control the government once he was out of office. Yrigoyen was an autocrat with messianic delusions who operated as a modern *caudillo*. He viewed the party as a personal vehicle, strengthened his position within it and behaved tyrannically. In contrast, Alvear was far more pragmatic and legalistic. As a result of these divergences of style, the President broke with the party leader and promoted the creation of the *antipersonalista* faction. The breach within the UCR was not healed in the presidential election that returned Yrigoyen to power in 1928, and the *antipersonalistas* sided with the Conservatives and the Armed Forces during the military coup that overthrew Yrigoyen in 1930.⁹²

Notwithstanding that agro-exports retained a key economic function under the Radicals, industry had emerged before the Twenties. Four factors account for the growth of manufacturing output. The first two, the expansion of agro-exports and rapid population growth, were the product of the 'golden age' of

⁸⁸ Ibid., p.280; John J. Johnson, *Political Change in Latin America* (Stanford, 1958), p.98.

⁸⁹ Rock, *Argentina*, pp.184,185.

⁹⁰ Cornblit, 'Inmigrantes', p.671.

⁹¹ Rock, *Radicalismo*, p.273.

⁹² Mark Falcoff and Ronald H. Dolkart, 'Political Developments', in Mark Falcoff and Ronald H. Dolkart (eds.), *Prologue to Perón* (Berkeley, 1975), pp.42,43.

externally-oriented growth. The third was a shift in the nature of foreign investments following the First World War, once the frontier closed. And fourth was pressure from within the Army for the establishment of essential strategic industries. Growth in agricultural exports induced substantive industrial expansion before 1930. The first modern food processing plants had already been established in the late nineteenth century.⁹³ The only major foodstuffs exporters were meat-packing plants and grain producers. Although part of the output from meat-packing, flour milling, processing of dairy products and wool-washing was exported, production of derivatives of rural commodities was directed at the local market.⁹⁴ Progress was also made in import substitution of key foodstuffs. Some 60% of total meat production was consumed locally by 1914, and this share continued to increase subsequently. Around 50% of the wheat harvest, subject to volatile annual production, and substantial volumes of other cereals were retained for home consumption.⁹⁵ In addition, the development of the railway grid - often believed to have conformed to international trade - contributed indirectly to the rise of manufacturing. The formation of a national network linked the main wine and sugar producing areas in the interior with the leading market in Buenos Aires, which allowed concentration of production at the source of the raw materials. Before 1929, sugar and wine were almost the only major local food processing industries to have developed outside Buenos Aires.⁹⁶

Urbanisation was generated by a significant immigrant influx. The urban population had virtually quadrupled between 1895 and 1914, having increased from 1,161,000 to 4,573,000 people.⁹⁷ This expanding population, which owned steadily rising disposable incomes and was implanted with European consumption patterns, enabled the diversification of demand and initially led to an import boom. However,

⁹³ Ezequiel Gallo, 'Agrarian Expansion and Industrial Development in Argentina, 1880-1930', in Raymond Carr (ed.), *Latin American Affairs* (Oxford, 1970), p.49.

⁹⁴ Carlos F. Díaz Alejandro, *Essays on the Economic History of the Argentine Republic* (New Haven, 1970), p.211; Bill Albert, *South America and the First World War* (Cambridge, 1988), pp.215,216,217.

⁹⁵ Colin M. Lewis, 'Railways and Industrialization: Argentina and Brazil, 1870-1929', in Christopher Abel and Colin M. Lewis (eds.), *Latin America: Economic Imperialism and the State* (London, 1985), p.217.

⁹⁶ *Ibid.*, p.215.

⁹⁷ Vicente Vázquez-Presedo (ed.), *Estadísticas Históricas Argentinas: Compendio 1873-1973* (Buenos Aires, 1988), p.33.

domestic manufacturing capacity increased in response to the home market.⁹⁸ As Table 2.3 shows, the share of food processing in the value of production declined while that of textiles and other branches rose.

Table 2.3

OUTPUT VALUE OF SOME MAJOR INDUSTRIES, 1911-1930
(in millions of pesos)

SECTOR	PRODUCTION 1911-1920	SHARE (%)	PRODUCTION 1921-1930	SHARE (%)
TOTAL	754.4	100.0	762.7	100.0
Food processing	300.0	39.8	187.0	24.5
Textiles	93.7	12.4	147.8	19.4
Leather and its products	21.6	2.9	18.2	2.4
Forestry	21.3	2.8	25.4	3.3
Printing	25.2	3.3	20.8	2.7
Oil, coal, etc.	39.7	5.3	73.5	9.6
Electricity	45.3	6.0	12.4	1.6
Machinery and vehicles	68.6	9.1	62.5	8.2
Metals and their products	42.1	5.6	54.7	7.2
Construction	26.4	3.5	51.1	6.7
Mining and quarrying	19.5	2.6	6.6	0.9

Compiled from the data in Ricardo M. Ortiz, *Historia económica de la Argentina*, Volume II (Buenos Aires, 1955), pp.217,218.

Among these sectors were those consuming iron and steel goods. For example, while the nominal value of total industrial output changed little between 1911-1920 and 1921-1930, the value of production virtually doubled in the construction and oil industries. As indicated in Chapter 4, construction would become the main iron and steel consumer, and the oil industry required tubes and pipes for the layout of pipelines and refineries. The value of output also increased in the emergent metallurgical sector, which also needed iron and steel inputs. However, growth in manufacturing had not led to a significant decline in imports owing to the small scale of domestic production, the quality of the goods produced and the need to import inputs.

⁹⁸ Colin M. Lewis, 'Immigrant Entrepreneurs, Manufacturing and Industrial Policy in the Argentine, 1922-28', *The Journal of Imperial and Commonwealth History* XVI (1987-1988) No.1, p.78.

Although industry was initially stimulated by the rural expansion and urban growth, a shift in the nature of foreign investment resultant from the closure of the frontier also contributed to its rise in the Twenties. The most significant investments were undertaken by American corporations. The penetration of US economic interests in Argentina had begun in 1907 in the meat-packing industry but not been significant before 1914.⁹⁹ The situation changed dramatically in the Twenties, as booming conditions at home forced American firms to find new markets.¹⁰⁰ Therefore, the range of US investments in Argentina diversified as major industrial groups established subsidiaries. Among the companies that set up shop and consolidated their position in various market niches were producers of metal products, machinery, electrical goods and pharmaceuticals.¹⁰¹ However, opportunities for sales and obstacles to exports (ie, trade barriers) proved insufficient to justify large-scale investments. In most cases, American firms set up sales outlets and erected assembly, mixing, packaging and service plants rather than full-fledged factories.¹⁰² As is shown below, development from assembly into manufacturing only occurred in the Thirties. In addition to investing in industrial branches, US interests exploited the financial might of Wall Street and acquired weak British-owned public utilities companies.¹⁰³

The final factor that generated industrial growth during the Twenties was the awareness and mounting discontent within the Army over the precariousness of the Argentine international economic position and of the traditional economic system. Import shortages during the First World War, the restricted nature of existing industry and an increase in the labour supply resultant from rapid urbanisation raised the interest of leading members of the Army in the possibilities of economic change and industrialisation.¹⁰⁴ However, these concerns were guided by military preoccupations with strengthening national defence by

⁹⁹ Eduardo F. Jorge, *Industria y concentración económica* (Buenos Aires, 1971), p.90.

¹⁰⁰ Mira Wilkins, *The Maturing of Multinational Enterprise: American Business Abroad from 1914 to 1970* (Cambridge, Massachusetts, 1974), p.60.

¹⁰¹ Jorge, *Industria*, p.98; Schvarzer, *Industria*, p.126.

¹⁰² Wilkins, *Maturing*, p.62.

¹⁰³ Fodor and O'Connell, 'Argentina', p.19.

¹⁰⁴ Robert A. Potash, *El ejército y la política en la Argentina, 1928-1945* (10th ed., Buenos Aires, 1982), p.45.

achieving self-sufficiency in key basic industries and the production of weapons such as small arms, munitions, explosives and aircraft.¹⁰⁵ Technocrats from the Army Engineering Corps, convinced that they possessed the necessary technical skills to attain this goal, began to champion industrialisation and self-sufficiency as essential foundations for national defence and economic security. Furthermore, they believed that the State should intervene with military assistance in industries crucial to self-sufficiency, such as steel and oil.¹⁰⁶ There was little opportunity to develop a steel industry based on national resources during the Twenties owing to the lack of adequate coal and iron resources. Nonetheless, aware of military discontent, Alvear resolutely supported the Army technocrats and appointed General Mosconi to head Yacimientos Petrolíferos Fiscales (YPF), the state oil company established in 1922.¹⁰⁷

In the context of the thesis, the significance of the creation of YPF is threefold. First, it indicates that State intervention in the economy, which is usually associated with *Peronismo* in the late Forties, began in the Twenties. However, there are two distinctive features about such intervention in the latter decade. It was not limited to essential industries, as exemplified by greater bureaucratisation, the growing importance of State railways and the attempt to regulate the beef trade. Moreover, it was an experience common to other Latin American economies before 1930, as illustrated by the example of Brazil. On the eve of the Wall Street crash, the Brazilian State owned 67% of the country's railways, major ports, its largest shipping line and leading banks, and also controlled the marketing and international price of coffee (the key export commodity).¹⁰⁸ Second, the founding of YPF signalled the beginning of military involvement in the development of basic industries, which peaked with the Dirección General de Fabricaciones Militares and the conception of the Plan Siderúrgico Argentino (PSA) in the Forties. Finally, State control of the oil industry reveals the failure of the Armed Forces to overcome politicians' opposition to ownership of critical sectors by public-private *sociedades mixtas*, a situation which recurred with the PSA. Although Mosconi

¹⁰⁵ Benjamin A. Most, *Changing Authoritarian Rule and Public Policy in Argentina, 1930-1970* (Boulder, 1991), p.84; Paul H. Lewis, *The Crisis of Argentine Capitalism* (Chapel Hill, 1990), p.93.

¹⁰⁶ Carl E. Solberg, *Oil and Nationalism in Argentina* (Stanford, 1979), pp.76,82,83.

¹⁰⁷ Alain Rouquié, *Pouvoir militaire et société politique en République Argentine* (Paris, 1978), p.153.

¹⁰⁸ Steven Topik, *The Political Economy of the Brazilian State, 1889-1930* (Austin, 1987), p.1.

initially advocated a State oil monopoly, he decided that the best solution was a monopolistic mixed corporation. The latter would be moulded on the Anglo-Persian Oil Company as regards shareholding structure and on the Mexican *sociedad mixta* Petromex in terms of the origin of private sector investment. Like Anglo-Persian, the proposed enterprise would be owned 51% by the State and 49% by private investors. As was the case with the PSA proposal (see Chapter 3), government representatives on the board of directors would have a veto over major policy decisions while private investors, which had the necessary commercial skills, would administer the company.¹⁰⁹ However, the Mosconi proposal differed in one critical respect from the PSA project: no foreign interests could participate in the mixed enterprise. Mosconi based this requirement on Petromex. Established in 1923, this firm restricted private investment to individuals of Mexican nationality.¹¹⁰ Mosconi was unable to see the issue of control of the oil industry resolved in the Twenties owing to bitter wrangling within the UCR and in Congress, the conflict between federal and provincial authorities over property rights on mineral deposits, and Yrigoyen's intransigence during his doomed second presidency.

The growth of the oil industry illustrates that certain conditions for the rise of manufacturing were present before 1930. Industry had been stimulated by the expansion of agro-exports, rapid urbanisation, the shift in the nature of foreign investment, and military interest in defence related industries. Nevertheless, there had been no opportunity for genuine industrialisation and the development of an iron and steel sector. The production and export of rural commodities remained predominant in the national economy, notwithstanding the weaknesses of the export-led growth model. Industrialisation was limited, and the UCR administrations did little to encourage economic reform as its single priority had been the accomodation of its supporting constituencies within the existing framework. The Great Depression, as the First World War had done, again exposed the weaknesses of dependence on agro-exports. However, the intensity of the world crisis provided little scope for manoeuvre in economic policy-making in the Thirties.

¹⁰⁹ Carl E. Solberg, 'YPF: The Formative Years of Latin America's Pioneer State Oil Company, 1922-39', in John D. Wirth (ed.), *Latin American Oil Companies and the Politics of Energy* (Lincoln, 1985), p.72.

¹¹⁰ Juan Carlos Vedoya, 'Mosconi, el petróleo y los trusts', in Juan Carlos Vedoya and Luis C. Alén Lascano, *El petróleo nacional* (Buenos Aires, 1976), pp.54,55.

The economy during the década infame

The *década infame* of Argentine politics (1930-1943) comprises two periods of major economic upheaval: the Depression during the early Thirties, and the Second World War in the early Forties. The most severe was the former, with its effects being more prolonged than those of the downturn during the First World War. Extremely adverse conditions reduced the scope for manoeuvre in policy-making. The second Yrigoyen administration took no steps to overcome the crisis, which contrasts sharply with the performance of the Concordancia régime that came to power in the aftermath of the 1930 coup. The Concordancia dealt effectively with economic difficulties by implementing short-term policies that increased government involvement in economic management. However, this section also shows the Concordancia's inability to introduce long-term reforms during the Second World War, when it became clear that the existing framework was no longer functioning. Increasing opposition to the régime prevented the introduction of an economic programme which was influenced by the conflict but had major long-term considerations, and the lack of political legitimacy ultimately destroyed the Concordancia.

As other countries, the Republic drifted into the Depression before October 1929. A sharp reduction in export volumes was coupled with a sudden capital outflow caused by speculation in Wall Street. This was combined with the deterioration in the terms of trade. Owing to the subsequent inability to pay for imports and service the foreign debt, net exports of gold increased until prohibited in December 1929.¹¹¹ Apart from suspending convertibility, which aimed to prevent further drainage of gold reserves, no concrete steps were taken by the government to tackle the economic crisis. The problem was that the crisis coincided with the disastrous second presidency of Yrigoyen, who was returned to power in 1928 at the age of 76, and brought about the downfall of democracy as the machinery of State virtually ground to a halt for two years. Yrigoyen's overthrow in September 1930 resulted from simultaneous factors: the President's senility and the overall incompetence of his government, combined with the wish of the oligarchy and his own supporters to displace him, growing restiveness within the Armed Forces, popular

¹¹¹ Arturo O'Connell, 'La Argentina en la Depresión: los problemas de una economía abierta', *DE* 23 (1983-1984) No.92, p.487.

discontent associated with the onset of the Depression, and an oil nationalisation policy that contributed to a serious legitimacy crisis by challenging the federal system and constitutional rights of the provinces.¹¹²

Although the *Yrigoyenista* oil nationalisation policy was a factor in the 1930 coup by paving the way for a political breakdown, there is little evidence to sustain the traditional argument that it was an 'oil coup'. There was no direct relation between oil nationalisation and the revolution's chronology, and no conspiracy between Standard Oil (the firm most threatened by nationalisation) and the corporatist ideas of the group led by General José Félix Uriburu.¹¹³ Uriburu's *gobierno provisional* only lasted until 1931, for four reasons. (a) Its fascist project to replace Congress with an Italian-style Chamber of Corporations was unpopular. (b) The heavy-handed response to opposition provoked hostility towards the authorities. (c) The President's health was deteriorating. (d) The economic crisis continued to deepen, and the Conservatives and their allies within the revolutionary camp outflanked Uriburu.¹¹⁴ The 1931 presidential election, which was marred by fraud and boycotted by *personalista* Radicals, brought to power a coalition known as the Concordancia. The latter, due to the controversial Roca-Runciman Pact of 1933, has been called *el gobierno de las vacas*, but that description conceals its true composition. It was a coalition of Yrigoyen's opponents, namely the Partido Democrático Nacional (old-time Conservatives), the *antipersonalistas* and the Independent Socialists (moderate former members of the Socialist Party), who provided Federico Pinedo, the very capable Minister of Finance.¹¹⁵

The policies undertaken by the Concordancia under Presidents General Agustín P. Justo and his successor Roberto M. Ortiz are the subject of considerable controversy and were largely designed to overcome the severe economic difficulties caused first by the world crisis in the early Thirties and subsequently by the Second World War in the early Forties. The most significant characteristic of these

¹¹² Particular details on the causes of the 1930 coup can be found in Smith, *Politics*, p.137; Falcoff and Dolkart, 'Developments', pp.45,46; Rock, *Argentina*, p.212; Solberg, *Oil*, pp.113,151.

¹¹³ Fernando García Molina and Carlos A. Mayo, *El general Uriburu y el petróleo* (Buenos Aires, 1985), pp.36,37.

¹¹⁴ Falcoff and Dolkart, 'Developments', p.34.

¹¹⁵ Smith, *Politics*, p.138.

policies was that they were supported by increased government involvement in economic management, which included the establishment of the Banco Central de la República Argentina (BCRA) in 1935. To counter the effects of the Great Depression, the Concordancia applied sound fiscal practices and promoted economic recovery in the rural sector. Although this strategy achieved its short-term objective after 1933, the régime had not aimed at long-term economic reform. This was explained by its nature, and the fact that 'reformist' government officials could not openly advocate the need for industrialisation owing to the continued prevalence of the international division of labour theory and the weight of public opinion.¹¹⁶ The Concordancia's only permanent achievement was the 'fiscal revolution' that made government reliant for the first time on direct rather than indirect taxation for its revenue. Although the rural sector retained a fundamental function in economic policy and the country remained dependent on Britain for exports of key commodities, the share of manufacturing in the GDP was increasingly greater than that of agriculture (see Table 2.2) and industrial development had been encouraged by the contraction in foreign trade.

The Concordancia's intervention in the management of national finances was the result of the disarray inherited by the *gobierno provisional* in 1930, as the total receipts collected by the State could not cover administrative expenses, and the effects of the world economic crisis on the collection of import duties, the leading source of public revenue. With the country forced to depend less on duties to raise public funds and more on the domestic economy to pay for the services and expansion of the State, the government established the appropriate machinery to raise receipts domestically from new taxes on income, business transactions and petrol.¹¹⁷ The introduction of these levies and other charges, which resulted in a significant decline in the gap between national revenue and expenditure, were the first step towards severing government finances from the hazards of foreign trade.

The other cornerstone of Concordancia policy was promoting the recovery of the rural sector, and

¹¹⁶ Raúl Prebisch, 'Argentine Economic Policies since the 1930s: Recollections', in Guido Di Tella and D.C.M. Platt (eds.), *The Political Economy of Argentina, 1880-1946* (Basingstoke, 1986), p.134.

¹¹⁷ Peter Alhadeff, 'Public Finance and the Economy in Argentina, Australia and Canada during the Depression of the 1930s', in D.C.M. Platt and Guido Di Tella (eds.), *Argentina, Australia and Canada* (London, 1985), pp.162,163.

its success was largely owed to the financial provisions in the controversial Roca-Runciman Treaty of May 1933. The Roca Funding Loan aimed to release blocked remittances of obligations representing import costs and profits of foreign-owned enterprises. The remittances had to be released, to alleviate the exchange position and restrain the pressure on the peso consequent from the steep drop in commodity prices, the deteriorated terms of trade and the burden of foreign obligations. Owing to the heavy strain on the peso, the exchange system had been placed under State control.¹¹⁸ Its reform was crucial for the success of the Plan de Acción Económica, which would actively support rural producers by purchasing major crops at minimum guaranteed prices. These purchases would be financed from the profits derived from the difference between the cheap rate at which the State bought exchange from exporters and the high rate at which it sold it to importers.¹¹⁹ The reform of the exchange system was critical for this, and depended on the managed devaluation of the peso. The Roca Loan had major implications for domestic policy. It made the régime confident that the devaluation could be controlled when the blocked funds were released, and that the minimum crop price guarantees could be implemented without major disturbances.¹²⁰ The peso was devalued by 20% in November 1933 to favour rural production and exports. In a move which reflected the continuing growth of State intervention in the economy and which was designed to ensure that the leading multinational grain traders did not reap all the benefits, the Junta Reguladora de Granos was created and awarded control over all export sales. Basic prices were fixed for wheat, maize and linseed, and the Banco de la Nación paid an immediate advance of 80% of the estimated crop value. The remainder was paid to farmers once crops were resold at market prices to the export houses.¹²¹

The agricultural sector was responsible for overall recovery. The reform of the exchange control system and the introduction of minimum price guarantees for grain purchases coincided with recovery in

¹¹⁸ Peter Alhadeff, 'Dependency, historiography and objections to the Roca Pact', in Abel and Lewis (eds.), *Imperialism*, p.370; Javier Villanueva, 'Economic Development', in Falcoff and Dolkart (eds.), *Prologue*, pp.62,63.

¹¹⁹ Alhadeff, 'Finance', p.168.

¹²⁰ Alhadeff, 'Dependency', p.370.

¹²¹ Roger Gravil, 'La intervención estatal en el comercio de exportación argentino entre las dos guerras', *DE* 10 (1970-1971) Nos.39-40, p.408.

the terms of trade and the stimulation of exports by the severe droughts in North America, which enabled the country to become the largest maize exporter in the world for several years during the mid-Thirties.¹²² Although the Concordancia made no attempt at economic diversification, the crisis had provided scope for industrial expansion. Import constraints arising from the depreciation of the peso and increases in duties and tariffs resulted in 'forced' import-substitution in manufacturing and enabled local producers to obtain a larger share of the domestic market.¹²³ Some sectors as textiles and food processing continued to develop on the foundations established before 1914. Textiles were a major industry in the Thirties, and food processing expanded into new product lines - particularly minor agricultural goods.¹²⁴ An unforeseen consequence of high tariffs, bilateralism and exchange controls was the manufacture of 'new' products by the subsidiaries of foreign firms. Investment in these subsidiaries increased substantially as American firms needing to circumvent the discriminatory use of exchange controls established local branches. The main US investments in subsidiaries were in sectors whose output had the highest rates of expansion between 1925-1929 and 1937-1939, namely machinery, electrical goods and rubber products. The curtailment of trade in the Thirties enabled the subsidiaries to expand from assembly into local manufacturing of components, which partially substituted imports.¹²⁵ Iron and steel production was not among the manufacturing activities that expanded, and the nascent metallurgical industry relied on local scrap resources and imports of basic inputs. Although these imports contracted at the trough of the Depression, their pre-Depression level was regained after 1933 owing to the rapidity of economic recovery and the policies of the ISC. As seen earlier, the cartel aimed to control worldwide production and distribution of iron and steel and sustain a declining trade by obstructing growth of the industry in the few remaining 'open' markets such as the Republic. With the domestic market for iron and steel goods being limited and well served by foreign suppliers, there was little incentive to develop steelmaking. However, this situation would be altered by the Second World War.

¹²² Carlos F. Díaz Alejandro, 'An Interpretation of Argentine Economic Growth since 1930: Part I', *The Journal of Development Studies* 3 (1966-1967) No.1, p.33; Rock, *Argentina*, p.232.

¹²³ Adolfo Dorfman, *Cincuenta años de industrialización en la Argentina* (Buenos Aires, 1983), p.45.

¹²⁴ For details on the conditions that benefited the textile industry at the time see Rock, *Argentina*, p.234; for developments in the food processing sector see Díaz Alejandro, 'Interpretation', p.34, and Adolfo Dorfman, *Historia de la industria argentina* (Buenos Aires, 1970), pp.368,369.

¹²⁵ Jorge, *Industria*, pp.140,144; Schvarzer, *Industria*, p.169; Dorfman, *Historia*, p.370.

Recovery under Justo was followed by renewed difficulties during the Ortiz presidency. The outbreak of war in 1939 added further strains. Rural production was highly affected by shortages of shipping capacity, which restricted the export level of output residues, and surplus production of maize and wheat was used as fuel.¹²⁶ Economic hardship combined with the decline in government fortunes. The problem was that, even without the difficulties it faced, the government again did not satisfy the political requirements for sustained economic growth. The Concordancia not only personified specific interest groups, but also lacked a true level of political representativeness as it was sustained in power by the mighty *Justista* faction of the Army and the *fraude patriótico* embodied in restricted and extremely corrupt elections. When Ortiz became President, it was not clear if growing discontent would undermine the régime. Aware of this, Ortiz attempted to silence critics through redemocratisation. The *personalistas*, who had previously abstained from participating in elections, re-entered the political arena. The UCR was successful in Congressional elections held in 1940 and, when combined with other opposition parties, had a majority in the Chamber of Deputies. For the first time since 1932, the régime faced a hostile Lower House. Nonetheless, fate and Vicepresident Ramón S. Castillo dashed any hope of full redemocratisation. The President had to take an extended leave owing to poor health and was replaced by Castillo, an unreconstructed Conservative who undid what Ortiz had achieved. He appointed a new cabinet and intervened in province after province to secure Conservative victories. The Concordancia was never to be the same again.¹²⁷

The first casualty of the new political climate was the Plan Pinedo, the régime's response in late 1940 to the renewed economic crisis and the outbreak of the Second World War. Intended as a countercyclical measure, it reflects the increasing government involvement in economic management that characterised Concordancia rule. First, the plan aimed to help agriculture by extending the crop-financing schemes created in 1933. Second, it hoped to promote faster industrial growth and the export of manufactures. Finally, it supported the construction industry through a programme of cheap housing, which Pinedo hoped would create some 200,000 jobs. Nevertheless, the plan only partly attempted to tackle

¹²⁶ Di Tella and Zymelman, *Etapas*, p.95.

¹²⁷ Falcoff and Dolkart, 'Developments', pp.38-40.

structural economic imbalances. Pinedo, serving a second term as Minister of Finance and under the influence of the international conjuncture, laid emphasis on the recovery of the rural sector in much the same way he had done in 1933. Largely devoted to agricultural relief, the plan only attempted to promote 'natural' industries transforming nationally available resources. Pinedo regarded industry as a supplementary economic sector: farm exports were to be the 'master wheel', and industries were to be promoted as 'lesser wheels' at its side.¹²⁸ However, the strategy went beyond the conjuncture. Because of the shortage of convertible currencies to cover import costs and the need to broaden markets, it proposed the diversification and industrialisation of exports.¹²⁹ The shortage of convertible currencies was due to the fact that Britain would not use scarce dollar or gold holdings on Argentine purchases. Under an accord between the Bank of England and the BCRA, Britain made its payments into a special account at the Bank of England, where sterling balances remained blocked and would be gradually freed after the war.¹³⁰ Hence, Pinedo proposed the diversification of markets, with a preference for Latin America and the USA. The reference to relations with the latter in the plan went beyond short-term considerations. The traditional Anglo-Argentine link was no longer functioning and Pinedo understood that his strategy would be unfeasible without improved trade relations with the Americans.¹³¹

Submitted to Congress in November 1940, the Plan Pinedo fell victim to the political crisis, most notably growing opposition by the UCR, and failed to gain approval in early 1941. The opposition would only support the Plan if there was political reform and demanded clean elections, but failed to obtain this. Rigged elections in the provinces of Santa Fe and Mendoza resulted in the rejection of the Plan Pinedo and the resignation of Pinedo as Minister of Finance.¹³² Castillo succeeded ailing Ortiz as President in January 1942, and it was during his tenure that the economy bore the brunt of the impact of the war. Grain earnings

¹²⁸ Rock, *Argentina*, pp.239,240.

¹²⁹ Juan José Llach, 'El Plan Pinedo de 1940, su significado histórico y los orígenes de la economía política del peronismo', *DE* 23 (1983-1984) No.92, p.525.

¹³⁰ Fodor and O'Connell, 'Argentina', p.56.

¹³¹ Llach, 'Plan', pp.525,526.

¹³² Porcile, 'Challenge', pp.133,135,136.

dropped steeply as the threat of German submarine warfare halved shipping to and from Argentine ports. In addition, the British naval blockade closed access to all Continental grain markets except Spain and Portugal.¹³³ Industrial development was under severe import constraints, as exemplified by the case of iron and steel production. The latter, which was insignificant on the eve of the war and provided by two ephemeral domestic producers before 1939, was undertaken by metallurgical enterprises as a result of the demise of the ISC and wartime import shortages (see Chapter 3). Based on the use of increasingly depleted domestic scrap resources and of equipment produced domestically by ingenious Argentine engineers, steel output increased substantially. As indicated in Chapter 1, local production rose sharply between 1941 and 1944 and covered a substantial share of national consumption of steel during the Second World War owing to the forced contraction of demand created by import curtailments.

Table 2.4

**EXPORTS OF NON-TRADITIONAL INDUSTRIAL GOODS, 1934-1947
(as a percentage)**

YEAR	SHARE OF TOTAL EXPORTS
1934-1936	1.4
1937-1939	1.9
1939	2.9
1940	4.9
1941	8.2
1942	13.0
1943	19.4
1944	14.4
1945	13.6
1946	11.4
1947	5.5

Source: Juan José Llach, 'El Plan Pinedo de 1940, su significado histórico y los orígenes de la economía política del peronismo', *DE* 23 (1983-1984) No.92, p.532.

However, despite severe difficulties, the country took some advantage of wartime conditions. Because the belligerent powers geared their economies to the war effort and could not supply Latin

¹³³ Rock, *Argentina*, p.238.

American markets, Argentine trade with adjacent nations grew rapidly.¹³⁴ The most significant feature of the increased wartime regional trade is the share of manufactures in the structure of Argentine exports and imports. The contribution of industrial goods to exports during the conflict peaked in 1943 at levels seldom repeated subsequently in this period (see Table 2.4), and exports of manufactured goods were largely dominated by goods from the textile industry. The type of non-traditional industrial exports reflect an Argentine industrial structure based largely on light consumer industries. Since the country required imports of industrial goods, dependence on regional trade for the latter was heightened with wartime conditions and the American economic embargo. Brazil supplied industrial and semi-industrial products, and these included iron goods.¹³⁵ Brazilian supplies of pig iron were particularly important for Argentine metallurgical firms as it enabled them to circumvent wartime import shortages and obtain the minimum essential quantities necessary for their steelmaking activities. In fact, Brazil was the leading source of pig iron during the Second World War (see Chapter 5).

Industrial exports, which represented 13.7% of total exports in the period 1941-1945, were a wartime windfall which evaporated once the war was over.¹³⁶ Hence, during the conflict, the country had continued to depend on agricultural exports which were severely affected by wartime conditions. The economic difficulties created by the Second World War combined fatally with the total decline of the Concordancia and the rise of pro-fascist elements within the Army to produce the coup of June 1943. The régime's coalition structure was shattered by Castillo, who broke publicly with ailing President Ortiz over both domestic and foreign policy in February 1941 and curbed most political activities by placing the country on long periods of state of siege with the pretext of 'wartime conditions'.¹³⁷ Additionally, Castillo alienated the *Justista* faction within the Armed Forces, which had provided the first Concordancia president

¹³⁴ For data on Argentine trade with other American countries see Llach, 'Plan', p.533, and Porcile, 'Challenge', p.132.

¹³⁵ Porcile, 'Challenge', pp.153,154.

¹³⁶ This average is calculated on the basis of the data in Table 2.4.

¹³⁷ Falcoff and Dolkart, 'Developments', p.40.

and given critical support to the régime, and there inevitably came the break between Castillo and Justo.¹³⁸ With the Armed Forces restless over the deteriorating political and economic situation and the government lacking any legitimacy or support, Castillo triggered the coup when he picked Robustiano Patrón Costas, an arch-Conservative sugar baron from northwest Argentina, as his successor and Concordancia candidate for the presidential election due in late 1943.

The Concordancia was confronted with severe problems when it took power in 1932, and its policies were not bold but dictated by short-term exigencies. When national economic structural weaknesses were again exposed by the Second World War and caused renewed problems, the government paid a heavy price for its undemocratic nature. It was prevented by its political opponents from introducing an innovative economic plan that, although emphasising agricultural relief, went beyond the wartime conjuncture. The politically doomed Plan Pinedo sought an incomplete alteration of the existing economic strategy and the promotion of trade relations with the USA and Latin America. Nevertheless, doubts remain over the sustainability of the Plan. The competitive nature of the Argentine and American economies, particularly in the field of agricultural production and exports, and US protectionist policies cast a shadow over improvements in US-Argentine trade relations.¹³⁹ The strategy of promoting industrial exports was affected by the fact that the domestic industrial capability was embryonic. Capital goods were the industrial product most in demand in Latin American trading partners like Brazil, and industries producing these goods were poorly represented in the Argentine industrial structure.¹⁴⁰ The Plan Pinedo was an aborted, partial attempt at economic change, whose most remarkable characteristic was a tacit acknowledgement that the existing framework was no longer functioning. The Army overthrew the government in June 1943 as a result of increasing economic and political problems. The Grupo de Oficiales Unidos (GOU) that came to power had very different convictions than its Conservative predecessors, and from its ranks emerged the most famous Argentine leader of the century.

¹³⁸ Marvin Goldwert, *Democracy, Militarism and Nationalism in Argentina, 1930-1966* (Austin, 1972), p.54.

¹³⁹ Llach, 'Plan', pp.517,534.

¹⁴⁰ Porcile, 'Challenge', pp.154,155.

The rise and fall of Peronista economics

The post-1943 decade perhaps provided the best opportunity to implement socio-economic reforms. The dictatorship of 1943-1945 and the elected *Peronista* government which followed it benefited from favourable conditions which were most apparent at the end of the war. When Juan Domingo Perón came to power in 1946, he had the economic means to create *la Nueva Argentina* (see Chapter 1). Yet the post-1943 decade ended in economic failure as both the military and *Peronista* régimes floundered. As is shown below, the problem as always was that these administrations represented specific interest groups and their policies were conditioned by political goals. The military governments headed by General Pedro Pablo Ramírez and General Edelmiro Farrell championed an industrialisation policy guided largely by wartime considerations, providing impetus for the development of projects like the PSA. Perón himself as Minister of War during the dictatorship of 1943-1945 had supported this type of industrialisation. Nonetheless, once the conflict ended, military policy had little urgency. Perón used his government position to create his own political base and develop his own *justicialista* agenda for his election to office. Given his labour base, his hatred for the Conservatives and his xenophobic leanings, Perón subordinated economic policy to political ideology. This brought short-term benefits to his supporters but did not lead to diversification. The rural sector was squeezed as it was the key source of cash, industrial policy was inappropriate due to overemphasis on light industries, and Perón wasted valuable exchange resources in nationalisations rather than productive investments. What this section will make clear is that the régime squandered a unique opportunity to introduce structural reforms which was favoured by the existence of the singular advantages described in Chapter 1.

Between 1943 and 1945, the military régime promoted the growth of defence-related industries. Influenced by the war, the Armed Forces envisaged self-sufficiency and preparedness for war. Changes in technology had made existing armament stockpiles and forms of mobilisation obsolete, and the Army responded to the challenge with two programmes. The first proposed the expansion of military factories by the Dirección General de Fabricaciones Militares. The second was a systematic elaboration of *planes*

de movilización industrial with reference to basic industries, fuels and weapons.¹⁴¹ These circumstances resulted in the elaboration of schemes like the PSA. Furthermore, they led to the military redefinition of the term 'natural industries', which had been linked with industrialisation limited to manufacturing associated to rural production. The Army also related the expression with the processing of minerals and to the notion of 'national raw materials' - ie, minerals vital for heavy industry.¹⁴² With these criteria in mind, the military embarked on a desperate search for domestic resources and on the creation of a national heavy industry, since iron and steel were crucial to manufacture weaponry for modern warfare.¹⁴³

Following his victory in the 1946 elections, Perón promoted a policy of mass consumption which conflicted with the need to deepen the industrialisation process and make long-term investments in areas such as steel production. The expansion of light industries increased demand for capital goods, which in turn could only be imported if agricultural exports paid for them. Unfavourable government policy towards the rural sector, which is discussed below, made this impossible. With lower exports and less foreign exchange available, there was little opportunity for further industrialisation.¹⁴⁴

The policy of mass consumption was typified by: (a) an increase in the income of the lower classes, which would enhance purchasing power and provide a mass market for domestic industry, and (b) the expansion of light industries producing for that market. Perón invariably backed wage demands from the trade unions (the popular base of his régime) to increase the earnings of the lower classes, and thereby gained political credit for the swift improvement in workers' living standards.¹⁴⁵ Real wages in industry rose by around 33% from 1946 to 1950, or by 70% when fringe benefits are added. In the short-run, this

¹⁴¹ Marta Panaia and Ricardo Lesser, 'Estrategias militares frente al proceso de industrialización (1943-1947)', in Panaia, Lesser and Skupch (eds.), *Estudios*, Volume 2, pp.95,96.

¹⁴² Llach, 'Plan', p.539.

¹⁴³ Luís García Mata and Juan Eugenio Maggi, *Posibilidades para el desarrollo de la gran siderurgia en la Argentina* (Buenos Aires, 1942), p.4.

¹⁴⁴ Lewis, *Crisis*, pp.180,181; Félix Luna, *Perón y su tiempo* (2nd ed., Buenos Aires, 1993), p.127.

¹⁴⁵ Rock, *Argentina*, pp.283,284; Joseph A. Page, *Perón: a biography* (New York, 1983), p.174.

income redistribution stimulated mass consumption as against investment.¹⁴⁶ Manufacturing grew by around 29% between 1945 and 1948. The prime agent in this rapid expansion was the Banco de Crédito Industrial founded in 1944, which starting in mid-1946 provided up to 80% of total credits for manufacturers. The consumer goods and service industries received most of the loans, and expanded fastest.¹⁴⁷ Especially favoured were housing construction, regional meat-packing plants, the production of 16 milimetre films, regional electricity cooperatives, regional 'industrial nuclei' (usually consisting of several small factories clustered around electric power stations), experimental nuclear power plants, frozen-food factories, storage facilities for cheese and wine, the purchase of diesel vehicles, any factory that would locate in Tierra del Fuego, and a broad range of artisan-type industries.¹⁴⁸ These sectors suffered from overinvestment and did not generate sufficient exchange savings to cover the increase in capital goods imports resultant from the growth in light industries. Therefore these imports were only possible if rural exports could pay for them, and government policy towards a declining agricultural sector made this very hard indeed.

The decline of agriculture was reflected in the decrease in the land area devoted to grains.¹⁴⁹ The war had severely hit output, exports and prices owing to the closure of traditional markets and the shortage of shipping capacity. Landowners shifted to pastoral activities, which were highly profitable as world demand for beef had been rising and increased further during the war.¹⁵⁰ The shift in production required less labour and resulted in high rural unemployment. Tenants, whose incomes had already dropped due to market conditions, were expelled from the land and forced to migrate to the cities.¹⁵¹ Tensions rose between tenants and landowners, and also between the latter and the government. The post-1943 régimes were no friends of the Conservatives, and this resulted in a confrontation compounded in the harsh

¹⁴⁶ Lewis, *Crisis*, p.182.

¹⁴⁷ Rock, *Argentina*, pp.276,277.

¹⁴⁸ Lewis, *Crisis*, p.185.

¹⁴⁹ Rock, *Argentina*, p.295.

¹⁵⁰ Mario J. Lattuada, *La política agraria peronista (1943-1983)*, Volume 1 (Buenos Aires, 1986), p.24.

¹⁵¹ Alicia Tecuanhuey Sandoval, *La revolución de 1943: políticas y conflictos rurales* (Buenos Aires, 1988), p.31.

agricultural policies of the Casa Rosada.

The seeds of conflict between landowners and the government were sown by the revolutionary GOU régime, whose policies conflicted with the interests of landowners and export houses.¹⁵² Of particular importance was the decision to increase State control in grain commercialisation. The government elected in 1946 implemented this policy to the extreme, which was to the detriment of the rural sector and only intensified the rift between landowners and government. Farmers suffered due to the pricing policies of the Instituto Argentino para la Promoción del Intercambio (IAPI), higher costs caused by the extension of minimum-wage legislation to rural labourers, and the forced channeling of investment into manufacturing. The IAPI was a State agency set up in May 1946, which was to direct the buying and selling of exportables, though export houses dealing with commodities were not nationalised.¹⁵³ It became the leading State instrument to control foreign trade, with a monopoly over practically all exports except wool. These included grain and meat exports through the various boards established by the Concordancia, and also linseed and leather exports.¹⁵⁴ The IAPI became the sole buyer of most rural goods from local producers. Its tasks was to ensure the highest possible export earnings and favourable terms for purchases of imports, and also cheap sales in the home market.¹⁵⁵ The IAPI was crucial for the income redistribution necessary to increase mass consumption, and a primary source of new funds for industrial investment. Designed to reap and reinvest the profits from agriculture, it squeezed rural interests by buying commodities cheaply from farmers and selling them dear abroad.¹⁵⁶ The IAPI made enormous profits for a time by paying farmers far less than prevailing international prices and pushing down rural incomes.¹⁵⁷ The differential it obtained was retained for allocation by the government, which used it to purchase foreign-owned utilities, subsidise

¹⁵² For the use of the state agencies created by the Concordancia to impose strict controls on output and exports of rural commodities see Tecanhuey Sandoval, *Revolución*, pp.46,47,64; for the measures improving the position of tenants and the resistance of landowners to them see Lattuada, *Política*, Volume 1, pp.30-32.

¹⁵³ Ferns, *Argentina*, p.186.

¹⁵⁴ Lattuada, *Política*, Volume 1, p.85.

¹⁵⁵ Rock, *Argentina*, p.274.

¹⁵⁶ Gary W. Wynia, *Argentina in the Postwar Era* (Albuquerque, 1978), p.49.

¹⁵⁷ Rock, *Argentina*, pp.274,276.

imports, finance acquisitions of capital goods, fuel and supplies for public companies and the Armed Forces, and for the *obras de bien común* of Peronista urban and welfare programmes.¹⁵⁸

The régime's industrial and rural policies contributed to the economic difficulties which surfaced by 1949. Before turning to these, two further aspects associated to resource allocation must be examined: investment, and the use of blocked foreign exchange balances. Though his first presidency is considered the best by its supporters, Perón's improvidence is reflected in the public accounts. The share of the gross national product paid out to public employees rose steadily, from 7.9% in 1945-1949 to 9.1% in 1950-1954. There was also the matter of the vast amount of resources directed for political purposes. Politicians have to pay off their supporters in some way or another, either in the shape of policies producing visible benefits or in the form of booty. The problem was that most of Perón's pay-off was booty (ie, the direct transfer of assets from one person to another) on too large a scale. The classic example is the Fundación Eva Perón, whose real budget increased tenfold in 1949-1952 and whose bounties were distributed among thousands of beneficiaries.¹⁵⁹ Investment was even more critical in the expenditure pattern. The proportion of public funds used in direct investments jumped to 8.7% while that in indirect investments rose from nil to 4.2% with the purchase of foreign-owned enterprises, and the share of the gross national product invested by State agencies increased impressively to 12.9% in the years 1945-1949. Nevertheless, the fundamental problem lay in the nature of the investments. Only 66.6% of these were direct, and were not predominantly used to build up productive capacity. Hence, 50.8% of direct investment was non-economic and mostly on conspicuous waste: 12.4% was spent on public buildings, 29.3% on the Armed Forces, and only 12.4% on items of some possible economic use (eg, sanitary works).¹⁶⁰ The remaining 33.3% was indirect investment, and consisted of asset transfers to foreign capitalists and the wastage of most of the US\$ 1,500,000,000 held in foreign exchange reserves.

Government policy contained serious flaws and achieved little in terms of economic diversification

¹⁵⁸ Susana Novick, *IAPI: auge y decadencia* (Buenos Aires, 1986), pp.48,68.

¹⁵⁹ Ferns, *Argentina*, pp.189,190,191; Rock, *Argentina*, p.304.

¹⁶⁰ Ferns, *Argentina*, pp.191,192.

or the development of heavy industry. Diversification could only be achieved through thorough industrialisation, a process that would absorb the manpower no longer required in primary production and had to supply all those industrial goods which could not be imported owing to the relatively slow growth of exports.¹⁶¹ Import substitution industrialisation consisted of two stages. The first was the establishment of light industries, which resulted in an expansion of capital goods imports. Since such imports were vulnerable to shortfalls in export earnings, industrialisation had to be deepened. The second stage was the development of heavy and capital goods industries, in which iron and steel had a vital role. The iron and steel industry not only would satisfy rising demand for its products in sectors as industrial construction building and transportation, but also constitute the basis for other industries as machinery manufacturing.¹⁶²

Peronista policies were far from achieving diversification. The light industries that received most of the régime's attention had been developing rapidly before 1943, and were probably nearing maturity by the Forties. Therefore these industries probably required an increasingly competitive climate to ensure their efficiency, but instead were surrounded by extremely protective policies.¹⁶³ The policy to promote mass consumption led to investment being channelled primarily into industries producing 'wage commodities' and activities producing 'wage services' such as popular housing. Furthermore, rural policy was aimed at ensuring cheap foodstuffs for urban workers. Export volumes declined steeply and domestic consumption of foodstuffs increased.¹⁶⁴ Hence, Perón's policies sacrificed exports and opportunities to earn foreign exchange that could be utilised on capital goods imports. In addition, emphasis on light industry reflected the régime's populist tone and excessive stress on the first stage of import substitution industrialisation. The government failed to deepen industrialisation, to generate sustained growth and to devote more attention to

¹⁶¹ United Nations (UN), Economic Commission for Latin America (ECLA), *Problems of the steel making and transforming industries in Latin America*, Volume 1: Report of the São Paulo meeting (New York, 1958), p.35.

¹⁶² *Ibid.*, p.36.

¹⁶³ Carlos F. Díaz Alejandro, 'An Interpretation of Argentine Economic Growth since 1930: Part II', *The Journal of Development Studies* 3 (1966-1967) No.2, p.164.

¹⁶⁴ *Ibid.*, p.166; Rock, *Argentina*, pp.296,297.

sectors struggling to emerge and the necessary social overhead capital.¹⁶⁵ Furthermore, public expenditure was mismanaged and public funds were siphoned off by corruption in the government.¹⁶⁶ Finally, there was the waste of foreign exchange balances on nationalising run-down utilities. The most celebrated nationalisation was that of the British-owned railways. Although the use of sterling balances in such a purchase was questionable, it arose from Argentine dilemmas. As the United Kingdom suffered from currency instability and export difficulties, the build-up of non-convertible sterling reserves was deemed dangerous.¹⁶⁷ There was no possibility of financing the dollar deficit with a sterling surplus as in the past, and the prospects of importing the necessary products from Britain were low.¹⁶⁸ Despite these circumstances, the purchase of the railways was unwise for two reasons. First, the economy was strained by the reorganisation and renovation of the enlarged State network. Second and more crucial, the acquisition contributed to shortages of sterling reserves at a time of increasing exchange shortages. Of the £ 150,000,000 spent, only £ 40,000,000 corresponded to the balances. The remainder was covered with an advance from the British Ministry of Food on account of commodity purchases in 1948, and a contribution made by HM Government towards increased Argentine production costs. Hence, the country spent exchange which could have been added to its dwindling reserves and did not retain adequate reserves to cover unforeseen future problems in the balance of payments.¹⁶⁹

The failure of government policy became apparent by late 1948, when the economy showed signs of incapacity to support the *Peronista* strategy. Foreign exchange and gold holdings were exhausted, and the balance of payments turned unfavourable as export prices fell relative to purchases of fuel, machinery and industrial raw materials. The deficits were met by borrowing and increasing the money supply, and the

¹⁶⁵ Díaz Alejandro, 'Interpretation II', pp.164,166.

¹⁶⁶ For the notorious corruption in the Fundación Eva Perón, see Lewis, *Crisis*, p.202.

¹⁶⁷ Noel Fursman, *The decline of the Anglo/Argentine economic connection in the years immediately after the Second World War: a British perspective* (DPhil thesis, Oxford, 1988), p.187.

¹⁶⁸ Jorge Fodor, 'Perón's Policies for Agricultural Exports 1946-1948: Dogmatism or Commonsense?', in David Rock (ed.), *Argentina in the Twentieth Century* (London, 1975), p.147.

¹⁶⁹ Fursman, *Decline*, pp.185,186.

differential between the prices paid for commodities and export prices was extended by the IAPI.¹⁷⁰ The bottleneck in the balance of payments became critical. Export earnings decreased as import levels increased and, by early 1949, Argentina had exhausted its dollar reserves and could no longer acquire imports from the USA.¹⁷¹ As the economy plunged, the troubled rural sector continued its steady decline. There was no scope to revive rural exports, owing to severe droughts in the late Forties and early Fifties and the fact that their placement abroad became increasingly difficult in the face of American competition in the grain trade.¹⁷² However, the difficulty in placing exports of rural commodities overseas was also due to the last remnants of US economic pressure on the country, which were manifest in discrimination towards purchases of Argentine goods with Marshall Plan dollars. The Economic Cooperation Administration (ECA), the administrator of Marshall Plan funds, deliberately denied the country the chance to acquire much needed exchange in 1948 by discriminating against Argentine goods which were in surplus and in high demand. Ever since the Marshall Plan was launched in 1947 and Argentine-American relations had improved, the country was promised access to ECA dollars by the Truman administration. While the Republic was discriminated against by the ECA, rural commodity exporters like Canada, which suffered from exchange shortages and required cash payment for its exports, were awarded substantial orders for agricultural products.¹⁷³ Matters were worsened by the impossibility of turning towards the United Kingdom for reviving the export trade, as the degree of dependence was not mutual.¹⁷⁴

The severe economic crisis initiated in the late Forties spread from agriculture and commerce to industry. In addition, employment and income contracted, and inflation compounded the crisis. Perón reacted to the deepening crisis by sacking the head of both the IAPI and the Banco Central and introducing a patchwork of measures in 1949, which included new import restrictions, the tightening of credit for the

¹⁷⁰ Ferns, *Argentina*, p.193; Lewis, *Crisis*, p.190.

¹⁷¹ Rock, *Argentina*, p.298.

¹⁷² Ibid., p.293.

¹⁷³ Carlos Escudé, 'Las restricciones internacionales de la economía argentina, 1945-1949', *DE* 20 (1980-1981) No.77, pp.33,38.

¹⁷⁴ For specific details on the problems in Anglo-Argentine trade see Colin Lewis, 'Anglo-Argentine Trade, 1945-1965', in Rock (ed.), *Argentina*, pp.121,122, and Rock, *Argentina*, p.294.

private sector, the curtailment of public works projects, and a demand for employers to cover the rising wages from profits.¹⁷⁵ Nevertheless, the measures were insufficient or even failed as any serious commitment was lacking.

The difficulties experienced by industry in the late Forties are critical from the perspective of the thesis, as the steepest drop in production occurred in the metallurgical sector. As seen above, metallurgical enterprises and importers of finished goods had undertaken steel production during the Second World War to compensate for shortages of overseas supplies. However, domestic steel output was based on increasingly depleted sources of scrap (see Chapter 5) and in the postwar period could only be sustained with imports of essential inputs. The curtailment of imports resulting from the economic crisis led to severe raw material shortages.¹⁷⁶ Unable to obtain import permits, many large firms cut back production. The difficulties became so extreme and vital imports of pig iron so scarce that steel production for construction, transportation and public works was threatened with paralysis.¹⁷⁷

Given the economic difficulties described above, it is clear that the attempt to create *la Nueva Argentina* had failed by the early Fifties. The policy to encourage mass consumption had been too costly. The squeeze on the rural sector sacrificed exports and opportunities to earn the foreign exchange necessary to acquire capital goods, and overemphasis on promoting light industries did not generate enough exchange savings to cover the required imports. In addition, the régime spent the considerable foreign exchange reserves it held after the war on purchasing foreign-owned, run-down utilities. These policies adversely affected the development of heavy industry, which had been enacted into legislation in 1947 but made no headway. The exchange shortage made resources scarce for this project and for equipment imports, and overinvestment in light industries retarded the growth of sectors which required iron and steel products.

¹⁷⁵ Gary W. Wynia, *Argentina in the Postwar Era* (Albuquerque, 1978), p.69.

¹⁷⁶ La Cantábrica S.A.M.I. y C., 'Memoria y balance general correspondiente al 48º Ejercicio cerrado el 30 de Junio de 1950', *Boletín de la Bolsa de Comercio*, 4 December 1950, p.1151; La Cantábrica, 'Memoria y balance general correspondiente al 50º Ejercicio cerrado el 30 de Junio de 1952', *Boletín*, 1 December 1952, p.499.

¹⁷⁷ *Metalurgia*, November 1951, p.14, and December 1951, p.7.

CONCLUSION

This chapter has assessed the international and domestic constraints on the efforts to develop steelmaking in Argentina. The external restrictions manifested themselves in the attempts of leading steel producer-exporters to prevent the growth of production overseas as export markets shrank. As seen above, the Continental European exporters predominant before 1939 achieved this the International Steel Cartel they established. These practices included a comprehensive general marketing agreement, the establishment of subordinate international sales *comptoirs* for specific products, domination of the distribution process in export markets, and dealing with competition from producer-exporters outside the cartel through market segmentation. Although the Second World War provided an opening to develop local steelmaking capacity in 'small' economies as the Argentine, there was renewed obstruction to the development of heavy industry in traditional markets importing iron and steel products. The USA replaced Continental Europe as leading producer-exporter and, notwithstanding that it had encouraged industrial development in Latin America out of wartime strategic considerations, did not want to foster industrial activities south of the Río Grande which could compete with North American industry. However, Washington did not have to resort to the cartel's methods to achieve its goals. It refused to supply technology and capital, of which it was the principal international source, and in the case of Argentina had a further incentive not to collaborate. The US-Argentine relationship had deteriorated during the Second World War and reached an all-time low.

In terms of domestic constraints on the development of steelmaking, the key factor was the configuration of the national economy. As shown in this chapter, some kind of structural transformation was taking place, which was reflected in the increasing share of manufacturing in the GDP (see Table 2.2). The growth of industrial activities had initially arisen from the demand effects of rising income and was subsequently fostered by 'forced' import substitution resultant from the Great Depression and the Second World War. However, the process of change did not go far enough and thereby rural production and exports retained a key economic function. The critical reason why this was the case was institutional failure. As seen above, the political groupings that governed in this period represented particular sectorial interests, which was reflected in their policies. The Unión Cívica Radical merely strove for accommodation within the

existing framework, the Concordancia restricted itself to economic policies influenced by short-term economic difficulties and would not have genuinely sought reform given the nature of the régime and the weight of public opinion, and the *Peronistas* wasted the best opportunity to implement socio-economic reforms by mismanaging the economy and embarking on grandiose follies. Although the inability or unwillingness of particular régimes to introduce structural reforms had an adverse effect on attempts to develop domestic steelmaking, there were other problems associated with iron and steel production to which this thesis now turns.

Chapter 3

THE ROLE OF THE STATE, PRIVATE FIRMS AND FOREIGN INTERESTS IN HEAVY INDUSTRY

Domestic steel production emerged by and large during the Second World War as a result of three factors. First was the demise of the International Steel Cartel, which had attempted to control worldwide steel production and distribution and obstructed growth of the industry in the extra-European world. Second were wartime shortages of imported iron and steel products, and third were military concerns over national defence. Given increased State intervention in the economy, it is little wonder that government action was central to the emergent industry. However, this was not how its future had been envisaged by General Savio, key promoter of a national heavy industry during the Forties.

This chapter presents three arguments. (a) That government involvement in the sector did not begin until the crises of the Thirties, despite clamours for the creation of a State-owned industry in the Twenties. (b) That although projects in the Forties were not devised to be wholly State-owned, this is what eventually happened. (c) That participation of foreign interests in proposals of the Forties was not incompatible with the objectives of the State, as foreign firms could provide much needed influxes of capital and technology. The first section of the chapter surveys the emergence of the private sector producers. It examines the origins of the firms concerned (some of them were well established metallurgical enterprises) and problems confronting them during the *Peronato*. The career of Fritz Mandl, an Austrian arms dealer closely involved in a scheme to establish a domestic iron and steel industry in the early Forties, is also considered in this section. The second section focuses upon initial State efforts to establish heavy industry. It outlines the government's assessment of requirements vital to a successful iron and steel industry and the ideas underlying military involvement in this sector. It examines the attempt by the Armed Forces to develop iron and steel production in the Thirties, and the subsequent development and functions of a military-controlled industrial empire known as the Dirección General de Fabricaciones Militares. The final section will assess the development of the Plan Siderúrgico Argentino and its political and economic tenets. Particular attention is paid to the establishment of Altos Hornos Zapla, a blast furnace in the province of Jujuy, and difficult negotiations for the establishment of the mixed enterprises Sociedad Mixta Siderurgia Argentina and Hojalata

Argentina, the integrated steelworks in which participation by private and even foreign interests was regarded as vital for success. The section concludes with an explanation of the factors that led to the non-implementation of the Plan Siderúrgico.

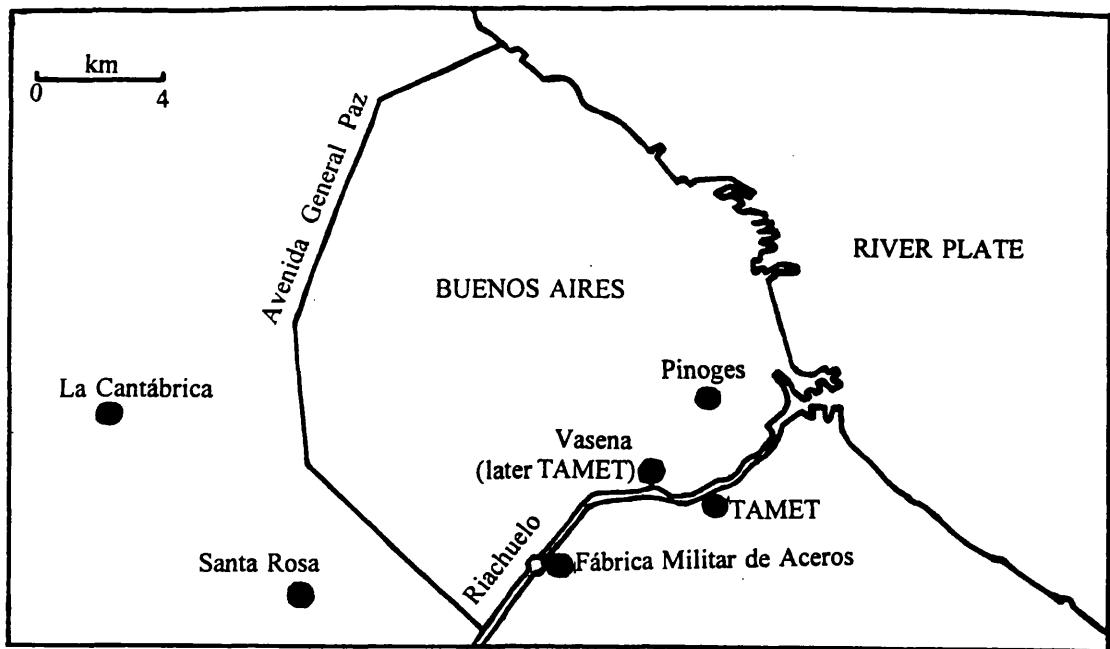
THE EMERGENCE OF PRIVATE SECTOR IRON AND STEEL PRODUCERS

The private sector companies that undertook steel production to overcome import shortages during the Second World War may be grouped into two categories. The first were metallurgical firms, founded mainly by immigrant entrepreneurs in the late nineteenth century to manufacture items such as construction materials, rural implements, and tools. By the war most of these companies were well established and had diversified into raw iron and steel production. The second group were composed mainly of importers of finished items. Cut-off from imports during the war, they were compelled to manufacture substitutes. The difficulty for these firms was that they possessed neither modern technology nor sufficient capital to undertake the construction of a large-scale steelworks. However, several of their achievements can not be underestimated. (i) The modest production capacity which existed before 1939 was expanded and plant was integrated. The metallurgical firms developed backward linked operations, and largely produced steel for 'in house' consumption. Of the three integrated stages of iron and steel production, only pig iron production was omitted. As inputs other than imported pig iron could be used in open-hearth furnaces (see Chapter 1), the key raw material was scrap obtained from obsolete machinery and rural implements, and war matériel and demolitions.¹ (ii) Equipment was available owing to the ingenuity of local engineers, in spite of wartime scarcities and hostile US policy. (iii) There is evidence that companies were able to overcome the insufficiency of capital and develop their steelmaking operations with financing from local banks.

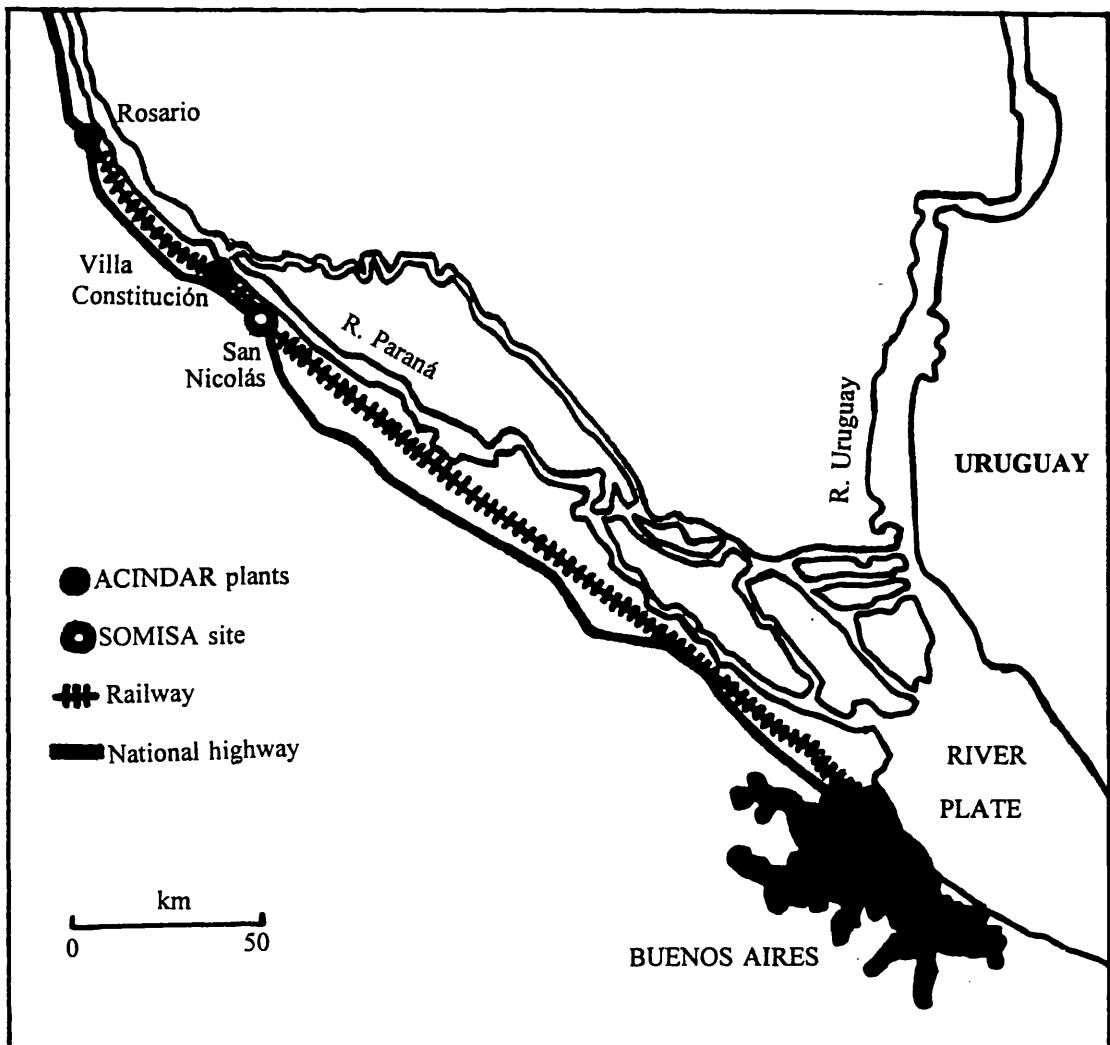
Origins of the leading private iron and steel producing firms

Of the established firms, only one had produced steel before the Twenties. However, all had been

¹ Jose García Vizcaíno, *Tratado de política económica argentina*, Volume II (Buenos Aires, 1975), p.254.



Map 3.1 STEEL PRODUCERS IN THE BUENOS AIRES METROPOLITAN AREA



Map 3.2 STEEL PRODUCERS IN THE ARGENTINE LITTORAL

founded towards the end of the nineteenth century and, before diversifying into steelmaking during the Second World War, most had a tendency towards administrative reorganisation most visible in changes of company names. This, however, did not necessarily result in the restructuring and integration of production. The first of these companies, the Compañía Argentina de Hierros y Aceros Limitada de Pedro Vasena e Hijos, dated back to 1870 but did not produce raw iron and steel *per se*. It provided frames, manufactured from foreign inputs, for the main buildings of the city of Buenos Aires between 1890 and 1914.² Another establishment, the El Carmen workshops, followed in 1889. Founded by Aureliano and Elíseo Baldor, they prospered in the metal bashing trade. El Carmen was transferred to a group of industrialists composed of Antonio Aróstegui, Ciriaco and Antonio Morea, Antonio Mulet, and Julián Ruiz in 1894. Following recapitalisation, the company was renamed La Cantábrica on 12 June 1902.³ Little else is known about the firm before 1939, except that it specialised in the supply of rural implements.

The pioneer steel producer was established in the Constitución district of Buenos Aires (see Map 3.1) by Juan Pinoges in 1896. It began operations with a small 3-ton capacity furnace, and successively incorporated 6 Siemens-Martin furnaces of 8 tons each.⁴ Initially, Pinoges produced pieces of moulded steel for machinery spare parts and years later set up a rolling mill with all accessories necessary for the production of steel building materials.⁵ This diversification was fostered by the protection awarded to certain rolled goods used in construction.⁶ Little else is known about the enterprise, except that it became the Talleres Metalúrgicos Vulcano S.R.L. and that at the end of the Second World War it was still owned by the Pinoges family.⁷ One more firm emerged in the early twentieth century, which eventually became

² Luis Enrique Vergne, 'El acero argentino: una batalla nacional', *Todo es Historia*, July 1980, p.20.

³ García Vizcaíno, *Tratado*, Volume II, p.254.

⁴ Dirección General de Fabricaciones Militares (DGFM), *31º Aniversario, 9 de Octubre 1941-1972* (Buenos Aires, October 1972), p.61.

⁵ Raúl Larra, *Savio: el argentino que forjó el acero* (Buenos Aires, 1980), p.139.

⁶ Secretaría de Industria y Comercio, *Hierro Laminado sin trabajar* (Buenos Aires, August 1947), p.13.

⁷ Banco Central de la República Argentina (BCRA), *Informe sobre el mercado local e industria nacional en laminados de hierro y acero* (Buenos Aires, May 1945), p.22.

the Sociedad Anónima Talleres Metalúrgicos San Martín TAMET and national leader in the market for metallurgy products. Its origins also date back to the late nineteenth century, to the bolt factory of José Ottonello and Luis A. Huergo and the machinery workshops of Antonio Rezzónico. In 1902, on the initiative of the Ernesto Tornquist & Co. group, Rezzónico, Ottonello and Huergo founded a company to acquire the stocks, equipment and land of the General Bosch plant of El Ancla S.A. The purpose of the venture, known as Rezzónico, Ottonello y Cía. until 1909 and thereafter as the Sociedad Anónima Talleres Metalúrgicos, was to assemble and modify the implements and agricultural machinery imported by a Tornquist subsidiary.⁸

Excluding Pinoges, only Vasena attempted to diversify into raw iron and steel production and develop backward linkages before the Twenties. As a number of Argentine companies, Vasena was listed overseas in order to gain access to new capital. It was registered in Britain in 1912 as the Argentine Iron and Steel Company, and its capital was denominated in sterling.⁹ Encouraged by import shortages during the First World War and by the fact that it already possessed technically advanced installations in its Riachuelo workshops (see Map 3.1 for their location), the firm expanded its activities into steelmaking. It set up 2 open-hearth furnaces and inaugurated a modern plant for the manufacture of bars in June 1920.¹⁰ Once a flourishing business, the Argentine Iron and Steel Company subsequently dwindled away and went into liquidation in 1924. Vasena products could not compete against the dumping of cheaper imported iron and steel goods.¹¹ In addition, the company had been mismanaged, and its expansion plans handled carelessly and financed through speculation.¹²

⁸ *Revista de la Sociedad Anónima Talleres Metalúrgicos San Martín*, July 1930, p.3; Donna J. Guy, 'La industria argentina, 1870-1940: Legislación comercial, mercado de acciones y capitalización extranjera', *Desarrollo Económico* 22 (1982-1983) No.87, p.364.

⁹ Guy, 'Industria', p.368; *The Times*, 2 October 1924, p.23.

¹⁰ Secretaría de Industria, *Hierro*, p.13; H. Foster Bain, *Las posibilidades de la manufactura de hierro y acero en la Argentina* (Buenos Aires, 1925), p.104.

¹¹ Foster Bain, *Posibilidades*, p.104.

¹² *The Times*, 2 October 1924, p.23.

Following the Vasena liquidation, there were no further private sector attempts to produce iron and steel. They were discouraged by the emergent oligopoly in the iron and steel trade, until war broke out in September 1939. As seen in Chapter 2, Continental steel producer-exporters attempted to retain their decreasing shares of overseas trade initially through dumping and subsequently through oligopolistic practices. One of the means of deterring the growth of iron and steel production in 'small' economies employed by West European steelmakers was the purchase of stakes in companies with the potential to produce steel locally in traditional export markets. The latter method was to be formalised by the International Steel Cartel (ISC) and pioneered by one of its founding members, the ARBED-Terres Rouges group of Luxembourg. ARBED, a colossal international mining and metallurgical consortium and the second largest European steel producer, had acquired important shareholdings in over 50 enterprises throughout Western Europe, Africa and South America, in order to secure raw materials for its manufacturing and markets for its products.¹³ The overseas operations of ARBED-Terres Rouges are important within the context of the thesis for two reasons. (i) They were the direct consequence of the problems faced by the Luxembourg steel industry after the First World War, namely the need to dispose of large production surpluses and gain footholds in the few remaining 'open' markets (see Chapter 2). (ii) By different means, ARBED methods affected the development of domestic steel production in both Brazil and Argentina, the two major South American economies.

In Brazil, ARBED acquired the Companhia Siderúrgica Mineira in 1921. This purchase, which resulted in the creation of the Companhia Siderúrgica Belgo-Mineira, suited both the requirements of the Brazilian Government and the Luxembourg group. Brazil was prepared to grant mining concessions in the rich iron ore deposits in the state of Minas Gerais, providing ARBED with the opportunity to obtain a share of Brazilian supplies of ore - which were largely controlled by British and American interests. In exchange for such favours, Brazil expected the firm which was awarded the mining concession to develop steelmaking in Minas Gerais, where charcoal-based pig iron production had been undertaken at the end of the nineteenth century.¹⁴ For ARBED, this was a chance to control the Brazilian market for iron and steel.

¹³ *Revista*, July 1930, pp.7,8.

¹⁴ Carlos Manuel Peláez, *História da Industrialização Brasileira*, (Rio de Janeiro, 1972), p.147.

Belgo-Mineira established itself as both the leading domestic steel producer and a major supplier of ISC products as local output did not keep pace with demand. In line with the objectives of its parent company and the steel cartel, Belgo-Mineira maintained its prominent market position by organising and dominating an association with other local producers. This trust regulated output through quotas, set prices and even paid some blast furnaces not to operate.¹⁵

ARBED's approach in Brazil contrasted sharply with that in Argentina, where the Luxembourgeois group acquired a significant participation in the Talleres Metalúrgicos in 1922. In Argentina, where domestic steel production and raw materials (excluding scrap) were virtually absent, it preempted the development of the industry by 'controlling' a firm in a traditional importing country with potential to expand into steelmaking. By taking a stock in the Talleres Metalúrgicos, a dynamic and rapidly growing concern, ARBED secured outlets in the leading Latin American market and allowed a 'controlled' expansion of its licensed distributor which would complement the corporate objectives of the group. The Talleres Metalúrgicos acquired the Talleres San Martín in 1925 and the former Vasena works in 1926.¹⁶ These purchases did not result in the integration of plant. In line with its goals, ARBED prevented the undertaking of steel production in the former Vasena works despite the availability of modern facilities. Vital inputs required in metallurgical goods were imported from countries participating in the ISC, while the steelmaking facilities acquired from Vasena remained idle until the collapse of the cartel and the outbreak of the Second World War. The rolling mill was then purchased by La Cantábrica, and the open-hearth furnaces were subsequently brought into use by the Talleres Metalúrgicos when this firm was forced to compensate import shortages with its own steel production.¹⁷ As a result of ARBED policies, the acquisition of the Talleres San Martín and Vasena in the short-term merely led to an amalgamation into a large holding company, the Sociedad Anónima Talleres Metalúrgicos San Martín, which was to manage and coordinate activities.¹⁸

¹⁵ John D. Wirth, *The Politics of Brazilian Development 1930-1954* (Stanford, 1970), p.88.

¹⁶ *Revista*, July 1930, p.3.

¹⁷ *Revista*, September 1930, p.3; BCRA, *Informe*, p.48; TAMET, September-October 1943, p.3.

¹⁸ Talleres Metalúrgicos San Martín S.A., *Reseña gráfica* (Buenos Aires, 1928), unpaginated.

The acronym TAMET was added to the firm's name in 1935.¹⁹

The oligopolistic trade practices of the ISC and the 'control' by one of its founder members of a leading Argentine metallurgical firm had deterred any attempts to develop domestic steel production. With the collapse of the cartel, the opportunity arose for diversification by the established metallurgical firms into steelmaking. However, before assessing this particular development, the chapter describes the origins of the two major private steel producers arising from companies that imported finished items before 1939 and were compelled to manufacture substitutes to overcome wartime shortages. The first was Industria Argentina de Aceros S.A. (ACINDAR), founded in 1942 by the construction firms Acevedo y Shaw and Compañía de Construcciones Civiles de Aguirre y Aragón. Set up to produce steel for construction, the sector with the largest share of the domestic iron and steel market, ACINDAR was no administrative amalgamation. Acevedo y Shaw and Aguirre y Aragón together held 50% of the capital and the Chilean industrial group Industria de Aceros Chilenos (INDAC) the remainder. Acevedo y Shaw had contracted work in Chile and a chance meeting between engineer Arturo Acevedo and Francisco Agurto Montesinos, the president and founder of INDAC, led to this Chilean company becoming a partner in the nascent company. The shareholding structure of ACINDAR underwent a major change when INDAC withdrew in 1946.²⁰ The reasons for this were connected to events in Chile. The Compañía de Acero del Pacífico steelworks project in Huachipato, developed with substantial financing from the Chilean State through the Corporación de Fomento de la Producción, was to start construction in mid-1947.²¹ This project represented a major threat to the survival of INDAC. The latter was a fairly small company based in Santiago, which would have difficulty in competing against large-scale production at Huachipato and thereby be marginalised in the Chilean market. The alternative for INDAC was to attempt to expand its facilities and production, which required substantial investments.²² In order to raise funds quickly, INDAC sold its stake in ACINDAR.

¹⁹ *Revista*, January 1935, p.5.

²⁰ ACINDAR, *Historia de una Voluntad de Acero* (Buenos Aires, 1986), pp.77,78,86.

²¹ David G. Greene, *Steel and Economic Development: Capital-Output Ratios in Three Latin American Steel Plants* (East Lansing, 1967), pp.18,19.

²² Carlos Sánchez Hurtado, *Evolución Histórica de la Industria Siderúrgica Chilena e Ibero-Americana* (Santiago de Chile, 1952), pp.239,240.

The other major producer set up by an importer of finished items are the Establecimientos Metalúrgicos Santa Rosa S.A., founded in 1943. In sharp contrast to ACINDAR, this firm was not set up by a consumer of iron and steel goods but by a licensed distributor of imported rolled products. Its founder was Hierromat S.A., a company established in 1933 by the French group Longovica (a subsidiary of the Aciéries de Longwy and Marine Homécourt).²³ Hierromat was a direct reflection of ISC policies. It was set up as a result of the need of the above mentioned French enterprises (which participated in the cartel) to secure markets at a time when trade contracted, and it acted as their licensed distributor in Argentina. Owing to wartime shortages and on the initiative of the South American director of Longovica, the Establecimientos Metalúrgicos Santa Rosa were created to manufacture substitutes for formerly imported products. Some other small companies emerged during the war, of which only the names are known.²⁴

The growth of private sector iron and steel production: equipment, finance and post-1945 problems

By diversifying into steelmaking, the private sector firms described above contributed substantially to surmount wartime shortages of imported iron and steel. More crucially, owing to the ability of local engineers, they demonstrated their capacity to circumvent the lack of imported capital goods and the American economic embargo. Nevertheless, growth in local iron and steel production had been shielded from overseas competition by the Second World War. In the aftermath of the conflict, it was assumed that the companies would confront the possibility of the restoration of iron and steel imports and would have to modernise their plants in order to survive but, as will be seen below, the threat of cheap imports proved temporary given domestic constraints on imports.

Compelled by the outbreak of war and subsequent import shortages, the companies mentioned above established steelmaking facilities in fairly rapid succession. Local engineers overcame the scarcity of foreign

²³ ACINDAR, *Historia*, p.104.

²⁴ These include Rosati y Cristofaro and Torres y Citati, which are mentioned in the data in Table N°1 in the Appendix of Eduardo A. Garimaldi, *Industria siderúrgica argentina* (Buenos Aires, December 1947). Lack of information on these firms suggests that they do not appear to have survived long after the war.

capital goods by copying old foreign designs and adapting second-hand equipment. The plants they designed were fairly integrated, comprising steelmaking and rolling installations. La Cantábrica was the first to diversify into raw iron and steel production. In 1941 it inaugurated a plant, designed by Argentine engineer Emilio Pujals, in the Buenos Aires suburb of Haedo (see Map 3.1).²⁵ It comprised 2 open-hearth furnaces with a capacity of 20 tons each, built locally on the basis of French designs, and rolling equipment from the Vasena works, which had been reconstructed and modernised. The plant produced shapes, slabs and iron for construction.²⁶ The following year, ACINDAR erected its plant in Rosario, the leading city in Santa Fe. It comprised a rolling mill supplied by INDAC and 1 Siemens-Martin furnace built according to a copy of plans of an American designed 15-ton furnace. The latter were provided by the Fabricaciones Militares (DGFM) and came with the furnace purchased during the mid-Thirties for the Fábrica Militar de Aceros project (see below). In addition, the DGFM provided ACINDAR an allocation of fuel-oil, as the latter was rationed and was needed to fuel the furnace. However, this assistance had a price. ACINDAR's location in Rosario was not solely based on the adequacy of communications and labour supply (see Map 3.2) and the availability of an ample scrap supply in the nearby railroad workshops at Pérez. It also met the condition laid by the DGFM for its support, which was that the plant should be within easy reach from San Nicolás - the site of the proposed SOMISA steelworks. This fit in with the military project for an integrated heavy industry, and ACINDAR was a potential SOMISA customer.²⁷

The ACINDAR plant is the best example of the domestic ability to build and commission steelmaking facilities. In order to attain high productivity, ACINDAR modified the military furnace design and increased capacity first to 25 tons and subsequently to 30 tons. The Rosario plant was completed by late 1942, the furnace having been built in 8 months. Production started in April 1943.²⁸ Also in 1943, TAMET inaugurated a steel plant in the former Vasena works. Although the firm previously had the

²⁵ Horacio N. Bruzone, *Contribución de La Cantábrica S.A.M.I. y C. al progreso del país* (Buenos Aires, 1941), unpaginated.

²⁶ ACINDAR, *Historia*, p.50.

²⁷ Ibid., pp.78,79.

²⁸ Ibid., p.84.

potential to diversify into steelmaking, the ARBED shareholding had imposed constraints on expansion from which it was only freed by the collapse of the steel cartel in 1939 and the German invasion of Luxembourg in 1940. The TAMET plant comprised 2 locally built open-hearth furnaces of 15 tons each and a rolling section, part of which was acquired in Brazil.²⁹ By the Fifties, the plant comprised 3 open-hearth furnaces.³⁰ Finally, one more mill was inaugurated by the Establecimientos Metalúrgicos Santa Rosa. This firm aimed to install a plant for the complete production process and obtain steel ingots, billets and rolled products in successive stages, and for this purpose acquired a large property in the Buenos Aires suburb of La Tablada (see Map 3.1).³¹ Steel production began in 1944 with locally-produced equipment, namely one open-hearth furnace of 17 tons and a rolling mill.³²

Although there is little evidence as to how this rapid growth in productive capacity was financed, major clues are provided by TAMET and Santa Rosa. Both these companies resorted to local financing to offset capital shortcomings. TAMET was able to obtain the necessary funds to rehabilitate the Vasena works through the Tornquist banking house - its key shareholder (the other being ARBED-Terres Rouges).³³ Arrangements between emergent manufacturers and the financial sector, such as that of TAMET and Tornquist, were not new and indicate that interests more commonly associated with agroexports did at times invest in non-agricultural projects. The Tornquist group, which was largely identified with involvement in farming, foreign trade and sugar mills, financed other industrial operations besides metallurgy.³⁴ In contrast to TAMET, no banks held shares in Santa Rosa - at least initially. The major shareholders were Hierromat, Marine Homécourt and the French company Actuma, which provided funds from blocked accounts that could not be remitted to German-occupied France. As the capital contributions of these three companies

²⁹ TAMET, September-October 1943, p.3; BCRA, *Informe*, p.48.

³⁰ 'Evolución de la Sociedad Anónima Talleres Metalúrgicos San Martín TAMET', *La Res*, 5 January 1958, p.27.

³¹ Instituto Latinoamericano del Fierro y el Acero (ILAFA), *Argentina* (Santiago de Chile, 1963), p.113.

³² Table N°1 in the Appendix of Garimaldi, *Industria*.

³³ 'TAMET S.A.', *La Metropole*, Antwerp, 12-13 July 1947.

³⁴ Guy, 'Industria', pp.362,363.

were insufficient to meet the substantial investment required for steelmaking and rolling installations, Santa Rosa placed shares in the Buenos Aires stock exchange.³⁵ Again, the search for new shareholders by would-be manufacturers was not unprecedented. There are other examples of this practice, with two dating back to the late nineteenth century: these are the Noel and Bagley companies in the foodstuffs sector.³⁶ After Santa Rosa searched for new partners, 40% of its shares came under the control of the public and local banks, with the remainder staying in French hands.³⁷

The achievements of private business in the development of iron and steel production were considerable. The scarcity of imported capital goods was circumvented by Argentine engineers, who designed plants that utilised copied old foreign designs and/or adapted second-hand equipment. The insufficiency of capital of individual companies to satisfy investment requirements in steelmaking facilities was offset with a resort to local financing, at least by some of the firms. However, the growth in productive capacity had been shielded from overseas competition by the Second World War. With the return of peacetime conditions in 1945, private iron and steel producers faced three difficulties. (i) Firms confronted price problems. Because formed stocks were purchased at wartime prices, losses would be incurred when prices dropped with the restoration of overseas supplies. (ii) It was assumed that sales of domestic producers were bound to contract if foreign products of greater variety and quality became available. (iii) There were plant-related problems. These producers would have to consolidate through modernisation to survive, but did not expect that technology would be readily available as the Americans would give priority to transfers to the countries devastated by the war.³⁸

In the event, the availability of imported iron and steel products had little effect on local production. Domestic factors, especially those originating in the faulty *Peronista* economic strategy, resulted in limited

³⁵ ACINDAR, *Historia*, p.104.

³⁶ Guy, 'Industria', pp.367,368.

³⁷ ACINDAR, *Historia*, p.104.

³⁸ La Cantábrica S.A.M.I. y C., 'Memoria y balance general correspondientes al 43º Ejercicio cerrado el 30 de Junio de 1945', *Boletín de la Bolsa de Comercio*, 15 October 1945, p.299.

output and restricted the growth and modernisation of capacity. Costs of production were affected by the high prices and shortage of raw materials, rises in labour costs, high fuel prices and electricity shortages which prevented a better mechanisation of production.³⁹ Furthermore, the rapid exhaustion of supplies of key raw materials such as scrap, creeping inflation resultant from government policies, and the run-down state of basic infrastructure adversely affected output. Increasing costs of production and input shortages led to lower turnovers by steel producers, forcing companies such as La Cantábrica to scale down the implementation of their expansion and modernisation programmes.⁴⁰ That particular firm made slow progress with its postwar plans to renovate and expand equipment through overseas purchases of machinery, to diversify production, to improve processes, and to lower costs and acquire land and build new facilities.⁴¹ The plight of private steel companies was further aggravated by the crisis of the late Forties. Severe exchange shortages arising from economic mismanagement (see Chapter 2) resulted in a sharp drop in imports and purchases being limited to cash transactions. The subsequent decline in stocks of imported raw materials (pig iron), machinery and spare parts resulted in drastic curbs of output.⁴² Since the government would not issue permits to purchase foreign exchange and import licences for machinery or spare parts, steelmakers continued to implement their projects to expand facilities when possible.⁴³ The firm hindered most by the inability to achieve its modernisation ambitions was ACINDAR, which had been rapidly consolidating its market position.⁴⁴ It had compensated the loss of the INDAC shareholding with local financing it obtained by becoming listed in the Buenos Aires stock exchange, and its wartime success resulted in the decision to erect a second plant outside Rosario, on a greenfield site with good communications and where a port could be built. ACINDAR acquired land in Villa Constitución, a spot

³⁹ *Metalurgia*, August 1949, p.5.

⁴⁰ *Monthly Journal of the British Chamber of Commerce in the Argentine Republic*, April 1950, p.40; La Cantábrica, 'Memoria y balance general correspondiente al 47º Ejercicio cerrado el 30 de Junio de 1949', *Boletín*, 16 January 1950, p.405.

⁴¹ La Cantábrica, 'Memoria', *Boletín*, 15 October 1945, p.300, and 'Memoria', *Boletín*, 16 January 1950, p.405.

⁴² *Journal*, April 1950, p.40.

⁴³ La Cantábrica, 'Memoria', *Boletín*, 16 January 1950, p.405.

⁴⁴ Roberto Bisang, *Maduración tecnológica, acumulación económica y generación de ventajas comparativas* (mimeo, Sussex, 1989), p.47.

that met these criteria and was situated near the proposed location of SOMISA (see Map 3.2). Unlike other private steel producers, and despite severe problems in US-Argentine relations and 'official' American reluctance to promote industry south of the Río Grande after the Second World War, ACINDAR benefited from the willingness of US big business to take advantage of opportunities in Latin America. It awarded the Republic Steel Corporation a 3-year contract for technical assistance, under which it was to direct the Villa Constitución project, supervising the erection and commissioning of the plant, and training the future operating personnel. Nevertheless, the execution of the project was seriously delayed by the severe crisis of the late Forties, and the Ingeniero Acevedo plant only came into operation during the Fifties.⁴⁵

Private sector producers had developed steel production to overcome wartime shortages and sustain their output of finished goods. However, notwithstanding the existence of backward linkages, their production process was neither fully integrated nor large-scale. The use of Siemens-Martin furnaces allowed producers to both circumvent wartime shortages of imported pig iron and employ considerable amounts of scrap as a raw material. The difficulty was that excessive dependence on scrap as an input was unwise (see Chapter 5). Although domestic steel production had risen and contributed significantly to satisfy demand in wartime, output levels were insufficient to substitute imports as the main source of iron and steel in peacetime conditions. The capital base of these producers were insufficient for the development of an integrated large-scale steelworks, as huge capital outlays and modern technology were required. One ambitious but unsuccessful initiative to build a large steelworks launched by the notorious arms tycoon Fritz Mandl between 1939 and 1941 attempted to overcome that problem by overtly seeking foreign assistance.

Mandl escaped to the Republic in 1938 following the German annexation of Austria. As a supporter of the Heimat party, he had opposed this and his Austrian properties were confiscated after the *Anschluss*.⁴⁶ Involved in the international trade of arms, whose manufacture depended on iron and steel, Mandl already had the idea of building a steelworks in Argentina when he settled there. His motives for

⁴⁵ ACINDAR, *Historia*, pp.86,87.

⁴⁶ Statement by Juan Atilio Bramuglia, Minister of Foreign Affairs, on Fritz Mandl during the debate on extraordinary and supplementary credits for ministries and government departments, 24 and 25 June 1948, Congreso Nacional, *Diario de Sesiones de la Cámara de Diputados*, Año 1948, Tomo II, p.1358.

such an undertaking became the subject of debate due to his dealings with the Third Reich. It was alleged that major producers, particularly German companies, which had participated in the ISC wanted to expand their industrial park overseas as the inevitable outbreak of war threatened serious damage to their exports. It was claimed that, in order to achieve this, the German military establishment allied itself with international arms magnates and financiers.⁴⁷ Although Mandl's scheme was far from being Nazi-inspired, it fit the bill by involving Germany (see below) and was thereby conflated with Nazi plots in South America.

Mandl's initial effort to obtain machinery within Argentina floundered. In the course of a European tour in early 1939 he met Barbanson of ARBED, a leading shareholder in TAMET, and failed to acquire the old Vasena equipment because it had already been sold to La Cantábrica.⁴⁸ Therefore, Mandl had to acquire both capital and technology, and he sought to obtain the simultaneous collaboration of American and German interests. This contrasted sharply with the case of the Volta Redonda project being undertaken in Brazil, where the United States of America and Germany competed to provide the Vargas régime with assistance. Mandl turned to the Americans for capital and advice on his project, and to Germany for the technology. The key financial backing was to come from the J. Henry Schroder Banking Corporation of New York, through its banking subsidiary Argentaria in Buenos Aires. During a visit to the USA in 1940, Mandl set up a syndicate to study the project, comprising the J. Henry Schroder Banking Corporation and the financial house Carl M. Loeb, Rhoades & Co.⁴⁹

Germany, which would provide the technology, was involved in the project from its inception. Mandl returned from his European visit in 1939 with Joseph Hatting, a metallurgical engineer once employed by the German weapons manufacturer Rheinmetall and SS officer, who worked with Mandl until

⁴⁷ Statement by Arturo Frondizi, Radical deputy for the Federal Capital, during the debate on the Draft Bill considering several unrelated issues, including the increase of capital for SOMISA, 28 September 1950, *Diputados, Año 1950*, Tomo IV, p.3463.

⁴⁸ Ronald C. Newton, *The 'Nazi Menace' in Argentina, 1931-1947* (Stanford, 1992), p.325.

⁴⁹ Despatch from C.A.E. Shuckburgh, First Secretary at the British Embassy in Buenos Aires, to the South American Department, FO, London, 28 June 1944, containing copies of documents regarding the activities of Fritz Mandl that were sent by the British Embassy in Buenos Aires to the Ministry of Economic Warfare in London, 27 June 1944. FO 371 37719 AS 3708/101/2.

the scheme petered out.⁵⁰ Although Mandl later claimed that his syndicate officially contracted Brassert & Company of Chicago to study the undertaking only in 1940, there is evidence that this engineering firm was already involved. Hermann Brassert, another German, was involved in the technical organisation of Mandl's proposed technology supplier, the Hermann Göring Reichswerke in Nazi Germany.⁵¹ Brassert & Co. was engaged to prepare an assessment for approximately US\$ 10,000, and it appears that Brassert himself visited the Republic in 1939. The report was rendered in early 1940.⁵² Soon after its completion by Hatting and Brassert, the latter fell out with Mandl for unknown reasons. Brassert then attempted to sell a copy of the report to the Argentine Government for US\$ 150,000, claiming that his project would meet both military and commercial requirements and that it had financial backing from the US Export-Import Bank. In the summer of 1940, Brassert held conversations with the State Department, which expressed interest owing to the concern of US steelmakers as ARMCO with such a project. However, the State Department urged caution and the overtures were rejected.⁵³ Nevertheless, this was a temporary setback as ARMCO would become involved in the SOMISA project in the mid-Forties.

Although Mandl later asserted that his attempted collaboration with German interests was the work of the Schroder Banking Corporation, there is no evidence that the American firms involved colluded in the dealings with the Göring Reichswerke.⁵⁴ In fact, Mandl himself had sought German collaboration and this 'unholy alliance' suited both interested parties. For Germany, it was an opportunity to strengthen its position in the Argentine market for iron and steel products. The Reichswerke already had Latin American business interests of its own since, in the aftermath of the *Anschluss*, the acquisition of the Austrian Steirische Gusstahlwerke (a member of the Central European Group of the ISC) had given it control over

⁵⁰ Ibid.; Newton, *Menace*, p.325.

⁵¹ Kurt Lachmann, 'The Hermann Göring Works', *Social Research* VIII (1941) No.1, p.29.

⁵² Despatch from Shuckburgh to the FO. FO 371 37719 AS 3708/101/2.

⁵³ Newton, *Menace*, pp.325,326.

⁵⁴ Despatch from Shuckburgh. FO 371 37719 AS 3708/101/2.

three marketing companies in Argentina, Brazil and Uruguay.⁵⁵ Given the German failure to influence the Volta Redonda steelworks project, participation by the Reichswerke in the Mandl scheme would give Berlin leverage over the development of another South American steel plant. On the other hand, Mandl had two motives to seek German collaboration. These were technological and political. Regarding the former, the Reichswerke were working on a formula by which steel was extracted under high temperature from iron ore bearing sands, like those available in the southern coast of the province of Buenos Aires and which Mandl hoped to industrialise. However, the technology was not fully developed.⁵⁶ As for political speculation, the course of the war dictated how Mandl dealt with Germany. He was convinced of a Nazi victory in 1940 and, by involving the Reichswerke in his Argentine project, hoped to gain some favour regarding his confiscated Austrian properties.⁵⁷ After all, following the *Anschluss*, the Reichswerke had acquired the control of most Austrian heavy industry (raw material production, sales and distribution, armaments manufacture), including the Hirtenbergwerke owned by the Mandl family.⁵⁸ Mandl conducted his negotiations through Johann Wehrli in Switzerland, an intermediary who had previously dealt with the expropriation of the Austrian properties and assets of the arms tycoon. By the time the Reichswerke replied in April 1941 that they were willing to collaborate, Mandl had changed his opinion on the war. He rightly concluded that Germany would lose eventually, owing to three factors: Britain had survived the Nazi onslaught, Roosevelt was re-elected as US President, and the Americans were rapidly sliding towards war with Japan. Accordingly, Mandl declined the German offer and his project faded away.⁵⁹

The Mandl scheme had two major weaknesses. First, it aimed to obtain simultaneously capital and technology supplies from two competing powers in wartime, which was not realistic. And second, it would be based on an untried technology. More critically, the project had two major implications. (i) It became linked to the US embargo imposed on Argentina in 1942. Mandl's activities, which extended beyond the

⁵⁵ Richard J. Overy, *War and Economy in the Third Reich* (Oxford, 1994), p.150, fn.23.

⁵⁶ Despatch from Shuckburgh. FO 371 37719 AS 3708/101/2.

⁵⁷ Newton, *Menace*, p.327.

⁵⁸ Overy, *War*, p.150; Newton, *Menace*, p.324.

⁵⁹ Despatch from Shuckburgh. FO 371 37719 AS 3708/101/2.

steelworks project and went unchecked, were of the type that fuelled American suspicions about the Argentine failure to break relations with the Axis. They therefore had an effect on the shape of Washington's antagonistic policy towards Buenos Aires, which remained in force until the late Forties and adversely affected progress with the Plan Siderúrgico Argentino (see Chapter 6). (ii) Mandl's scheme again exposed the problem of insufficiency of domestic private capital to develop large-scale iron and steel production. As indicated earlier, some private sector producers had obtained financial resources from banks to undertake steelmaking, but their level was inadequate to cover the huge outlays necessary to invest in a modern steelworks. However, by the time Mandl had abandoned his efforts, international instability fostered demands to develop heavy industry from an entirely different quarter: the Armed Forces. As is seen below, they clamoured for the promotion of steel production since the Twenties and, with strong influence on the government after 1930 (see Chapter 2), increased the pressure to achieve this objective.

THE BEGINNING OF STATE INTERVENTION IN HEAVY INDUSTRY

State intervention in the development of heavy industry can be traced back to the Twenties. The government expressed interest in the subject, but never got beyond compiling reports. However, real pressure came from nationalist elements within the Army - particularly the Engineering Corps. From the military perspective, the lack of industrial development restricted the technical capacity of the Armed Forces to guarantee adequately national defence requirements.⁶⁰ Sections of the Armed Forces firmly believed that the capability to wage war was dependent on the presence of an efficient industrial capacity, and asserted that the State should intervene in financing and operating vital installations through the Army.⁶¹ These views were promoted at government level by General Justo, the powerful Minister of War, and gained the support of President Alvear. As seen in the previous chapter, the State-owned oil company Yacimientos Petrolíferos Fiscales (YPF) was placed under General Mosconi. Under his direction, YPF enjoyed a period of growth which was reflected in the increase of both production and refining capacity. Besides oil, the

⁶⁰ María del Carmen Angueira and Alicia del Carmen Tonini, *Capitalismo de Estado (1927-1956)* (Buenos Aires, 1986), p.55.

⁶¹ Carl E. Solberg, *Oil and Nationalism in Argentina* (Stanford, 1979), pp.82,83.

Army planned to establish a whole range of defence-related industries. Most of them were to be located in Córdoba, as the military believed that this province could be better defended in the event of an attack owing to its location in the centre of the country. The first of these industrial plants, the Fábrica Militar de Aviones, opened in 1927.⁶² With the onset of the world economic crisis, the projects for armaments factories were shelved. As seen in Chapter 2, the Uriburu régime was rightly more concerned with restoring order to national finances and thereby defence spending was reduced.⁶³ The Army's aspirations of self-sufficiency in military hardware were boosted when General Justo became President in 1932. Military expenditure was increased and a number of defence-related industrial projects were launched, the most important being the Fábrica Militar de Aceros.

Mining, metallurgy and iron and steel production had not been supported by the State during the Twenties. This decision was criticised by several influential officers. Colonel Luis Vicat, a metallurgical engineer, emphasised that the State should promote a national heavy industry in order to escape dependence on foreign trade and a strategically dangerous situation. The Italian example was frequently evoked to support the contention that the apparent lack of high-grade iron ore need not prevent the development of a steel industry.⁶⁴ In the absence of adequate raw materials and to overcome import shortages, scrap-based steel production had mushroomed in Italy during the First World War.⁶⁵ During the Second World War, this example could have well inspired Argentine private metallurgical firms which undertook steel production in similar circumstances. However, contrary to expectations, the intensive use of scrap as a raw material was far from a secure foundation for heavy industry (see Chapter 5).

The arguments of the Twenties were strengthened in the early Thirties by the onset of the Depression, the severity of the economic crisis and the coming to power of the Army. Given the deteriorating international situation and rivalry with Brazil, the Armed Forces concluded that the

⁶² Jorge Schvarzer, *La industria que supimos conseguir* (Buenos Aires, 1996), pp.136,137.

⁶³ Ibid., p.178.

⁶⁴ Solberg, *Oil*, p.84.

⁶⁵ British Iron and Steel Federation, *Monthly Statistical Bulletin* 27 (1952) No.4, p.1.

development of military industrial capacity required steelmaking for the production of tools, munitions and weapons. Thus, the erection of a military steel plant was decided in 1933.⁶⁶ Construction of the Fábrica Militar de Aceros, which was located in the Buenos Aires suburb of Valentín Alsina (see Map 3.1), began in 1934. This initiative was ill-planned, lacked support outside the Army, and was financed from credits which had been originally earmarked for other military expenditure. Nonetheless, work progressed.⁶⁷ The Fábrica Militar de Aceros was established on 31 December 1935, and became a dependency of the newly created Dirección de Fábricas Militares on 24 December 1936. The plant was set up in the abandoned Polvorín del Riachuelo, which required renovation, and opened in July 1937.⁶⁸ It was one of two steel producers, the only other one at this time being the Talleres Vulcano. These two plants were the only producers of rolled goods until 1940, and of ingots until 1942. The Fábrica Militar surpassed its civilian counterpart and by 1946 became the fourth largest national producer of metallurgical goods, with just over 10% of total output. Production began with an American designed Siemens-Martin furnace in 1937; another of national manufacture, based on the original and which enabled the military to circumvent the US embargo, was added in 1942.⁶⁹ Such domestic technical ingenuity resulted in the doubling of capacity and an increase and diversification of output. The Fábrica Militar rolled iron, billets and slabs for artillery munition, and sheets. The latter were mostly thin sheets, which were then unique in South America.⁷⁰

Although the Fábrica Militar was a modest achievement, it laid the foundations for future developments. Military pressure for the development of heavy industry intensified in the late Thirties, owing to two factors. First was the deterioration of the economy after 1938, which renewed military concerns over

⁶⁶ Alberto S.J.de Paula, 'Reestructuración operativa de la industria bélica argentina', in María Haydée Martín, Alberto S.J. de Paula and Ramón Gutiérrez (eds.), *Los ingenieros militares y sus precursores en el desarrollo argentino (1930-1980)* (Buenos Aires, 1980), p.81.

⁶⁷ Garimaldi, *Industria*, pp.20-22.

⁶⁸ De Paula, 'Reestructuración', p.81.

⁶⁹ Ricardo Lesser and Marta Panaia, 'Las estrategias militares frente al proceso de industrialización (1943-1947)', in M. Panaia, R. Lesser and P. Skupch (eds.), *Estudios sobre los orígenes del peronismo*, Volume 2 (Buenos Aires, 1973), p.104.

⁷⁰ Ministerio de Guerra, *Dirección General de Fabricaciones Militares, 1941 - 9 de Octubre - 1945* (Buenos Aires, 1945), unpaginated.

the vulnerability of the Argentine economy to international conditions. Poor harvests in 1938 resulted in lower production and export volumes, and coincided with a reduction in international grain prices consequent from the recovery in North American agricultural exports.⁷¹ Problems were further aggravated by the outbreak of the Second World War, which resulted in reduced shipping capacity for exports and shortages of vital imports (see Chapter 2). The second factor that encouraged the Army to press for basic industrial development was the perception that the national security situation was worsening. Brazil appeared to threaten increasingly Argentine dominance of the Southern Cone of South America. Its defence spending seemed considerably greater than that of Argentina.⁷² Brazil was also an iron and steel producer. While Argentine iron and steel output on the eve of the Second World War was minimal, Brazilian production had been initiated in the Twenties and by 1939 was sufficiently high to reduce dependence on imported iron and steel. In 1939, Brazil produced 160,016 tons of pig iron, 114,095 tons of steel ingots and 100,996 tons of rolled goods.⁷³ This total would later be expanded with the establishment of the Volta Redonda integrated steelworks, a project which involved American assistance.

With renewed economic problems and increased security anxieties, the creation of heavy industry was considered an essential step for development and critical to national defence. Military pressure resulted in the foundation of the Dirección General de Fabricaciones Militares in June 1940 by the government of ailing President Ortiz. As this project only became law in October 1941, the credit went to Acting President Castillo.⁷⁴ Law 12,709 established the functions of the DGFM, and those specifically related to iron and steel were to carry out explorations for minerals and obtain iron, build the necessary works for its extraction, promote related industries, and to elaborate war materiél.⁷⁵

⁷¹ Benjamin A. Most, *Changing Authoritarian Rule and Public Policy in Argentina, 1930-1970* (Boulder, 1991), pp.83,84.

⁷² Ibid., p.85.

⁷³ Werner Baer, *The Development of the Brazilian Steel Industry* (Nashville, 1969), p.61.

⁷⁴ Robert A. Potash, *El ejército y la política en la Argentina, 1928-1945* (Buenos Aires, 10th ed., 1982), p.181, fn.58.

⁷⁵ Lesser and Panaia, 'Estrategias', p.105.

The key promoter of heavy industry was General Manuel N. Savio, who headed the DGFM until his premature death in 1948. He intended to establish a whole range of basic industries, but faced many obstacles (not least with the Plan Siderúrgico Argentino, as is seen below) and his tenure at Fabricaciones Militares was too brief for him to achieve his goals.⁷⁶ The most remarkable feature of these industrial projects regarded their ownership. Savio introduced new perceptions on State involvement in industries processing 'strategic' minerals. Rather than advocate outright intervention, he believed that the vehicle to achieve military industrial objectives were *sociedades mixtas*. Incorporated into Law 12,709, this concept would enable the State to share large expenditures of installation and maintenance with private sector capital. Since no industrial mixed companies existed, this measure was guided by Law 12,161, which awarded the faculty of veto to the State.⁷⁷ Savio recognised that the DGFM budget could not provide all the capital required for the enterprises, and stressed that they had to be formed as mixed corporations with private interests.⁷⁸ These included foreign interests, whose cooperation in major projects was not opposed in principle by the Army.⁷⁹ Although mixed corporations would allow the State to sustain an industry and provide technical assistance, the State had no evident commercial purpose in these industries and its participation could only be transitory. Hence, private interests could eventually be left in charge of the *sociedades mixtas*. There were, nevertheless, some factories where the private sector could not be involved: those producing arms, munitions and explosives.⁸⁰

Savio's conceptions implied that the State was to have an initiating role through the Fabricaciones Militares, a dependency of the Ministry of War. However, the requirements of iron and steel production were more complex. The DGFM was determined to 'have' heavy industry for military purposes at any cost,

⁷⁶ Schvarzer, *Industria*, p.180.

⁷⁷ General Manuel N. Savio, 'Ley de Fabricaciones Militares: conceptos que fundamentaron su proyecto', Buenos Aires, 25 September 1943, in SOMISA, *Obras del General Manuel N. Savio* (Buenos Aires, 1973), pp.406,407.

⁷⁸ General Manuel N. Savio, 'Política de la producción metalúrgica argentina', 1942, in Blas Alberti (ed.), *Fuerzas Armadas y Nacionalismo Económico* (Buenos Aires, 1982), p.54.

⁷⁹ Robert A. Potash, *The Army and Politics in Argentina, 1945-1962* (London, 1980), p.64.

⁸⁰ Savio, 'Ley', pp.407,408.

but could not provide all the capital and lacked the commercial and technical experience to establish a modern steelworks. Private producers had some experience, as the technical ingenuity of local engineers enabled them to commission equipment and plants, but lacked the capital necessary to develop integrated production. The alternative was to set up mixed corporations to develop heavy industry, which the military believed would result in the achievement of the political objectives of the Army and the growth of existing capacity.

THE DEVELOPMENT OF THE PLAN SIDERÚRGICO ARGENTINO (PSA)

The Plan Siderúrgico devised by Savio stated the four purposes of having an iron and steel industry. The first purpose of the PSA was domestic steel production, using the most economically advantageous combination of local and foreign raw materials. The second was to supply the domestic processing and finishing industries with high quality steel at prices comparable to those prevailing internationally. The third purpose was to promote the installation of modern steel processing and finishing plants. Finally, the Plan was to ensure the development and ultimate stability of the steel industry.⁸¹ Although these tenets appeared economically sound, there was no indication as to how or when they would be achieved. Moreover, even though it was based on three industrial units, the Plan laid its entire emphasis on a single component: the Sociedad Mixta Siderurgia Argentina project. This suggests that the PSA was not exactly a plan but merely a vehicle for the DGFM to achieve its objectives.

The DGFM proposal foresaw the constitution of three industrial units, which were interdependent and to be established as separate companies. The first of these was the blast furnace at Palpalá, which would produce pig iron utilising ores from the nearby Zapla deposit. The decision to make it a separate enterprise was based on its location, and the unlikelyhood of attracting the participation of the private sector. The second unit foreseen by the PSA would produce steel in Siemens-Martin furnaces and obtain semifinished materials in a blooming mill. The third comprised the plants carrying out rolling and finishing operations. Two distinct mixed corporations would be established for steel production and rolling, as there

⁸¹ Translation of the Draft Bill of the PSA, *The Review of the River Plate (RRP)*, 18 April 1947, p.11.

would be private sector interest and to prevent the creation of a monopoly controlling these two activities.⁸² However, the attempts to set up the enterprises for each stage of production proved far more difficult than foreseen by Savio.

The first unit of the PSA: the Altos Hornos Zapla (AHZ)

The DGFM envisaged a first unit for pig iron production, a resource-oriented project comprising sources of raw materials and nearby blast furnaces to process them.⁸³ This was the wartime development of the iron ore deposits at Zapla in the remote province of Jujuy. Given its location and being the first undertaking of this kind, the venture failed to attract private interests. The private sector considered exploitation uneconomic in view of the large capital investment required and lack of adequate machinery for mining and processing the ore, and had many doubts about the ores.⁸⁴ There were no clues as to how much Zapla iron would cost in Buenos Aires compared with imports, if it could be used economically to manufacture special steels comparable in quality and price with imports, what impact the 1,600 kilometre haul by rail from Zapla to Buenos Aires would have on costs, or how difficult it was to obtain charcoal to fuel the blast furnace.⁸⁵ The latter issue also deterred private investors, as charcoal-based production was the only option available for Zapla but not the most modern nor economic method (see Chapter 5).

Notwithstanding the lack of private investors, the DGFM went ahead with the development of Zapla as this project was a comparatively modest undertaking. Nevertheless, as its budget had to finance other projects, the Fabricaciones Militares still hoped to restrict its role in Zapla to being either a shareholder or independent supplier.⁸⁶ It obtained funds from the local provincial government, which was interested in

⁸² Bases for the Mixed Company contest for the constitution of the Second Iron and Steel Unit of the plan of the DGFM, in DGFM, *Plan Siderúrgico Argentino* (Buenos Aires, 1946), p.143.

⁸³ General Manuel N. Savio, 'Bases para la industria del acero en la República Argentina', Córdoba, 1942, in SOMISA, *Obras*, p.391.

⁸⁴ *Monthly Journal*, April 1950, p.38.

⁸⁵ *RRP*, 19 October 1945, pp.13,14.

⁸⁶ Savio, 'Bases', p.391.

the scheme. The DGFM and the Jujuy authorities signed a contract in August 1942 establishing the conditions for working the mine on a profit-sharing basis and the construction of the blast furnaces and processing plants.⁸⁷ Once the wealth and size of the deposits was confirmed in 1942, the area was declared a national reserve.⁸⁸ Decree No. 141,462 of 23 January 1943 stipulated that Establecimiento Altos Hornos Zapla or AHZ was the name for the industrial unit consisting of the iron ore deposit in the Zapla hills and the installations at Palpalá. In August 1943, the DGFM undertook the exploitation of the '9 de Octubre' mine. However, despite some experience in small-scale iron and steel production at the Fábrica Militar de Aceros and the successful expansion of this plant in the Forties (see above), the Army lacked the necessary technical know-how and expertise on blast furnaces. Therefore, international tenders were invited for the Adjudication of the Project, Construction and the Making Operational of a charcoal-fuelled blast furnace, and the Swedish firm Svenska Entreprenad AB successfully submitted a proposal.⁸⁹ This firm was chosen on two accounts. (i) It could satisfy the technical requirements of the AHZ project as Sweden, which lacked coal, had expertise in charcoal-based iron and steel production and had made some technological advances in this field (see Chapter 6). (ii) Sweden was neutral in the Second World War. There was no possibility of Britain or Germany contributing industrial equipment, as capital goods necessary to sustain production related to the war effort would not be exported. The USA would not contribute equipment either, as export licenses were limited and Washington was attempting to enforce an economic embargo on the Republic over Argentine wartime neutrality.

The AHZ blast furnace was built according to Swedish plans at a construction cost of SKr 180,000, which was equivalent to approximately m\$n 163,000 on 31 December 1943.⁹⁰ Construction was begun by the DGFM in May 1944. Financed from the budgets of the DGFM and the Jujuy government, the project

⁸⁷ *Monthly Journal*, April 1950, p.38.

⁸⁸ DGFM, *Fabricaciones Militares. Visión de una gran empresa* (Buenos Aires, 1973), p.62.

⁸⁹ Ricardo Fernando Marcos, *Altos Hornos Zapla* (Jujuy, 1980), unpaginated.

⁹⁰ *Ibid.*; the conversion from SKr to m\$n is based on data in *Business Conditions in Argentina*, No.242, April 1944, p.53.

also involved the firm Thyssen Lametal, which built the cable car to transport iron from the mine to Palpalá.⁹¹ The blast furnace started production of pig iron on 11 October 1945, an event which passed unnoticed owing to political turmoil at the time.⁹² The AHZ initially comprised one blast furnace with a capacity of 60 tons and was considered an experiment, in order to verify its efficiency and the aptitude of the raw materials.⁹³ With the performance deemed satisfactory from a strictly technical viewpoint, construction of a second furnace began in August 1950 and was completed on 10 April 1951.⁹⁴

The second unit of the PSA: the Sociedad Mixta Siderurgia Argentina (SOMISA)

The DGFM project envisaged a second unit which would produce steel in open-hearth furnaces and semifinished materials in a blooming mill. The effort to attract private sector participation proved far more successful than with Zapla since output from the second unit would increase steel supplies for the private producers and thereby allow them to increase production. Nevertheless, major setbacks occurred. Tenders, to be submitted by 15 September 1944, had to meet three requirements. (a) The plant was to comprise a foundry with the capacity to manufacture 150,000 tons of pig iron and semifinished materials annually, and a rolling mill with the capacity to produce 350,000 tons annually. (b) Both components of the unit were to be located in the immediate vicinity of one of the riverside ports on the Paraná, and designed to handle scrap and nationally produced iron ore. (c) The project was to achieve the minimum steel production necessary for the domestic industry and especially defence-related sectors to avoid shortages in times of crisis.⁹⁵

The DGFM held the tender contest on 3 November 1944. The only detailed, feasible proposal

⁹¹ Marcos, *Zapla*, unpaginated.

⁹² Larra, *Savio*, p.147.

⁹³ DGFM, *Fabricaciones*, p.64.

⁹⁴ DGFM, *El hierro de Zapla* (Buenos Aires, 1954), p.4.

⁹⁵ Despatch no.191 'E' from Sir D.V. Kelly, British Ambassador in Buenos Aires, to the Rt.Hon. Anthony Eden, FO, 2 July 1944. FO 371 37676 AS 3928/4/2.

submitted was that of a consortium comprising the local firms TAMET, La Cantábrica, and SIAM Di Tella and the US steel group ARMCO.⁹⁶ Other foreign interests were also indirectly involved: ARBED had a substantial participation in TAMET and Westinghouse partly financed SIAM Di Tella. The proposal recommended that the *sociedad mixta* should have an initial capital of m\$n 100,000,000, to which the private sector shareholders would subscribe m\$n 10,000,000, and that the technical management should be in the hands of ARMCO Argentina.⁹⁷ In addition, the proposition set the tone for PSA guidelines on the use of a mix of national and foreign minerals. Although the proposal affirmed that the project had to be based on the use of national resources, its signatories foresaw that it would be more advantageous to import minerals in peacetime and preserve national raw materials for emergencies.⁹⁸ This responded to the inadequacy of national mineral supplies (see Chapter 5) and the high costs of transportation. The other domestic iron and steel producers not involved in the proposal supported the scheme as they stood to benefit from it. Hence, Savio suggested negotiations with all local steelmakers and companies re-rolling imported billets and slabs, aiming to shape their development within the PSA and their eventual involvement in the mixed enterprise. The recommendation was accepted by the private investors and Savio prepared the project, which was discussed in detail by its participants.⁹⁹ Although the proposed *sociedad mixta* represented the modernisation of existing capacity, the framing of all private steelmakers within the PSA and their participation in the mixed company signalled a tendency towards creating a local monopoly.

An agreement between the DGFM, the signatories of the tender, the adhering industrialists and ARMCO Argentina was signed on 19 January 1946. It detailed the role of the ARMCO subsidiary in the project, which was critical to its success. ARMCO Argentina was not only a shareholder but also contractor and operator. It was awarded the contract for the production of feasibility studies, the installation and commissioning of the plant, and the management of the works when SOMISA became fully operational.

⁹⁶ Proposal presented by TAMET S.A., La Cantábrica S.A., SIAM Di Tella Ltda., and ARMCO Argentina S.A. at the contest held on 3 November 1944, in DGFM, *Plan*, p.154.

⁹⁷ Despatch no.11 'E' from Shuckburgh to Eden, 10 January 1945. FO 371 44751 AS 729/729/2.

⁹⁸ Lesser and Panaia, 'Estrategias', p.149.

⁹⁹ Larra, *Savio*, pp.143,144.

The agreement also specified three preparatory work undertakings for constituting SOMISA. (i) A whole series of specifications and plans was to be prepared for a plant with an annual production capacity of around 315,000 tons of billets, blooms and slabs, but which had to allow for an increase in capacity upto 500,000 tons and perhaps later to 800,000 or even 1,000,000 tons. The preparation of the plans and specifications was to be implemented by ARMCO Argentina within 1 year of the agreement being approved by the Executive Power. (ii) The cost of the remaining work involved in the complete technical management was to be calculated, and presented within 90 days of the agreement being approved by the Executive Power. (iii) The materials necessary for the installation of the plant which were unrelated to technical management (eg, land, machinery, vehicles) were to be purchased.¹⁰⁰ The estimated cost of these undertakings was m\$n 4,000,000, to which the State would contribute m\$n 3,700,000 and the private shareholders m\$n 300,000. These amounts would be entered in the books and considered as part of the paid-up capital subscriptions of the shareholders.¹⁰¹

The private shareholders and shareholding partners confirmed their intention to contribute m\$n 10,000,000 to the authorised capital of SOMISA on 19 January 1946. The largest contributions would be furnished by La Cantábrica, TAMET and ARMCO Argentina, which each agreed to subscribe shares amounting to m\$n 2,000,000. The other major share subscriptions would be those of ACINDAR's founders with m\$n 1,500,000, Santa Rosa with m\$n 1,100,000, and SIAM Di Tella with m\$n 500,000.¹⁰² Given the levels of private and State contributions to the project, the *sociedad mixta* was hardly 'mixed'. Nevertheless, as was indicated earlier, State predominance was intended to be transitional as the DGFM merely aimed to have an initiating role in industrial projects. Therefore, an article in the corporation's statutes allowed private shareholders to expand their holdings of integrated capital in the *sociedad mixta* upto 49% after 1 year of SOMISA becoming operational and, if the State agreed, enabled them to acquire up to

¹⁰⁰ Translation of the agreement on the preparatory work for the constitution of SOMISA, Buenos Aires, 19 January 1946, *RRP*, 30 May 1947, p.15.

¹⁰¹ *Ibid.*, p.14.

¹⁰² Undertaking of subscription of shares, Buenos Aires, 19 January 1946, in DGFM, *Plan*, pp.128,129.

90% of the integrated capital. The remaining 10% could not be purchased.¹⁰³

The PSA was submitted to President Farrell on 24 January 1946, but received little attention as a general election approached. It got a new lease of life following the *Peronista* victory. Savio presented his project at a cabinet meeting with the backing of General Sosa Molina, the Minister of War, and obtained full support from Perón. Not only did the latter accept the Plan in its original form, but also allowed Savio to prepare both the text of the Draft Bill and the Message from the President presenting the Bill to Congress. By signing the proposed legislation, Perón expressed identification with the PSA.¹⁰⁴ At least at the start of his presidency, Perón was not opposed in principle to enlist private or foreign capital for major development projects.¹⁰⁵ It must be noted that the PSA is not the only example of this approach. A comparable mixed enterprise proposal had been prepared for the British-owned railways under the Miranda-Eady treaty of September 1946, which resulted from the Anglo-Argentine renegotiation of the waning 'special relationship'. In the case of the railways, a corporation was to be formed for the acquisition and exploitation of their goods, with its capital fixed at m\$n 2,000,000,000. The old British companies were to participate at the value of their existing investments, and the State was to contribute m\$n 500,000,000 for the modernisation of lines projected in its Five-Year Railway Plan. In addition, the new company would have significant advantages including tax exemptions, the extension of the duty exemptions provided under the Mitre Law (due to expire in 1947), and a guaranteed operating revenue; the State would cover the disparity when net income dropped below the guaranteed minimum level.¹⁰⁶ As with SOMISA, the railways mixed corporation was intended to be an 'intermediate' stage. Upon reasonable notice, the Government could buy shares until it gained full control, but was not obliged to take control.¹⁰⁷ The most

¹⁰³ Estatutos de Siderurgia Argentina, Sociedad Anónima Mixta, in *Obras*, p.295.

¹⁰⁴ Larra, *Savio*, pp.145,154 and fn.p.153.

¹⁰⁵ Potash, *Army*, p.64.

¹⁰⁶ Pedro R. Skupch, 'Nacionalización, libras bloqueadas y sustitución de importaciones', *Desarrollo Económico* 12 (1972-1973) No.47, p.489; Winthrop R. Wright, *British-Owned Railways in Argentina* (Austin, 1974), p.251; Jorge Fodor, 'Argentina's Nationalism: Myth or Reality?', in Guido Di Tella and Rudiger Dornbusch (eds.), *The Political Economy of Argentina, 1946-1983* (Basingstoke, 1989), p.38.

¹⁰⁷ Wright, *Railways*, p.251.

significant similarity between the two *sociedad mixta* proposals was that both suffered the same fate. They came under heavy fire and the enterprises ended up wholly State-owned. The main opponents were Radical and 'extremist' *Peronista* members of Congress, who displayed immoderate anti-foreign views towards the proposals for the railways and, as is seen below, the steelworks. In addition, the railways scheme was opposed by the railroad unions, at the very moment Perón was waging battle for greater control over trade unions. While the railway nationalisation was also a means to strengthen Perón's political position, SOMISA was left under greater State control than originally planned as the only alternative to salvage the project from opposition in Congress.

The Draft Bill of the PSA and Statutes of SOMISA was submitted to Congress on 26 July 1946, and approved by the Senate with *media sanción* in November that year. Because Congress went into recess, La Cantábrica, SIAM Di Tella, TAMET, and ARMCO Argentina issued a complementary document extending their proposal's term of validity until 30 April 1947. The extension, which was not the first, was necessary to allow Congress to approve the Bill and authorise the constitution of the mixed enterprise.¹⁰⁸

Following approval by the Senate, the Draft Bill was referred to the relevant Congressional Committees.¹⁰⁹ It was at this stage that the concept of mixed corporations as applied to SOMISA came under fire. The PSA suffered two major setbacks concerning the participation of the private sector and the size of its shareholdings. Foremost was the objection against the article in the SOMISA statutes enabling the private investors to acquire up to 90% of the integrated capital (see above). The Minister of War argued that there was no obligation for this to be implemented, since national interests were affected, and that 90% of the DGFM capital could not be easily absorbed by private shareholders.¹¹⁰ This did not convince the opposition. However, the Committees acknowledged that, though it should retain substantial control of heavy industry, the DGFM could not provide from its budget all the capital for the enterprises it was

¹⁰⁸ Translation of the complementary minutes of the future private shareholders of SOMISA drawn up at a meeting with the DGFM, Buenos Aires, 31 December 1946, *RRP*, 30 May 1947, p.18.

¹⁰⁹ Communication from the Senate, 29 November 1946, *Diputados*, Año 1946, Tomo VII, p.693.

¹¹⁰ Summation speech by Minister of War General José Humberto Sosa Molina during the debate on the PSA, 8-9 May 1947, *Diputados*, Año 1947, Tomo I, p.343.

required to promote. Therefore, they made two recommendations. (a) A change in the composition of the capital, with m\$n 80,000,000 being subscribed by the State and the remainder by the private sector. (b) The limit of shares to be offered by the State for public subscription was to be 49% and that the remaining 51% could not be transferred.¹¹¹ The other setback concerned the size of private shareholdings in SOMISA. Argentine companies were required by law to have 80% of capital and directors of national origin, and thereby could have no shareholdings held by subsidiaries of foreign firms or companies involving foreign interests. The Congressional Committees had to make exceptions for the private shareholders (TAMET, SIAM Di Tella and ARMCO Argentina involved substantial foreign participation), but restricted their holdings to 2% each.¹¹²

The Draft Bill of the PSA reached the Chamber of Deputies on the night of 8-9 May 1947. On the eve of the Congressional debate, the proposal's terms of validity were again extended until 6 August 1947.¹¹³ During the debate, the crucial issue was that of private sector participation. The most ardent opponent to *sociedades mixtas* was Arturo Frondizi, spokesman for the Radical block. He argued that the State should control 'strategic' industries, and that private sector participation should be limited and restricted to those firms which could provide technical knowledge or commercial experience. Though this argument was based on the fact that the State had to acquire the necessary technology and had no evident commercial purpose in the activity considered, it contradicted the facts. One of the private shareholders would supply the technology, and the other three were commercially experienced. Furthermore, the limit to be imposed on private sector involvement was not defined, and Frondizi pointed out that the State should have the right to confiscate private shares without indemnity.¹¹⁴ However, the dominant *Peronista* block defended the suggestion of the Committees, which was a variant on Savio's proposal. It argued that the

¹¹¹ Recommendations of the Comisiones de Defensa Nacional, de Legislación General, and de Presupuesto y Hacienda reviewing the Draft Bill of the PSA, 26 March 1947, *Diputados*, Año 1947, Tomo I, p.258.

¹¹² *Ibid.*

¹¹³ Message from the Executive Power on the extension of the term of validity of the undertakings related to the constitution of SOMISA, Buenos Aires, 8 May 1947, *Diputados*, Año 1947, Tomo I, p.185.

¹¹⁴ Debate on the PSA, *Diputados*, Año 1947, Tomo I, p.321.

military-controlled industrial empire was awarded ample control over SOMISA, for two reasons. (i) An increase in private capital could not exceed 49%. (ii) Under a provision in the Bill, the DGFM was awarded overall control of the PSA and over the handling of the advice received during the first 5 years.¹¹⁵

The military and the private shareholders reluctantly accepted the changes.¹¹⁶ In his summation speech, the Minister of War conceded that private sector participation could be of upto 49% - thereby accepting defeat over the initial proposal that it could be allowed to increase to 90%. Nonetheless, he also noted that private sector participation was not *entreguismo* and in the interest of industrial development, as the creation of heavy industry was related to national defence but not exclusively for that purpose.¹¹⁷ Following a heated debate, the recommendations of the Committees were accepted and the Bill was passed. However, the debate is best remembered for the onslaught over the participation of ARMCO Argentina, in which the government was attacked in sensationalist terms over the position granted in the Plan to this subsidiary of the US firm ARMCO (see Chapter 6 for an account). No objections were raised to the involvement of ARBED-Terres Rouges in TAMET and of Westinghouse of the United States of America in SIAM Di Tella.¹¹⁸ Approved by the Chamber of Deputies, the revised Bill returned to the Senate, where it was accepted.¹¹⁹ The Bill was approved, becoming Law 12,987 on 13 June 1947, and was followed by two decrees aimed at the constitution of the mixed corporation. Decree No.22,018 of 28 July 1947 designated the authorities representing the State for a period of 3 years, and Savio became the president of SOMISA. Decree No.22,315 of 3 August 1947 allowed these authorities to constitute the *sociedad mixta*. SOMISA was awarded the status of a juridical person, and 20% of the authorised capital had to be

¹¹⁵ Ibid., p.329.

¹¹⁶ Larra, *Savio*, p.156.

¹¹⁷ Summation speech by General Sosa Molina during the debate on the PSA, *Diputados*, Año 1947, Tomo I, p.341.

¹¹⁸ Despatch no.141 'E' from Sir Reginald A.Leeper, British Ambassador to Argentina, to the Rt.Hon. Ernest Bevin, FO, 23 May 1947. FO 371 61172 AS 3204/3204/2.

¹¹⁹ Consideration of the report of the Comisión de Defensa Nacional on the Draft Bill of the PSA under revision, 13 June 1947, Congreso Nacional, *Diario de Sesiones de la Cámara de Senadores*, Año 1947, Tomo I, p.224.

subscribed and 10% integrated.¹²⁰

The private sector industrialists adhered to the statutes of SOMISA as approved by Congress and ratified their undertaking to subscribe shares on 20 August 1947. However, ARMCO Argentina resigned its undertaking to subscribe m\$n 2,000,000.¹²¹ It was the price ARMCO was compelled to pay for political disapproval of its dual role in the steelworks project as shareholder and contractor. The Ministry of War, responding to Congressional objections, had already restricted the shareholding of ARMCO Argentina. A communiqué stressed that ARMCO could not hold more than m\$n 800,000 in shares out of the total capital of m\$n 100,000,000, nor its holding exceed 4% of the latter even if it did fulfill the qualifications of an Argentine juridical person. Despite this setback, ARMCO agreed to remain as contractor and would provide the technical information and personnel necessary for the success of the PSA.¹²²

Further steps were taken towards the conclusive organisation of SOMISA. The DGFM studied the two ARMCO proposals for a steelworks (with capacities of 315,000 and 500,000 tons respectively) in the PSA and, given the high levels of national iron and steel consumption, determined that the capacity of the steelworks should be 500,000 tons. The contract covering the technical direction and design of the steelworks was drawn up, under which SOMISA would comprise blast furnaces and a rolling mill with an annual output capacity of 500,000 tons, and a mill for the production of plates, sheets and tinplate with an annual capacity of 250,000 tons.¹²³ The contract was subscribed on 13 March 1948, and the Definitive Plan presented by ARMCO on 29 March 1948 was approved on 23 June 1948.¹²⁴ Despite progress on these technicalities, the PSA made little headway owing to political and economic constraints associated with the *Peronista* régime. The political constraints were embodied in the opposition from powerful people who

¹²⁰ Pedro F. Castiñeiras, *Esto lo hicieron los argentinos* (Buenos Aires, 1972), pp.30,31.

¹²¹ Ibid., p.32.

¹²² Despatch no.141 'E' from Leeper to Bevin, 23 May 1947. FO 371 61172 AS 3204/3204/2.

¹²³ Letter from J. Garnett Lomax, Commercial Minister at the British Embassy in Buenos Aires, to the South American Department, FO, 29 March 1948. FO 371 68091 AS 2274/1/2.

¹²⁴ Castiñeiras, *Esto*, p.39.

had gained Perón's favour. The most important of these was Miguel Miranda, the 'czar of the economy'. He had been called upon by Perón to direct the Consejo Económico Nacional, which promoted the commercialisation of rural products through the Instituto Argentino para la Promoción del Intercambio, and as president of the Banco Central controlled foreign exchange. According to nationalist author Raúl Larra, opposition by Miranda to the steelworks project arose from his personal business interests. A manufacturer of tinned fish and importer of tinplate, he had defined himself in favour of the promotion of mass consumption policies and of light industries similar to his own. Furthermore, Miranda opposed the development of heavy industry because its projected product range included tinplate - which would be inauspicious for his tinplate import trade.¹²⁵ The economic constraints were reflected in the effects of the policies fostered by Miranda. The country faced serious problems by 1948 owing to economic mismanagement, and the government could not afford large expenditures or heavy exchange outlays (see Chapter 2). State contributions to SOMISA came in 'droplets', and under prevailing regulations exchange could not be obtained nor foreign loans negotiated.¹²⁶

The lack of government funding proved critical, as one year after the approval of the PSA it became clear that the authorised capital of SOMISA would have to be increased. The decision to increase the capacity of the plant to 500,000 tons meant that there would be more installations than had been originally envisaged.¹²⁷ Furthermore, owing to rising costs, projected expenditure on the plant bore no relation to the authorised capital. Because prices had increased since ARMCO had prepared its estimates in 1944, it became apparent that the budget presented by ARMCO was greater than the authorised capital of the mixed corporation.¹²⁸ Although the economic crisis prevented any realistic possibility of the State being able to provide funds, the Executive Power submitted draft legislation laying the foundations for an increase in the capital of SOMISA. Though the Bill made no specific commitments, it urged an increase from the initial m\$1 100,000,000 to m\$1 500,000,000 if costs were higher than planned or if it was essential

¹²⁵ Larra, *Savio*, pp.161,162.

¹²⁶ Castiñeiras, *Esto*, p.42.

¹²⁷ Ibid., p.41; Potash, *Army*, p.107.

¹²⁸ Castiñeiras, *Esto*, pp.41,65.

to expand facilities, and that the State could contribute upto m\$n 400,000,000. Congress shelved the Bill on account of mounting economic difficulties and political objections by the Radicals. The Government paid a heavy price as the Bill also attempted a drastic revision of the extent of DGFM involvement in SOMISA agreed by Congress in 1947. After the first 5 years, the DGFM would have to reduce its stake from 51% to a minimum of 10%, which was considered sufficient to retain supervision and control.¹²⁹ This was in line with the concept that State participation in *sociedades mixtas* should be transitory, but increased private sector participation was as before fiercely opposed by the UCR.

Perón again attempted to increase the capital of SOMISA in June 1949. Since the PSA had been foreseen at a lower cost level than that being incurred, the presidential Message to Congress stated that the capital should be increased to m\$n 500,000,000.¹³⁰ With the deepening economic crisis, the proposal was shelved. Nevertheless, an increase in capital was finally obtained in 1950. A Bill typical of the end of the Congressional session, which dealt with several unrelated matters, was presented on 26 September. Article 4 authorised an increase in capital upto the amount required to fulfill the aims of the PSA, and empowered the Executive Power to modify the statutes of SOMISA accordingly as well as to guarantee the necessary financing schemes. The proposal was ambiguous, as it made no specific financial commitments, and did not contain controversial provisions modifying the shareholding structure of the company. Therefore, it was accepted by the Congressional Committees studying the Bill on 27 September, and Article 4 was passed on the following day.¹³¹ The economic crisis prevented the government from making any contribution to the increase in capital throughout 1951. Only the works that could be implemented within existing constraints were executed. No equipment purchases had been possible, and a considerable rise in internal prices made available funds totally insufficient to face local works. Housing was built for the workers, and terrain was levelled.¹³²

¹²⁹ *Metalurgia*, July 1948, pp.31,32.

¹³⁰ Message from the Executive Power on the increase of State credits allowed by the Ley de Fabricaciones Militares and the PSA, Buenos Aires, 4 June 1949, *Diputados*, Año 1949, Tomo I, p.679.

¹³¹ *Diputados*, Año 1950, Tomo IV, pp.3191,3433,3468.

¹³² Castiñeiras, *Esto*, p.66.

Although SOMISA had initially attracted private investment, it failed to get off the ground by the early Fifties. Congress manifested antagonism towards private business, with particular resentment at participation of private shareholders and the size of its holdings in a 'strategic' industry. However, other political and economic factors associated with the *Peronato* also prevented the implementation of the PSA. Although Perón had supported this type of industrial project as Minister of War during the military régime of 1943-1945, he developed his own agenda once elected President in 1946. The realisation of the PSA was frustrated by government policy, for reasons explained in Chapter 2. The promotion of heavy industry was not a priority. Furthermore, *Peronista* policies resulted in a severe crisis and shortage of foreign exchange by the late Forties, which led the régime to curb drastically expenditure and restrict the issue of import licenses vital for equipment purchases. However, even without these adverse domestic political factors, the PSA could not have been successfully implemented by the Fifties. As will be seen in forthcoming chapters, shortages of vital foreign inputs such as coal, poor US-Argentine relations, and the sheer cost of the steelworks also conspired against the execution of the project. Nevertheless, the bases for the development of SOMISA had been laid. These were far more secure than the ground work being carried out for a *sociedad mixta* in the third unit of the PSA.

The third unit of the PSA: the production of finished goods

The DGFM project envisaged a third unit comprising the existing establishments that carried out rolling and finishing operations, and those to be installed in future. The existing plants, which were the Fábrica Militar de Aceros and the private manufacturers, were regarded as insufficient to meet the requirements of the PSA. Savio himself had indicated that State intervention in this unit was necessary, and a mixed company would be established. In line with the concept for mixed corporations that had originally guided the SOMISA proposal, the State would participate at a level which was sufficient to attain effective control as shareholder. Once productive capacity was increased and restructured, the State would withdraw as it was believed that the success of the third unit of the PSA lay in the participation of the private producers.¹³³

¹³³ Savio, 'Bases', pp.396,397.

Accordingly, a *sociedad mixta* for the manufacture of steel sheets and flats was projected, in which ARMCO Argentina would be the nucleus.¹³⁴ However, because of overt US interference in Argentine domestic political affairs (see Chapter 6 for an account), ARMCO Argentina faced increasing difficulties over its involvement in the PSA and thereby expressed reservations. It assumed no obligation to participate in the constitution of the mixed company for the third unit, and everything agreed regarding that enterprise was declared null and void.¹³⁵ Consequently, some circles suggested that finishing operations should be included in SOMISA, thereby making the latter a monopoly. This was rejected on the grounds that private sector initiatives would be damaged, and that the purpose of State intervention was to stimulate private initiatives.¹³⁶

Despite the decision by ARMCO not to form the *sociedad mixta* with the DGFM for the production of sheets and plates, General Savio was determined that ARMCO Argentina remained involved in the third unit of the PSA. He succeeded once US-Argentine relations were 'normalised' in mid-1947 and the storm over the role of ARMCO in SOMISA had receded. Savio was authorised by Decree No. 2,786 of 30 January 1948 to organise a mixed corporation for the production of sheets, plates, and tinplate. The DGFM was empowered to carry out the preparatory work for this purpose and contract the direction of ARMCO Argentina for the installation and operation, on the basis of the proposal originally presented by ARMCO on 15 February 1947. Furthermore, all expenditure would be temporarily debited to the DGFM budget.¹³⁷

The mixed enterprise Hojalata Argentina was officially created on 20 March 1948, and US\$ 5,000,000 (m\$n 21,150,000 at the official exchange rate) were to be invested in it. In addition, another US\$ 10,000,000 (m\$n 42,300,000 at the official exchange rate) were to be destined to the purchase of machinery

¹³⁴ Comments on the supplementary documents of the PSA, *RRP*, 30 May 1947, p.12.

¹³⁵ Translation of the complementary minutes signed by La Cantábrica, ARMCO Argentina, TAMET and SIAM Di Tella, Buenos Aires, 22 February 1946, *RRP*, 30 May 1947, p.18.

¹³⁶ Speech by Manuel Álvarez Pereyra, *Peronista* deputy for Buenos Aires, during the debate on the PSA, *Diputados*, Año 1947, Tomo I, p.290.

¹³⁷ Castiñeiras, *Esto*, p.51.

and installations in the United States of America, and the necessary contract was negotiated.¹³⁸ The contract signed by the DGFM and ARMCO, which was similar to that between SOMISA and ARMCO, established that the DGFM would set up a North American commission, with the power to subscribe contracts of purchase, decide technical questions of lesser importance, and contract legal advice. This commission would be empowered to approve plans and specifications, and carry out inspections of manufacture or of materials and equipment.¹³⁹ Pedro F. Castiñeiras was appointed its head, and he left for the USA on 25 May 1949. However, the contract between the DGFM and ARMCO had not been formalised owing to domestic economic uncertainties, a shortage of funds which prevented any investment in Hojalata Argentina, and the scarcity of exchange for equipment purchases. The US commission of the DGFM was not established, as this would mean unnecessary expenditure, and Castiñeiras was put in charge of the commission already set up by SOMISA in Chicago. As the Argentine economic crisis deepened and resulted in total paralysis in the implementation of the Hojalata Argentina and SOMISA projects, Castiñeiras was recalled on 1 August 1951.¹⁴⁰ Consequently, the ground work aimed at laying the foundations for a *sociedad mixta* for the production of rolled and finished goods ended in virtual failure. No funds were available for Hojalata Argentina owing to economic difficulties, and the technical management contract between the DGFM and ARMCO was never formalised.

CONCLUSION

Although nationalist elements within the Army had advocated the development of heavy industry before 1939, domestic iron and steel production emerged as a result of import shortages during the Second World War. Private metallurgical companies and also firms that previously drew on iron and steel imports were interested in steelmaking owing to the use of steel in the production of finished goods, and State interest responded to its importance in national defence. However, the private sector plants built during the

¹³⁸ Nora Siegrist de Gentile, 'Desarrollo siderúrgico', in Martín, De Paula and Gutiérrez (eds.), *Ingenieros*, p.195; the conversion from US\$ to m\$ is based on data in Vicente Vázquez Presedo (ed.), *Estadísticas Históricas Argentinas: Compendio 1873-1973* (Buenos Aires, 1988), p.244.

¹³⁹ Castiñeiras, *Esto*, p.52.

¹⁴⁰ Ibid., pp.52,53.

war were not fully integrated, as they substituted the need for pig iron as an input by drawing heavily on local scrap sources. Furthermore, neither private industrialists nor the DGFM, the military-controlled industrial empire commissioned by the Army to develop iron and steel production, could afford the heavy capital outlays required in the development of a modern, large-scale steelworks.

Determined to develop heavy industry, the DGFM was willing to work with the private sector through *sociedades mixtas* to achieve its goals. Private firms collaborating with the military in mixed companies could include foreign interests, as the latter could provide much needed influxes of capital and technology. The most interesting characteristic of the mixed enterprises was that once the foundations were laid and the private sector could be left to its own devices, Fabricaciones Militares intended reducing its involvement to an essential minimum as its participation had no evident commercial purpose. The existing literature has largely ignored these facts and their implication - namely that, despite their nationalist rationale, the military required assistance from technically and commercially experienced private firms to develop defence-related industries such as steel.

Private interests were not attracted to participate in the AHZ. Large capital investments were required to develop the remote iron ore deposit at Zapla, adequate machinery was lacking, and there were doubts regarding the iron. With the project being comparatively modest, the DGFM pressed ahead on its own in order to attain national pig iron production, which began in October 1945. Participation of private interests was attracted more successfully for the SOMISA proposal. Both major industrialists and the subsidiary of the US firm ARMCO were involved. However, there were major setbacks. SOMISA was regarded as a 'strategic' project, and Congress challenged the extent of private sector participation in the project and the role of ARMCO Argentina as shareholder and operator of the steelworks. Although Perón has been usually associated with nationalism and Statism, he had not opposed the PSA project in its initial form. It was Congress, largely owing to the Radical block, which restricted the role of the private sector in SOMISA. Political factors were not alone in hindering the implementation of the PSA. The scheme also fell victim to *Peronista* economic policy. It was not an economic priority, it was opposed by powerful people, and by the late Forties the necessary funds were unavailable as a result of the severe economic crisis.

These problems also affected the third unit of the PSA, which ran into trouble from the beginning. After several false starts, the prevailing conditions were extremely unfavourable when the DGFM finally was able to undertake the project.

Chapter 4
THE MARKET FOR IRON AND STEEL PRODUCTS

Within Latin America, the Republic had both the most advanced economy and the highest iron and steel consumption. Table 4.1 shows apparent consumption, which is the sum of total imports and national output, and per capita consumption in the region's three major economies. The table also shows how Argentina's position relative to that of the other countries deteriorated. In 1925-1929, Argentine aggregate

Table 4.1
IRON AND STEEL CONSUMPTION, 1925-1949
(annual averages)

PERIOD	ARGENTINA		BRAZIL		MEXICO	
	Aggregate ('000 t)	Per capita (kg)	Aggregate ('000 t)	Per capita (kg)	Aggregate ('000 t)	Per capita (kg)
1925-29	891.8	81.0	447.5	13.3	174.0	11.1
1930-34	510.9	41.5	239.5	6.7	151.0	8.8
1935-39	668.8	47.9	406.3	10.5	253.6	13.5
1940-44	312.5	21.0	386.5	9.0	256.7	12.3
1945-49	732.8	45.0	662.0	13.6	501.6	21.4

Source: Calculated from the statistics in United Nations (UN), Economic Commission for Latin America (ECLA), *A study of the iron and steel industry in Latin America*, Volume I (New York, 1954), pp.84-86.

levels were double those of Brazil and eight times over those of Mexico. The pace of recovery in Argentine consumption after the Depression was below that of Brazil and even Mexico, where consumption outstripped pre-1929 levels. Following further fluctuations, total Argentine demand had in 1945-1949 actually fallen in relation to that of 1925-1929. In contrast, aggregate consumption in Brazil and especially Mexico had increased - not least because of substantial growth in domestic steel output capacity. The data also shows that the drop is even more dramatic in Argentine consumption per capita, which in 1945-1949 was almost $\frac{1}{2}$ that of 1925-1929. In Brazil the level remained virtually unchanged, and in Mexico it had doubled.

The shifts in total and per capita Argentine consumption levels are representative of broader

economic conditions. Notwithstanding the progress attained by the Republic, this chapter shows that the market for iron and steel products was limited. The chapter is divided into four sections. The first provides a general view of the market. It considers issues such as population, income and economic structure, and argues that Argentina was already in a position where the degree of industrialisation should, apparently, have been deeper. However, although manufacturing had expanded before the Depression and the Second World War, industrial growth was most rapid in branches unlikely to foster an increase in steel consumption. The first section also assesses the composition of demand, actual conditions regarding imports and domestic output, and the extents and limits for local production - including what might have been possible by using the example of other countries at some similar stage of development as counterfactuals. The three remaining sections gauge whether or not the market was sufficient to sustain an efficient national industry. Each appraises a key area of iron and steel consumers, namely, transportation, construction and the infant metallurgical industry. The focus on these areas of consumption will be justified in the appropriate parts of the text. The section on transportation explains the decline of this sector as a consumer of iron and steel. This resulted from the altered economic circumstances after 1914 and financial difficulties of the railway companies. The product case-study chosen to support the argument is that of rails. The section on construction, which was by far the largest source of demand, argues that requirements for iron and steel changed over time. Although building remained the principal user in the absence of major steel-transforming industries, the metal content in construction gradually decreased owing to a shift to low-cost housing projects and the substitution of cement for steel. Changes in demand for iron and steel by the construction industry are captured by two product case-studies - iron girders and cast-iron pipes. The final section considers metallurgical goods (other than construction materials) produced locally. Their product range was relatively diverse and, notwithstanding the technological restrictions and the comparatively small output volume, were able to cover part of demand in times of import scarcities - especially during the Second World War. The chosen product case-studies are windmills and ploughs.

GENERAL MARKET TRENDS

Iron and steel consumption is construed as an indicator of economic development. The higher the

level of consumption, the deeper the degree of industrialisation. This is of particular importance from the perspective of the thesis. Although the country boasted the highest consumption levels in Latin America, the market for iron and steel was limited. This section argues that this resulted from two factors. First, that Argentina was far less industrialised than it should have been. Second, that large-scale domestic iron and steel production could have been undertaken in a different manner from that envisaged by military planners.

Argentina had already attained various basic traits of economic progress often declared as 'prerequisites' of modern industrialisation - eg, a large unified territory, and a legal system assuring the rights of the individual and satisfactory protection of property.¹ In this period, it can be described as a semi-industrial country - that is, an economy which had diversified its production structure and exceeded some threshold level of per capita income (see below).² It was in a position to undergo a 'late industrialisation' process, which meant industrialising by acquiring and improving the technology already created by experienced leading firms in the most advanced economies.³ Yet the Republic took what many portray as a wrong turn: it squandered opportunities and set off on a perverse downhill course which in the long-run resulted in a belated, weak, incomplete and truncated industrialisation process.⁴ The problem was that, although the country was prosperous, the simple availability of wealth had not helped industrialisation. Capital was accumulated in the hands of people (ie, landowners and merchants) who were mostly unwilling either to invest it in industrial ventures themselves or to pass it on in one form or another to those who are immediately engaged in industrialisation.⁵ This had occurred notwithstanding that Argentina had already attained various benchmarks identified by Chenery and which differentiated semi-industrial countries from exclusively primary-oriented exporters. The most important of these were a minimum per capita income

¹ Alexander Gerschenkron, *Economic Backwardness in Historical Perspective* (Cambridge, Massachusetts, 1962), pp.32,33.

² Hollis Chenery and Moshe Syrquin, 'The Semi-Industrial Countries', in Hollis Chenery, Sherman Robinson and Moshe Syrquin, *Industrialization and Growth* (Washington, 1986), p.84.

³ Takashi Hikino and Alice H. Amsden, 'La industrialización tardía en perspectiva histórica', *Desarrollo Económico (DE)* 35 (1995-1996) No.137, p.3.

⁴ Juan Carlos Korol and Hilda Sábato, 'Incomplete Industrialization: An Argentine Obsession', *Latin American Research Review* XXV (1990) No.1, p.3.

⁵ Gerschenkron, *Backwardness*, p.39.

(as a proxy for domestic demand for manufactures), shifts in production from the primary sector to manufacturing, and the contribution of industry to growth.⁶

The size of the population and its purchasing power

Argentina was one of the most populous Latin American countries. The population doubled between the Third National Census in 1914 and the Fourth National Census in 1947: it rose from 7,885,237 to 15,897,127 inhabitants. Most people clustered in urban areas, whose share of the total population increased from 53% in 1914 to 62% in 1947.⁷ This reflects a rapid urbanisation process, which was concentrated in the Greater Buenos Aires metropolitan area and fundamentally relied on migration - first from overseas and subsequently from the interior of the country. Foreign immigrants, facing increasing difficulties of access to the land (see Chapter 2), descended in droves upon the national capital and until the Thirties were the major component of its growth.⁸ The population of Buenos Aires in 1914 was 50% of European immigrant origin, 40% city-born (and, therefore, also largely of foreign origin) and only 10% originated from the interior.⁹ The immigrant population contributed in a fundamental manner to expanding the market for manufactures, not only because its origin implied a taste for 'European' products. Enjoying relatively high wages, the disposable incomes of European immigrants widened the market for manufactures.¹⁰

Because of rapid urbanisation, the Greater Buenos Aires metropolitan area had already exceeded the 1,000,000 inhabitants mark by 1914, and remained the only city to have done so for decades.¹¹ In fact,

⁶ Chenery and Syrquin, 'Countries', p.85.

⁷ Aldo Ferrer, *The Argentine Economy* (Berkeley, 1967), p.227.

⁸ Zulma Recchini de Lattes, 'El proceso de urbanización en la Argentina: distribución, crecimiento y algunas características de la población urbana', *DE* 12 (1972-1973) No.48, pp.879,880.

⁹ Paul H. Lewis, *The Crisis of Argentine Capitalism* (Chapel Hill, 1990), p.118.

¹⁰ Celso Furtado, *Economic Development of Latin America* (Cambridge, 2nd ed., 1976), p.58.

¹¹ Recchini de Lattes, 'Urbanización', p.870.

its population doubled from 2,067,000 inhabitants in 1914 to 4,274,000 inhabitants in 1947.¹² This increase in the urban population, although not associated with industrialisation, drove demand for iron and steel products. Urbanisation concentrated not only the market for manufactures but also for factory, office and house building. Therefore iron and steel products associated with construction were those most in demand (see below). Despite the absence of a genuine industrialisation process which should have translated into greater demand for other iron and steel goods, urban growth was a form of macroeconomic structural change which was reflected in changes in the employment structure and the insertion of new groups into the economic process. Manufacturing and tertiary activities increasingly absorbed a greater share of the labour force and had expanded as Buenos Aires enjoyed major advantages favouring their growth. The capital was a concentrated market, it had an abundant labour supply with above-average training and adequate infrastructure and services, and was the hub of the transport system with easy access to national resources through the rail network and to foreign inputs through the port on the River Plate.¹³

Table 4.2

**DISTRIBUTION OF THE ACTIVE POPULATION AMONG ECONOMIC ACTIVITIES
(as a percentage)**

SECTOR	1900-1904	1925-1929	1940-1944	1955
Rural	39.2	35.9	33.3	26.1
Manufacturing	19.8	20.8	23.8	22.5
Mining and construction	4.7	4.9	3.9	5.6
Transport	4.6	5.1	4.5	5.9
Electricity and communications	0.8	1.2	1.5	1.9
Commerce and finance	12.8	13.9	13.5	14.8
Personal services	14.4	13.1	12.8	12.7
State	3.6	5.2	6.7	10.3

Source: Compiled from UN, ECLA, Serie Análisis y proyecciones del desarrollo económico, V: *El desarrollo económico de la Argentina, Primera parte - Los problemas y perspectivas del crecimiento económico argentino* (Mexico, 1959), pp.37,39.

Alterations to the occupational structure are revealed in Table 4.2 above. The rural sector steadily

¹² Carlos F. Díaz Alejandro, *Essays on the Economic History of the Argentine Republic* (New Haven, 1970), p.422.

¹³ Eduardo F. Jorge, *Industria y concentración económica* (Buenos Aires, 1971), p.139.

declined as a source of employment, while higher income tertiary activities (ie, commerce, services and the State administrative apparatus) and manufacturing expanded. The data shows that tertiary activities employed a larger share of the active population than manufacturing. This reflects the fact that urbanisation in Argentina did not result in industrialisation owing to the lack of capital, which was essential for industry. Therefore most people migrating to the cities got absorbed into tertiary activities, which required little or no capital.¹⁴ The expansion of commerce, services and the State apparatus led to the growth of the middle class, which already in 1914 comprised 33% of the total active population.¹⁵ As a result, the different social strata enjoyed good income levels and a relatively more even income distribution - unlike in Brazil or Mexico.¹⁶ Income and its distribution are important to the argument that Argentina should have been further industrialised than it actually was. Rises in per capita income led to changes in demand: the proportion of food consumption decreased while that of non-food demand (ie, that for manufactures) increased.¹⁷ Per capita income in the Republic was rising and income distribution underwent significant changes. Since the level of per capita income was virtually that of a semi-industrial country, demand for manufactures had expanded and the country should have pursued a different industrial strategy than that implemented.

Changes in gross per capita income for the period 1920-1949 are shown in Table 4.3 below. The figures are based on the only existing reliable data, which is that calculated in 1950 pesos by the United Nations Economic Commission for Latin America. For the purposes of international comparisons, the figures include the US currency equivalent for 1950. Since more than one exchange rate was in operation, two key rates are shown. First the official rate, which is defined as the amount of pesos per dollar quoted

¹⁴ Ezequiel Gallo and Roberto Cortés Conde, *La república conservadora* (Buenos Aires, 1986), p.175.

¹⁵ Roberto Cortés Conde and Ezequiel Gallo, *La formación de la Argentina moderna* (Buenos Aires, 1967), p.83.

¹⁶ Jorge, *Industria*, p.137.

¹⁷ Hollis Chenery and Moshe Syrquin, 'Typical Patterns of Transformation', in Chenery, Robinson and Syrquin, *Industrialization*, p.57.

in the Mercado de Cambios in Buenos Aires; second the parallel market rate.¹⁸ However, caution should be exercised when using the dollar equivalents shown in Table 4.3 - particularly those arising from the parallel market rate. Normally, the 'gap' between the official and parallel market rates was very low. Towards the end of the period, it was considerable owing to the severe domestic crisis and the shortage of foreign exchange. As a result, per capita income in the dollar equivalent for 1950 at the parallel market rate appears substantially distorted. Regarding the official rate, it is not entirely satisfactory due to the existence of multiple rates but it is widely used.

Table 4.3
GROSS PER CAPITA INCOME, 1920-1949*

PERIOD	POPULATION	INCOME (m\$n 1950)	US\$ EQUIVALENT (Official rate)	US\$ EQUIVALENT (Parallel market rate)
1920-1924	9,416,300	2,670	406.4	167.0
1925-1929	10,969,900	3,207	488.1	200.6
1930-1934	12,384,600	2,626	399.7	164.2
1935-1939	13,493,200	2,991	455.2	187.0
1940-1944	14,643,000	3,065	466.5	191.7
1945-1949	16,005,800	3,639	553.9	227.6

* The data for the period 1945-1949 was calculated from the individual figures for the years concerned.

Sources: The statistics for population and income were compiled from UN, ECLA, *Análisis y proyecciones, V: Argentina*, Primera parte, p.15 and the US\$ equivalent was calculated from the data for exchange rates (m\$n 6.57 per US\$ at the official rate and m\$n 15.99 per US\$ at the parallel market rate) in Vicente Vázquez-Presedo (ed.), *Estadísticas Históricas Argentinas: Compendio 1873-1973* (Buenos Aires, 1988), p.244.

Table 4.3 shows that, excluding the contraction in 1930-1934 during the world crisis, per capita income experienced growth. Chenery identifies US\$ 500 as the threshold level of per capita income distinguishing semi-industrial countries from primary-oriented exporters.¹⁹ Measured in dollars at the official exchange rate, per capita income was close to the benchmark on several occasions and even exceeded it in the late Forties. As per capita income is used as a proxy for domestic demand for manufactures, the

¹⁸ Vicente Vázquez-Presedo (ed.), *Estadísticas Históricas Argentinas: Compendio 1873-1973* (Buenos Aires, 1988), p.241.

¹⁹ Chenery and Syrquin, 'Countries', p.86.

evidence suggests that in Argentina it was high enough to have expanded non-food demand and that thereby the country was already in a position to industrialise. There was a market for manufactures as the population had considerable purchasing power and, as is seen below, benefited from a relatively more even income distribution than elsewhere in Latin America.

Table 4.4

**DISTRIBUTION OF THE NATIONAL INCOME IN 1950
(at factor cost)**

ITEM	m\$n AT CONSTANT PRICES
Remuneration of employees*	32,128,000*
Income from unincorporated enterprises	21,913,000
Income from property	6,250,000
Savings of corporations	1,014,000
Direct taxes on corporations	720,000
General government income from property and entrepreneurship	237,000
Minus interest on public debt	(443,000)
NATIONAL INCOME	61,819,000

* Comprises m\$n 29,745,000 in wages and salaries and m\$n 2,383,000 in employers' contributions to social security.

Source: UN, ECLA, *Statistical Bulletin for Latin America I* (1964) No.2, p.107.

Data on income distribution is scarce, particularly for the earlier part of the period, and the most precise statistics only date back to 1950. Nevertheless, there is some information for the Thirties and early Forties. The most critical feature of the period was that distribution underwent a significant change in terms of the share of wages. Remuneration of labour - wages and salaries, including business and personal contributions to social security - accounted for around 46% of net domestic income in the years 1935-1939. The remaining 54% corresponded to the remuneration of capital and enterprise - net business income, property owners, independent professions, interest, and so on. These relative shares remained more or less unchanged until 1946, after when the share of labour rose steadily and peaked at 56.9% in 1952.²⁰ This rise is reflected in the data in Table 4.4, which shows the first detailed statistics of the distribution of

²⁰ Ferrer, *Economy*, p.173.

national income. Remuneration of employees through wages and salaries and employers' contributions to social security came to account for just over 50% of national income by 1950. This was the result of: (i) the changes in the employment structure indicated earlier, and (ii) the strengthening of the unions - not least during the *Peronato*. Alterations to the occupational structure affected income distribution, as the share of labour in total income varied considerably per sector. The share of labour in the net income generated by rural production was around 25%, while that in manufacturing and tertiary activities amounted to approximately 55%. Therefore, when the labour force shifted from rural production to industry and services, the share of wages in the net national income increased.²¹ The strengthening of labour unions also tended to raise the share of wages. Urbanisation and increased employment in manufacturing and services reinforced the labour unions and enabled workers to defend their share of total income more effectively. This is particularly true during the late Forties, when the labour-based *Peronista* régime was highly receptive to union demands for higher wages, ceiling prices on primary necessities, rent control and so forth.²² The rise in labour costs acted as a disincentive, not least for the expansion of iron and steel production. Although higher labour costs could have stimulated attempts to substitute capital for labour, they also squeezed profits of firms already enduring hardship - which prevented them from purchasing equipment essential for modernisation (see Chapter 3).

In terms of size of the population and its purchasing power, Argentina was already a semi-industrial country in a position to industrialise further. Rapid urbanisation had three results: (a) concentration of demand; (b) changes in the occupational structure, with the decline of the rural sector as a source of employment in favour of manufacturing and tertiary activities; and (c) the insertion of new groups into the economic process. Good income levels were not only enjoyed by the wealthy upper class but also by the expanding middle class, and higher disposable income gradually became available for the labour force. As income per capita rose, demand for bare essentials such as food declined in favour of that for non-food items - which expanded the market for manufactures. The rising demand for these goods is only one of the indicators signalling that the country could have undergone industrialisation. A further two equally

²¹ Ibid., p.170.

²² Ibid., pp.170,171.

important indicators are discussed below: the shift in production from the primary sector to manufacturing, and the contribution of industry to growth.

Manufacturing and the national economy

One of the benchmarks differentiating semi-industrial countries from primary producers is the share of manufacturing as a percentage of the gross domestic product (GDP). According to Chenery, the threshold is 14%.²³ Table 4.5 below, which displays the structure of Argentine GDP for the period 1920-1949, shows that the share of manufacturing exceeded this level and had already done so by the early Twenties. Nevertheless, two observations should be made: (i) how does this share compare with that of the rural sector

Table 4.5

STRUCTURE OF THE GROSS DOMESTIC PRODUCT, 1920-1949*
(share of economic sectors as a percentage)

SECTORS	1920-24	1925-29	1930-34	1935-39	1940-44	1945-49
Farming	15.5	14.9	14.6	13.8	13.7	9.3
Livestock	12.6	10.6	10.3	10.4	10.8	9.2
Fishing	0.2	0.2	0.2	0.2	0.2	0.2
Mining	0.3	0.4	0.6	0.9	1.2	1.0
Manufacturing	16.4	17.7	18.4	20.4	21.0	23.5
Other public services	0.7	0.7	0.9	1.0	1.0	1.0
Construction	5.3	6.5	5.3	5.7	5.3	6.1
Trade	20.5	21.3	19.1	18.2	16.7	17.3
Transport	6.3	7.2	7.5	7.1	7.4	8.2
Communications	0.6	0.7	0.9	0.9	0.9	1.0
Finance	2.1	2.0	2.1	1.9	1.9	2.3
Housing	5.3	4.8	5.4	5.0	4.9	4.6
Government and personal services	14.2	13.0	14.7	14.5	15.0	16.3
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0

* The data for the period 1945-1949 was calculated from the individual figures for the years concerned.

Source: Compiled from the data in Banco de Análisis y Computación S.R.L. (ed.), *Relevamiento Estadístico de la Economía Argentina 1900-1980* (Buenos Aires, 1982), pp.40,60,78,218.

²³ Chenery and Syrquin, 'Countries', p.86.

(the key source of cash for the country), and (ii) what is actually meant by the term *manufacturing*. Regarding the former, the data in Table 4.5 shows that the share of manufacturing surpassed the individual shares of farming and livestock production. However, it does not exceed the combined share of these rural activities, except in 1945-1949. The share of rural production in the GDP amounted to almost 30% in 1920-1924, approximately 25% between 1925 and 1944, and slumped to 18.5% in 1945-1949 as a result of *Peronista* policy towards farmers (see Chapter 2). This is partly explained by the fact that, although industries developed, the composition of manufacturing was not that of a truly industrialised country. Therefore, it is necessary to observe changes in the structure of industry and to qualify the term *manufacturing*, particularly for the pre-1930 period.

Although on paper the share of manufacturing in the GDP before the Wall Street crash was sufficient for Argentina to be regarded a semi-industrial country, the established activities did not genuinely represent what is normally regarded as *manufacturing*. Industry had been stimulated by the expansion of exports (ie, some local transformation of primary products was necessary), urbanisation and the rise in income derived from export growth. The predominant activities were traditional industries: foodstuffs and beverages, tobacco, textiles and clothing.²⁴ Supplementary activities, which included the production of construction materials and rural implements and railway repair workshops, had also developed.²⁵ Until the Thirties, production of non-durables accounted for over 50% of industrial output.²⁶ Only when trade contracted during the world crisis and imports had to be substituted was a relative expansion of the industrial base facilitated. Changes in the composition of manufacturing are reflected in the data in Table 4.6, which shows the value of industrial output per branch for the period 1930-1949. The most dramatic growth occurred in the share of textiles. Other existing sectors, playing a modest part during the Twenties, increased their share within manufacturing with difficulty.

²⁴ United Nations (UN), Economic Commission for Latin America (ECLA), *El proceso de industrialización en América Latina* (New York, 1965), pp.14,15,27.

²⁵ Jorge, *Industria*, p.48.

²⁶ Mónica Peralta-Ramos, *The Political Economy of Argentina* (Boulder, 1992), p.11.

Table 4.6

VALUE OF INDUSTRIAL PRODUCTION PER SECTOR, 1930-1949
 (as a percentage)

INDUSTRY	1930-1934	1935-1939	1940-1944	1945-1949
Food and beverages	33.2	36.1	35.2	30.3
Tobacco	-	1.8	1.7	1.7
Textiles	6.2	9.6	11.6	13.6
Clothing	-	9.2	8.1	9.0
Wood	-	4.3	4.8	5.0
Paper	-	5.1	4.7	4.4
Chemicals	6.9	4.9	6.7	6.1
Petroleum derivatives	3.3	4.2	3.8	3.6
Rubber	0.4	1.4	0.6	1.0
Leather	-	3.2	4.4	4.0
Glass and ceramics	5.9	3.6	4.0	4.0
Metallurgy, excluding machinery	7.6	8.7	6.7	7.6
Vehicles and machinery	7.6	5.3	5.2	6.9
Equipment and electric machinery	7.6	1.6	1.3	1.9
Miscellaneous	-	1.0	1.2	1.4
TOTAL INDUSTRIAL OUTPUT	100.0	100.0	100.0	100.0

Source: Guido Di Tella and Manuel Zymelman, *Las etapas del desarrollo económico argentino* (Buenos Aires, 2nd ed., 1973), p.100.

Government policy was responsible for the *ad hoc* nature of industrial development after 1930.

During the early Thirties, the Concordancia faced severe conditions and responded with measures to reactivate the rural sector (see Chapter 2). Nonetheless, some 'new' industries such as rubber emerged. This was not because of the existence of an official industrial policy but in response to the drastic reduction in the capacity to import. In order to continue or expand their business, foreign companies that traditionally supplied manufactured imports had to skirt exchange and import controls and tariff surcharges imposed in 1931.²⁷ These firms, facing idle capacity in their countries of origin as a result of the Depression, were in condition to export capital, equipment and technicians and therefore set up local subsidiaries in Argentina.²⁸ However, major basic industries did not emerge. The development of steel production was

²⁷ Jorge Schvarzer, *La industria que supimos conseguir* (Buenos Aires, 1996), p.168; Roger Gravil and Timothy Rooth, 'A Time of Acute Dependence: Argentina in the 1930s', *The Journal of European Economic History* 7 (1978) Nos.2-3, p.375.

²⁸ Adolfo Dorfman, *Cincuenta años de industrialización en la Argentina* (Buenos Aires, 1983), pp.45,46.

obstructed throughout the Twenties and Thirties. Before 1930, two factors were at the root of the problem.

(i) There were no exploitable domestic iron ore and coal sources at the time.²⁹ (ii) In its infancy, the industry would be uncompetitive owing to high costs of production and the absence of economies of scale and thereby require tariff protection which the government would not provide. The ruling political class, the agro-exports sector and local merchants of imported basic inputs were powerful vested interests which resisted this type of industry.³⁰ Although the Depression created the conditions for import substitution, two further factors hindered the development of local steel making. (a) Improvements in the economy by the mid-Thirties led to recovery in import levels. (b) The strong presence of the steel cartel in the market frustrated any attempt to develop domestic production - at least by private firms (see Chapters 3 and 6).

Renewed import shortages in the early Forties again encouraged the growth of manufacturing - including steelmaking (see Chapters 2 and 3). With the industrial sector already accounting for over 20% of GDP (see Table 4.5) and light sectors firmly established, Argentina was in a position to industrialise further by the late Forties. Moreover, a deep industrialisation process seemed achievable with the election of Perón, who favoured industry and relied on the labour movement for political support. Nevertheless, the *Peronista* régime did not foster genuine industrialisation (see Chapter 2). The encouragement of mass consumption resulted in over-emphasis on light industries and therefore a continued predominance of these sectors within the structure of manufacturing (see Table 4.6). The drawback was that industrial growth essentially based on light industries could not be sustained in the long-term, for two reasons. First, demand for wage goods had low elasticity and expanded very slowly. Second, the operation of these sectors was constrained by the need to import machinery and intermediate goods, which could only be covered by expanding exports.³¹ During the *Peronato*, this was not feasible. Export volumes declined as a result of adverse government policies towards the rural sector, while simultaneously the terms of trade deteriorated.³²

²⁹ Díaz Alejandro, *Essays*, p.213.

³⁰ Jorge, *Industria*, pp.44,45.

³¹ UN, ECLA, *Industrialización*, p.27.

³² UN, ECLA, *The economic development of Latin America in the post-war period* (New York, 1964), p.84.

The import-purchasing power of exports could not be substituted with gold or liquid foreign currency. Exchange reserves accumulated during the Second World War were exhausted, not least because of their use to finance the nationalisation of foreign-owned utilities.³³ Imports of machinery and intermediate goods were therefore unobtainable, and the only alternative was to develop basic sectors such as iron and steel and related transforming industries.³⁴

During the period under study, the Republic had shifted away from primary production to manufacturing. However, there was a crucial difficulty: the nature of the predominant industries. These were well established light sectors, which by 1949 had virtually exhausted their import-substitution possibilities.³⁵ Given the share attained by manufacturing within GDP, Argentina could have deepened industrialisation. Yet the country failed to undertake this task. As seen in Chapter 2, the various governments of the day can be held partly responsible for this failure. Industry had initially arisen as a consequence of the expansion of exports, urbanisation and the rise in income derived from export-led growth. Its subsequent development was induced by the need for 'forced' import-substitution resultant from the contraction in trade during the world economic crisis and the Second World War. However, this had been insufficient to genuinely transform the country into an industrial economy. This is even more apparent when assessing the iron and steel sector. As is shown below, though steelmaking had been undertaken in the early Forties, the market was limited and the Plan Siderúrgico Argentino (PSA) project for large-scale production fell far short of realising its potential.

Iron and steel: the composition of demand and sources of supply

The increases in urban population and income described earlier should have expanded demand for industrial commodities such as iron and steel. Nevertheless, even though Argentina had the highest

³³ UN, ECLA / Economic Commission for Europe (ECE) / Food and Agriculture Organisation, *A study of trade between Latin America and Europe* (Geneva, January 1953), p.33; Lewis, *Crisis*, p.193.

³⁴ UN, ECLA, *Industrialización*, pp.27,28.

³⁵ Díaz Alejandro, *Essays*, p.228.

aggregate demand for iron and steel in Latin America, consumption per capita had not kept pace with changes in the standard of living.³⁶ In fact, it decreased from 81 kilograms in 1925-1929 to 45 kilograms in 1945-1949 (see Table 4.1). In the absence of an authentic industrialisation process, the market for iron and steel remained restricted. The tragedy was that things could have been different. In order to assess what might have been possible, this section considers three critical factors: (i) the composition of demand, (ii) actual supply conditions regarding imports and domestic output, and (iii) the extents, limits and opportunities for local production.

Table 4.7

ANNUAL AVERAGE ESTIMATED STEEL CONSUMPTION BY GROUPS OF PRODUCTS
(as a percentage of total steel consumption)

GROUPS OF PRODUCTS	1925-29	1930-34	1935-39	1940-44	1945-49
TOTAL (in thousands of tons)	891.8	510.9	668.8	312.5	732.8
Bars, strip, shapes and structural steel	37.2	39.7	45.4	48.9	45.9
Sheet	18.7	18.4	18.3	11.7	16.4
Rails and accessories	15.0	7.7	5.2	0.8	4.8
Wire and wire products	14.4	14.3	12.4	10.1	15.1
Tubes	9.2	10.1	8.7	7.0	9.1
Tinplate	4.5	9.5	9.7	20.4	7.9
Other products	0.9	0.2	0.2	1.0	0.7

Source: Calculated from the Argentine consumption data in UN, ECLA, *Study*, Volume I, p.87.

To evaluate the composition of demand for iron and steel, the evolution of consumption of the major groups of products is observed. Changes in the share of specific categories within aggregate demand for the years 1925-1949 are shown in Table 4.7 above. The figures indicate that the commodities with the highest proportion of consumption were all types of steel associated with construction, which as late as 1939 was rated as the second largest local industry after meat-packing despite its relatively low share within GDP (see Table 4.5).³⁷ The largest share of demand corresponded to bars, strip, shapes and structures, which

³⁶ UN, ECLA, *A study of the iron and steel industry in Latin America*, Volume I (New York, 1954), p.72.

³⁷ Laura Randall, *An Economic History of Argentina in the Twentieth Century* (New York, 1978), p.129.

reflected the absence of major steel-transforming industries and resulted from fluctuations in the share of demand for other products. However, the data in Table 4.7 conceals important facts relating to the actual volume of consumption of bars, strip, shapes and structures. Excluding drops in demand during the trough of the Depression and the Second World War, the tonnage consumed remained largely stable: it averaged 333,400 tons in 1925-1929, 304,700 tons in 1935-1939 and 314,500 tons in 1945-1949.³⁸ However, the amount of steel employed in construction effectively decreased in favour of locally produced cement as a consequence of tendencies towards product substitution, technological changes in building and the growth

Table 4.8

CONSUMPTION OF STEEL BARS AND SHAPES AND OF CEMENT, 1925-1949
(1935-1939 = 100)

PERIOD	BARS AND SHAPES	CEMENT
1925-1929	109.4	58.6
1930-1934	66.0	80.4
1935-1939	100.0	100.0
1940-1944	47.8	102.0
1945-1949	103.2	132.0

Source: Calculated from the data in UN, ECLA, *Study*, Volume I, p.90.

in public works programmes. Table 4.8 charts the substitution effect, confirming the steady increase of cement use in construction while the absolute volume of construction steel stood at much the same level in the late Forties as in the late Twenties. During the same period, cement consumption more than doubled. As a result of this shift, there was increased utilisation of products such as asbesto-cement tubes in sewerage systems and galvanised sheets for roofing were replaced by asbesto-cement sheets.³⁹

Three other groups of products associated with construction had a significant share of consumption:

(a) sheets, which were employed in galvanised roofing; (b) wire and wire products, in the form of items

³⁸ The figures were calculated from the Argentine consumption data in UN, ECLA, *Study*, Volume I, p.87.

³⁹ UN, ECLA, *Study*, Volume I, p.60.

such as wire rods; and (c) tubes and pipes, which were employed in public works and services. However, these categories of commodities were not used exclusively by the building industry. The emergent metallurgical sector utilised sheets in the production of consumer durables such as kitchen stoves and refrigerators and of capital goods such as machinery and rural implements. Agriculture required wire and wire products such as fencing wire and wire netting. The petroleum industry made increasing use of tubes and pipes.⁴⁰

Finally, the data in Table 4.7 above shows the trends in the share of demand for products associated with the agro-exports sector. The most significant feature is the steep drop in the consumption of rails and accessories, which had been the iron and steel product in greatest demand before 1914. The construction of railways, although associated with factors such as national consolidation, had also been determined by the requirements of export production.⁴¹ Changed economic conditions after the First World War and the financial difficulties of the railway companies (see below) were the principal causes for the fall in demand for rails. However, two further factors were also to blame: (i) contractions in trade during the Depression and the Second World War, and (ii) steel shortages in the late Forties. As regards tinplate, a commodity associated with food processing industries (especially meat-packing), consumption was remarkably stable save for a huge growth during the period 1940-1944. The significantly high levels of tinplate consumption during the Second World War responded to Allied (and more particularly British) needs. The meat-packing industry was controlled by British and US interests, and its beef supplies were vital. Shortages of tinplate imports from Britain were compensated with a substantial US quota.⁴² This can only have discouraged the development of local tinplate manufacturing. Moreover, during the late Forties, tinplate was progressively substituted by other packaging materials. Imported tinplate supplies were preserved for goods which could not employ other materials (eg, canned fish, shellfish and condensed milk), and replaced where possible by

⁴⁰ Ibid., pp.79,80.

⁴¹ Colin M. Lewis, 'Railways and industrialisation: Argentina and Brazil, 1870-1929', in Christopher Abel and Colin M. Lewis (eds.), *Latin America: Economic Imperialism and the State* (London, 1985), pp.201,202.

⁴² UN, ECLA, *Study*, p.79.

materials such as cardboard, wood and glass.⁴³

Table 4.9

IRON AND STEEL CONSUMPTION, IMPORTS AND PRODUCTION, 1925-1949
(annual averages)

PERIOD	CONSUMPTION (tons)	IMPORTS (tons)	OUTPUT (tons)	IMPORTS (% share of consumption)	OUTPUT (% share of consumption)
1925-1929	891,800	891,800	-	100.0	-
1930-1934	510,900	510,900	-	100.0	-
1935-1939	668,800	664,200	4,600	99.3	0.7
1940-1944	312,500	243,700	68,800	78.0	22.0
1945-1949	732,800	560,800	172,000	76.5	23.5

Source: Calculated from the statistics in UN, ECLA, *Study*, p.84.

Having assessed the structure of demand for iron and steel, this section focuses on actual supply conditions. Table 4.9 shows the volumes and shares of demand covered by imports and domestic production. It is clear from the data that imports were the key source of supply. Before 1939, local output was too modest to satisfy a significant share of consumption. Domestic iron and steel production grew during the Second World War but, as the figures indicate, domestic production satisfied only approximately 20% of requirements during the Forties.

The predominant source of iron and steel was imports. Two features characterised imports at this stage: first, volumes fluctuated strongly, subject to the length of economic cycles; and second, consistency in sources of supply - at least until September 1939. Fluctuations reflected the fact that 'normal' conditions were not prevalent. Severe difficulties arose from the contraction in trade during the world economic crisis and especially the Second World War, which are reflected in the drops in the annual averages of imports shown in Table 4.9. Furthermore, since economic cycles had shortened, annual import levels swayed even in periods of relative stability - as occurred between 1920 and 1927. With the onset of the world crisis in 1928, imports fell sharply. Although the domestic economy and trade recovered between 1934 and 1937,

⁴³ Ibid.

these years were again typified by sharp variations. Imports were most seriously disrupted between 1938 and 1945, owing first to recession and subsequently the Second World War.⁴⁴ Finally, notwithstanding the boom in the early postwar period, fluctuations in import levels remained the norm. Traditional trade currents were not immediately restored, and *Peronista* economic policy adversely affected the balance of payments.

The dominant sources of imports until 1939 were Continental European steel producer-exporters, notwithstanding the significance of Anglo-Argentine relations and that 23% of total Argentine imports originated in Britain and British India. Purchases of British iron and steel goods which in 1930 had declined in favour of Continental goods in relation to 1913 included galvanised sheets, and various types of wires and pipes.⁴⁵ As seen in Chapter 2, this shift towards Continental producers resulted from: (i) changes in output capacity arising directly from the First World War; (ii) currency conditions prevailing in the early and mid Twenties; and (iii) the oligopolistic International Steel Cartel (ISC) they created to sustain a declining overseas trade. As also seen in Chapter 2, the ISC flourished during the Thirties and was able to effectively control (and prevent the development of local production in) the few remaining 'open' overseas markets like Argentina through a range of elaborate distribution practices.

The outbreak of the Second World War precipitated change in supply conditions. The ISC collapsed and the Republic was deprived of imports from its leading sources, thereby encouraging the growth of a national steel industry to compensate for import shortfalls. Crude steel producers consumed their entire output 'in house' since they also manufactured finished goods. Although the domestic industry contributed to alleviate import shortages by satisfying a significant share of consumption, it was still in its infancy. Notwithstanding that production in nationally manufactured or second-hand Siemens-Martin furnaces with modest capacity and simple rolling mills methods overcame the limited availability of modern technology (see Chapter 6), methods were antiquated and restricted both output and the range of goods produced.

⁴⁴ *Boletín Informativo Techint*, October–November 1964, pp.11,27.

⁴⁵ Fondo Documental Julio A. Roca (h), Legajo No.7, Documentos 4 y 138. Archivo General de la Nación, Buenos Aires.

Table 4.10

DOMESTIC OUTPUT OF IRON AND STEEL PRODUCTS FOR SELECTED YEARS
 (share of total output value)

CATEGORIES	1935	1941	1948
Cast and elaborated iron and steel shapes and various articles	13.4%	15.8%	25.1%
Undetermined range of iron articles with or without content of other metals	9.7%	14.1%	18.1%
Tinplate, iron and zinc goods - including production of food containers	26.0%	29.5%	15.5%
Various iron shapes produced by blacksmiths	3.2%	-	-
Galvanised iron	9.4%	3.8%	1.9%
Drawn and galvanised wire	1.6%	2.6%	2.2%
Rivets, screws and nails	10.5%	5.4%	5.4%
Iron and steel pipes	3.2%	5.5%	5.5%
Rural implements	6.0%	2.2%	1.4%
Weighing apparatus and scales	0.6%	0.7%	0.8%
Doors, windows and other building goods	8.0%	8.4%	5.0%
Iron fittings and edgings for doors, windows, furniture and related goods	1.0%	2.5%	3.4%
Kitchen stoves and analogue goods	2.9%	4.4%	9.0%
Safes, metal furniture and related goods	2.0%	3.1%	4.2%
Iron beds and springs	2.3%	2.0%	2.5%

Sources: Calculated from the data in Ministerio de Hacienda, *Censo Industrial de 1935* (Buenos Aires, 1938), pp.612-632; Ministerio de Hacienda, *Estadística Industrial de 1941* (Buenos Aires, 1944), pp.307-311; Ministerio de Asuntos Técnicos, *Anuario Estadístico de la República Argentina, Tomo III: Estadística Industrial, Años 1949-1950*, pp.447,450-456,459.

There are few years for which national output statistics for the different product categories are available. With the exception of some selected items, the data is in monetary values rather than volume. Furthermore, there are inconsistencies in the range of items included in each category, particularly in the figures for 1948. To make the data comparable throughout the period (not least because of changes over time in the value of the peso), Table 4.10 shows the share of each category in total output value. The types of goods shown were simple to manufacture (ie, the necessary equipment was not complex) and reflect the absence of a genuine industrialisation process. Products associated with the building sector, the leading iron and steel consumer, were predominant overall. The categories under which they were classified accounted for between 35% and 40% of output value during the years displayed in Table 4.10. There was also considerable growth in the manufacture of consumer durables, notwithstanding their comparatively modest share of total output value, with the most notable example being provided by

kitchen stoves and analogue goods. High customs duties and the depreciation of the peso gave a sharp impetus to their national production during the Thirties. Domestic products, which were copies or licensed manufactures of imported brands, matched their foreign counterparts in all respects except quality. They were offered at very cheap prices, and thereby the import market became increasingly unsustainable.⁴⁶ With the subsequent over-emphasis on industries manufacturing consumer durables during the *Peronato*, production of goods as kitchen stoves soared and was sufficient to satisfy demand.⁴⁷

Notwithstanding the growth in output, domestic iron and steel production was neither modern or large-scale and its scope was limited. This worried military planners, who were concerned over supplies for *seguridad nacional* purposes and self-sufficiency in 'strategic' commodities. As seen in the previous chapter, their response was the PSA and its centrepiece, the SOMISA project. Unfortunately, the underlying assumption of the military - ie, that once the steelworks were operational a whole range of related transforming industries would develop automatically - was a serious misconception. Although the PSA was not implemented on schedule, it failed to go far enough and the flaws showed when it eventually was realised. This need not have been the case, as is demonstrated by two counterfactual examples: the steel industries in South Korea and Australia.

The South Korean counterfactual refers to a later period than that being studied, namely the late Sixties and early Seventies. Nonetheless, it is useful on three accounts. (a) South Korea also had a concentrated market. (b) South Korea, like Argentina in the interwar period, was at a stage where some of Chenery's benchmarks defining a semi-industrial economy were rapidly being attained. (c) Unlike the case of the PSA, government plans for iron and steel production included expanding the limited domestic market by incorporating related transforming industries. Regarding the thresholds differentiating primary-oriented economies from semi-industrial ones, South Korea made spectacular progress within a decade. Per capita national income expanded at a faster rate than the population. While population increased from 26,987,000

⁴⁶ DOT, *Economic Conditions in the Argentine Republic*, No.608, March 1935, p.72.

⁴⁷ Board of Trade, Export Promotion Department, Overseas Economic Surveys, *Argentina*, October 1947, p.87.

inhabitants in 1963 to 32,905,000 inhabitants in 1973, per capita income rose steeply over the same period from US\$ 87 to US\$ 313.⁴⁸ The role of manufacturing within the economy was also considerably enhanced. Its contribution to GDP increased from 15.6% to 20.5% between 1964 and 1970 - at a much faster pace than had been the case in Argentina (see Table 4.5).⁴⁹ These changes enabled South Korea to deepen industrialisation, as growth in per capita income shifted demand towards manufactures and manufacturing continued to increase its share of GDP.

Prior to government planning for expansion, South Korean iron and steel production was modest. As in Argentina during the Forties, local producers relied heavily on increasingly depleted scrap resources. Pig iron production, which began in 1958, was almost entirely exported to Japan. Crude steel output amounted to a mere 47,000 tons in 1961, and the finished goods produced were typical of a sector in its infancy.⁵⁰ Production was low technology, its market was limited and costs of production were high. When the Seoul government pursued the modernisation of the sector, though national defence played a part, the key consideration was the limitation of growth led by light industries. In addition, it acknowledged the insufficient stimulation of related sectors through state incentives and market mechanisms. The Heavy and Chemical Industries Promotion Plan launched by the South Korean régime in 1973 provided for the establishment of industries that consumed iron and steel, thus securing a minimum domestic market for its integrated steelworks project.⁵¹ If the PSA would have followed the South Korean example of incorporating related transforming industries, industrialisation would have been deepened and the market for iron and steel expanded with the growth of other heavy sectors. The PSA merely envisaged concentrated production of a broad range of semifinished and finished goods, many of which could not be manufactured efficiently (see Chapter 7). Hence, the PSA was severely flawed and would remain so when implemented. Argentina could have avoided or corrected the most serious deficiencies, as other countries had done with

⁴⁸ Korea Development Institute, *Korea's Economy: Past and Present* (Seoul, May 1975), p.342.

⁴⁹ UN, Economic Commission for Asia and the Far East (ECAFE), *Economic Bulletin for Asia and the Far East* XXIII (1972) No.1, p.53.

⁵⁰ UN, ECAFE, *Economic Survey of Asia and the Far East 1963* (New York, 1964), pp.61,62.

⁵¹ Lee-Jay Cho and Yoon Hyung Kim (eds.), *Economic Development in the Republic of Korea* (Honolulu, 1991), pp.436, 437,438.

their industries.

During the second quarter of the century, Australia provides another useful counterfactual. Both Argentina and Australia were traditional exporters of primary commodities, with the difference that before 1929 the range was more diverse in the Argentine case. Wool and wheat accounted respectively for 43% and 21% of total Australian exports in the Twenties.⁵² However, there were three significant distinctions between the two countries. (i) The Australian population, which increased from 5,435,734 inhabitants in 1921 to 7,579,358 inhabitants in 1947, was significantly less than that of Argentina.⁵³ (ii) Australia was 'born rich'. Sparsely populated and endowed with vast minerals resources, Australia enjoyed a higher GDP per capita than Argentina. Díaz Alejandro has estimated that, measured in 1970 US dollars, Australian GDP per capita was already US\$ 1,690 in 1913 while that of Argentina was US\$ 1,030 that same year.⁵⁴ (iii) The composition of manufacturing in Australia at the start of the Twenties was 'advanced' in relation to that of Argentina, notwithstanding that the contribution of manufacturing to GDP in Australia at that time was below that of its South American counterpart. The contribution of manufacturing to Australian GDP was 12.5% in the years 1920-1921, and it rose to 18% by 1929-1930.⁵⁵ Yet when it was just below the threshold differentiating exclusively primary-oriented exporters from semi-industrial countries, Australia had initiated import-substituting industrialisation as a result of import shortages during the First World War. Among the sectors that emerged was the iron and steel industry.

The Australian iron and steel sector had two significant similarities with the Plan Siderúrgico Argentino. (a) Production was concentrated in the hands of a single firm - the Broken Hill Proprietary Company (BHP) in Australia and SOMISA in Argentina. (b) The location of plant was dictated by access

⁵² Carlos F. Díaz Alejandro, 'Argentina, Australia and Brazil Before 1929', in D.C.M. Platt and Guido Di Tella (eds.), *Argentina, Australia and Canada* (London, 1985), p.99.

⁵³ Commonwealth of Australia, Commonwealth Bureau of Census and Statistics, *Census of the Commonwealth of Australia*, 30 June 1947, Statistician's Report (Canberra, 1952), p.34.

⁵⁴ Díaz Alejandro, 'Argentina', pp.97,98.

⁵⁵ N.G. Butlin, *Australian Domestic Product, Investment and Foreign Borrowing 1861-1938/1939* (Cambridge, 1962), p.13.

to both the market and basic inputs. The Argentine industrial heartland and main steel consumer market stretched along the River Plate and the right bank of the Paraná, between the cities of La Plata and Santa Fe, and was linked to the rest of the country by road and rail. The projected SOMISA steelworks were to be located at San Nicolás on the Paraná river, somewhere at the centre of this belt, with easy access to the market as well as its mainly imported raw material supplies.⁵⁶ In Australia, the rapidly growing market was concentrated in two states, New South Wales and Victoria, which each held 1/3 of the national population and were located contiguously. BHP initially concentrated production in the Newcastle steelworks in New South Wales. This implied easy access to the market and nearby coal sources, and the availability of a seaport to receive iron ore from South Australia.⁵⁷ Similar criteria applied to the subsequent development of steelmaking facilities at Port Kembla, as is seen below.

The Australian industry was heavily protected by tariffs, and its initial structure was far from efficient. Basic steel output was monopolised by BHP at its Newcastle plant, which had opened in 1915, and a number of small enterprises dependent on its production set up close by.⁵⁸ While requirements of pig iron and crude and semifinished steel were satisfied exclusively by local mills, those of finished commodities (excluding rails and wire) were not at least until the Depression. Although its output of finished products included galvanised sheets and wire, BHP was encouraged by guaranteed government purchases to concentrate on the manufacture of rails and structural steels for the public authorities. Production was costly and uncompetitive, as goods had to be made for use in the maintenance of infrastructure and services to government and municipal specifications. Furthermore, demand for these products was dependent on public expenditure. Before the onset of the Depression, heavy borrowing by the federal and state governments for works such as bridge building, electrification of the railways and improvements in the harbours sustained purchases of BHP products.⁵⁹

⁵⁶ Pedro J. Maristany, *El problema siderúrgico argentino* (Buenos Aires, 1950), p.36.

⁵⁷ E.A. Boehm, *Twentieth Century Economic Development in Australia* (Camberwell, 1971), pp.126,141.

⁵⁸ For details on the small producers see Commonwealth of Australia, Department of Trade, *Steel Industry of Australia* (Melbourne, November 1958), pp.6,7.

⁵⁹ Nancy Windett, *Australia as Producer and Trader, 1920-1932* (London, 1933), pp.181-184.

However, abrupt change came with the world crisis. The disappearance of both government orders and of imports transformed the industry. BHP acquired many of the small firms producing finished goods in the Newcastle area and developed an integrated operation based on an extensive network of subsidiaries and associated companies. The most significant acquisition was that of Australian Iron and Steel Limited in the early Thirties. This firm was severely affected by the Depression and had recently completed its steelworks at Port Kembla - a site which became the focus for the expansion of Australian steel production.⁶⁰ Port Kembla was a greenfield location outside Wollongong, the third largest city in New South Wales after Sydney and Newcastle, and had rail links with the coal deposits and a deep water harbour to receive iron ore shipments. BHP expanded operations in Port Kembla, and production levels in that area were further boosted with the opening of another steelworks in 1939 by Commonwealth Rolling Mills Proprietary (a joint venture of the British firm John Lysaght Limited and ARMCO).⁶¹

The development of Port Kembla into the prime Australian steelmaking area can be compared and contrasted with the structure proposed for SOMISA. In both cases, there was a high degree of integration and concentration. The Argentine steelworks project envisaged steel production in Siemens-Martin furnaces and a blooming mill. The steel ingots produced by SOMISA would then be reduced to adequate sizes and supplied to the private finished good producers for processing. As 'in house' production of steel at these firms was inefficient and outdated, their requirements would be provided by SOMISA - whose output would be efficiently manufactured by modern, large-scale production methods.⁶² Like the BHP plants at both Port Kembla and Newcastle, SOMISA would concentrate and virtually monopolise raw steel production, and a whole range of private sector firms manufacturing finished goods in the main consumption area would depend on its output.

The involvement of ARMCO with one of the Port Kembla plants was also in similar circumstances

⁶⁰ Department of Trade, *Australia*, pp.5,6.

⁶¹ Ibid., p.7.

⁶² Proposal presented by TAMET S.A., La Cantábrica S.A., SIAM Di Tella Ltda., and ARMCO Argentina S.A. at the contest held on 3 November 1944, in Dirección General de Fabricaciones Militares (DGFM), *Plan Siderúrgico Argentino* (Buenos Aires, 1946), p.151.

to the Argentine case. The American company had experience in the design, construction and operation of steelworks.⁶³ Participation of the US firm in both Commonwealth Rolling Mills Proprietary and SOMISA allowed domestic manufacturing of specialised ARMCO product lines such as sheets for automobiles and consumer durables such as refrigerators and enamelware.⁶⁴ However, the involvement of ARMCO in the PSA also responded to Argentine self-sufficiency aspirations. It not only manufactured a specialised line of sheets but also had diversified into the production of finished goods such as oil storage tanks and pipelines from its sheet output.⁶⁵ As part of its services to SOMISA, ARMCO would make its major registered processes available through licensing.⁶⁶

Concentration of production and the involvement of ARMCO are the only similarities between the Port Kembla area and SOMISA. There are three sharp and important differences: (i) the location of the greenfield sites, (ii) the range of goods produced, and (iii) the development of related industries. Regarding the upriver site proposed for SOMISA, it was unsuitable. The water was not deep enough for large ore carriers and thereby transport costs of raw materials increased (see Chapter 7). As concerns the variety of products manufactured, the initial concentration by BHP on expensive rails and structural steels had given way to a broader range of products (eg, plates and special steels) which could be manufactured efficiently as a result of favourable labour and fuel costs and of growth in the scale of production.⁶⁷ In contrast, SOMISA was designed to satisfy military self-sufficiency aspirations and produced all conceivable finished steel goods at enormous costs (see Chapter 7). Finally, there was the matter of the formation of related industries. BHP established one which increased consumption of its steel output. On the eve of the Second World War, it had developed the port of Whyalla in South Australia (the outlet for iron ore) and established its own shipyard there. The Whyalla shipyard designed and built ships to transport raw materials and

⁶³ Antecedentes de la capacidad técnica de ARMCO Argentina S.A., in DGFM, *Plan*, p.66.

⁶⁴ Department of Trade, *Australia*, p.7.

⁶⁵ William T. Hogan, *Economic History of the Iron and Steel Industry in the United States* (Lexington, 1971), Volume 3, pp.981,982, and Volume 4, p.1797.

⁶⁶ Antecedentes, in DGFM, *Plan*, p.66.

⁶⁷ Peter Cochrane, *Industrialization and Dependence* (St. Lucia, 1980), p.95.

finished goods for BHP, and to satisfy defence requirements of the Royal Australian Navy and commercial requisites of the Australian Shipbuilding Board.⁶⁸ In the case of the Argentine steelworks project, the only related transforming activity had no bearing on the market for iron and steel. Coke to be employed in steelmaking was to be produced in special ovens that made use of byproducts (eg, distilled gas, benzol for engines, coke tar) which would be sold by SOMISA - to a rather limited market - in order to reduce the cost of metallurgical coke.⁶⁹

As the South Korean and Australian examples have shown, the PSA had serious flaws which could have been avoided if DGFM planners had based it on economic rather than military considerations. The deficiencies showed when the project was finally realised in the early Sixties. Until then, domestic production had a market limited by the absence of a genuine industrialisation process and output constrained by technological restrictions. At least on paper, things should have been different. Argentina had a concentrated market. Its population was one of the largest in Latin America and enjoyed both good income and a relatively even income distribution - which could only increase demand for manufactures. Furthermore, the contribution of manufacturing to GDP was rising. Therefore, the country should have been in a position to genuinely industrialise. The Argentine failure to take advantage of these conditions are reflected in the market for iron and steel, where shifts in consumption did not introduce real changes or expansion, and in the limitations on what iron and steel goods could be produced locally.

THE TRANSPORT SECTOR: A DECLINING LEADING CONSUMER (Product case-study: steel rails)

Transportation, a major traditional sector associated with agro-exports, had been the leading steel user before 1914 as a result of the growth of the national railway network. As indicated earlier, the drop in its iron and steel consumption was one significant feature of the market. The position of transportation as a consumer was undermined by: (i) changed economic conditions after the First World War, and (ii) the

⁶⁸ Department of Trade, *Australia*, pp.5,9.

⁶⁹ Estudio técnico-económico de la producción de acero semiterminado en la República Argentina presentado por ARMCO Argentina S.A., in DGFM, *Plan*, pp.73,77.

financial difficulties of the railway companies - particularly British-owned ones, which controlled most of the system until 1948. These arguments will be supported by a product case-study: that of steel rails, whose selection is justified on two accounts. (a) Rails were an essential input in railway development and the key component in steel consumption by the transport sector. (b) Rails were one product which the Republic aspired to produce in its bid for self-sufficiency in 'strategic' goods and for which demand was pent-up as renewals had not been undertaken for some time. However, notwithstanding Argentine aspirations, this section demonstrates that domestic rail production was not economically viable. The United Nations Economic Commission for Latin America has calculated that the minimum annual level necessary for rails to be produced economically was 100,000 tons. Domestic demand by the early Fifties remained well below this threshold, as the combined consumption for rails in Argentina, Bolivia, Brazil, Chile, Paraguay, Peru and Uruguay was calculated at 160,000 tons.⁷⁰

The critical factor preventing efficient domestic rail production was that shapes, lengths and weights varied widely as a consequence of consumer requirements and a lack of standardisation among users.⁷¹ The 'segmentation' of the railways between a multiplicity of private companies (mostly British-owned, but also comprising some minor French and Argentine ones) and the State Railways had two important consequences on demand: (i) there was no big buyer, and (ii) a proliferation of gauges which resulted in divergent requirements of different types of permanent way materials. Broad-gauge lines, representing 58% of track, required heavy rails of 40-50 kilograms per metre. Metre-gauge and standard-gauge lines, representing 34% and 7.5% of track respectively, required semi-light rails of 25-35 kilograms per metre. Narrow-gauge lines, which were insignificant in the system, needed light rails of less than 25 kilograms per metre.⁷² Given these conditions, the undertaking of local manufacturing was not viable as large numbers of shapes would have to be produced in relatively small volumes in rolling equipment also employed to

⁷⁰ UN, ECLA, *Study of the prospects of inter-Latin American trade (Southern zone of the region)* (New York, 1954), p.104.

⁷¹ UN, ECE, *Railways and steel* (Geneva, 1957), p.3.

⁷² UN, ECLA, Serie Análisis y proyecciones del desarrollo económico, V: *El desarrollo económico de la Argentina*, Segunda parte - Los sectores de la producción: energía y transporte (Mexico, 1959), pp.81,86.

manufacture other goods.⁷³

Besides varying requirements for different types, circumstances particular to the railways affected demand. Purchases of rails depended on the age of existing tracks, traffic density, the amount of empty running, the extent to which additional tracks were being laid, and the financial position of railway companies.⁷⁴ On account of the age of existing tracks, there appeared to be considerable demand for permanent way materials. The normal useful life of rails, if these had been adequately maintained, was 20-25 years on main lines (except those with intense traffic or unfavourable layout characteristics such as steep gradients and curves) and upto 40-50 years in secondary and trunk lines. In the Republic, a large proportion of rails had completed their useful life: it was estimated that 54% of rails were over 40 years old in 1954.⁷⁵ However, track dilapidation was unevenly distributed among the different gauges, and varied with levels of traffic density. In many of the State-operated lines, especially those built out of political considerations in the north and northwest of the country, traffic density was low and the slow decay of permanent way materials was due to the passage of time. In Greater Buenos Aires and the agricultural region of the Pampas, owing respectively to the heavy volumes of traffic in suburban passengers and rural production, densities were really high. However, even density changed over time in areas with the greatest traffic. This was most apparent in the Pampas, and resulted from the success of automotive transport. There was an excess of parallel lines to the ports which ran close to each other, which were initially laid as a result of intense competition between private operators, and many declined as most pre-dated the age of roads. Consequently, the slow running down of many tracks owed little to traffic density.⁷⁶ Given the uneven distribution of track dilapidation, domestic production of replacement materials would have been inefficient as demand was irregular.

⁷³ UN, ECLA, *Problems of the steel making and transforming industries in Latin America*, Volume 1: Report of the São Paulo meeting (New York, 1958), p.13.

⁷⁴ UN, ECE, *Railways*, p.22.

⁷⁵ UN, ECLA, *Análisis y proyecciones, V: Argentina, Segunda parte - Los sectores de la producción: energía y transporte*, p.82.

⁷⁶ Ibid., pp.58,79,80.

Table 4.11
THE ARGENTINE RAILWAYS, 1900-1950
 (length in kilometres)

YEAR	TOTAL NETWORK	PRIVATE LINES	STATE LINES
1900	16,400	14,400	2,000
1907	22,000	19,400	2,600
1914	33,500	28,800	4,700
1920	35,291	29,141	6,150
1925	36,436	29,455	6,981
1929	38,378	30,296	8,082
1935	41,753	31,643	10,110
1939	42,846	30,223	12,623
1946	42,852	29,389	13,463
1950	42,984	-	42,984

Sources: Ricardo M. Ortiz, *Historia Económica de la Argentina*, Volume II (Buenos Aires, 1955), p.232 for the years 1900-1914; *Business Conditions in Argentina*, Reports No.150, 31 January 1921, p.16; No.169, January 1926, p.24; No.188, October 1930, p.114; No.209, January 1936, pp.20-21; No.225, January 1940, p.20 and No.253, January-February 1947, p.15 for the years 1920-1946; UN, Economic Commission for Europe (ECE), *Railways and steel* (Geneva, 1957), p.53 for the year 1950.

On account of the extent to which additional tracks were being laid and of the financial position of the railway companies, demand for rails steadily dropped - particularly after 1930. Table 4.11 shows the increase in the length of the national railway system between 1900 and 1950, breaking it down into private and State lines. The rapid expansion of the network before 1914 reflects a railway building boom. Economic growth was founded on a land-extensive pattern of agro-exports, and increased commodity output and exports required new railway construction across the Pampas. Steel rail imports rose from 28,740 tons in 1900 to 156,592 tons in 1913.⁷⁷ However, changed conditions after the First World War limited further expansion of the network. Table 4.11 shows a sluggish increase in the length as from 1920, indicating that the building rate had slowed down considerably. Two factors account for the deceleration in the Twenties. (i) The exhaustion of the 'easy' phase of export-led growth, which resulted in the 'closing' of the frontier and a shift in the nature of foreign investment from infrastructure and public services to industry (see Chapter 2). (ii) Instability in world commodity and money markets reduced export profits and made it difficult for (especially British) companies to raise new capital to invest in social overhead projects.

⁷⁷ Ministerio de Hacienda, *El Comercio Exterior Argentino*, Año 1900, Boletín número 108, p.83, and Año 1913, Boletín número 160, p.197.

The rail market was 'fragmented' between private and State railways, between imports from Britain and the Continent, and between demand for replacements and new construction. Purchases by British companies were made in Britain; the State Railways bought mainly in the Continent. The market began to undergo a substantial structural change. There was a slow shift from private to State construction, which peaked under President Justo in the Thirties. During the confrontation with foreign-owned railways (particularly over rates), Yrigoyen annulled various existing concessions awarded to British companies to build extensions and new lines on the grounds that they represented speculative aims.⁷⁸ Simultaneously, the State Railways undertook a construction programme whose feature was that it complemented rather than competed with private lines. It aimed to link up those national territories which the private sector could not exploit profitably, connect part of the State system with Buenos Aires - the terminus of the British lines - and improve Transandine links.⁷⁹

Table 4.12

RAIL IMPORTS AND THE MARKET SHARE OF THEIR SOURCES, 1921-1950
(annual averages)

PERIOD	TOTAL ('000 t)	BRITAIN (%)	GERMANY (%)	FRANCE (%)	BELGIUM (%)
1921-1925	85.0	38.3	17.1	3.4	28.2
1926-1930	137.5	69.1	6.5	10.5	10.0
1931-1935	21.4	11.7	13.4	9.0	23.3
1936-1940	24.7	4.3	3.6	39.5	17.1
1941-1945	0.5	-	-	-	-
1946-1950	40.2	14.1	0.3	1.5	12.3

Sources: Calculated from the data in Ministerio de Hacienda, *Anuario del Comercio Exterior de la República Argentina*, volumes for 1921-1942; Dirección Nacional de Investigaciones, Estadística y Censos, *Anuario Estadístico de la República Argentina: Comercio Exterior*, volumes for 1944-1947; *Anuario Estadístico*, Tomo II: Comercio, Años 1948 y 1949-1950.

The gradual move from private to State building is reflected in Table 4.12, which shows the origin

⁷⁸ DOT, *Report on the Financial and Economic Conditions of the Argentine Republic*, September 1921, p.44.

⁷⁹ DOT, *Economic Conditions in the Argentine Republic*, November 1929, p.77, and *Report*, September 1922, p.31.

of rail imports. The British share declined in the early Twenties, as British-owned companies limited procurements, while the share of Continental sources increased with purchases by the State Railways. By the middle of the decade, the British companies benefited from improvements in their financial position and thereby restarted their comprehensive work on extensions, improvements and repairs.⁸⁰ The result, as seen in Table 4.12, was a sharp rise in import levels during the second half of the Twenties, especially from Britain, which reflected postponed demand and increased the total annual imports to levels unparalleled since 1913. Although demand in the late Twenties exceeded the efficiency level required for domestic rail manufacturing, it could not have justified the undertaking of local production if this would have been possible. The onset of the world crisis led to the decline of transport as a source of demand for steel. The high import levels of the late Twenties were maintained in 1930, as the bulk represented orders placed in 1929 and 1930 by the British companies.⁸¹ Demand for rails and accessories decreased subsequently as both the British and State railways were forced to limit purchases. Furthermore, the State Railways were forced by the military régime of 1930 to suspend many extension projects authorised by its Radical predecessors, though work on new branches and extensions undertaken before the coup was allowed to continue and be completed.⁸²

Rail imports in the Thirties did not attain the high levels of the late Twenties (see Table 4.12). The British companies, the leading buyers, never recovered from the crisis and were unable to replace increasingly dilapidated materials as a result of the failure to maintain provision for depreciation and mounting financial difficulties. Receipts were drastically reduced with the fall in traffic and increased competition from road transport, and thereby purchases were restricted to materials essential for the maintenance of the network.⁸³ This trend was sustained throughout the Thirties, and rail imports from Britain dropped from over 100,000 tons per annum on the eve of the Depression to a few hundred tons by

⁸⁰ DOT, *Report on the Financial, Commercial and Economic Conditions of the Argentine Republic*, September 1925, p.59.

⁸¹ DOT, *Conditions*, Report No.505, 31 October 1931, p.39.

⁸² DOT, *Conditions*, 31 October 1930, p.81.

⁸³ DOT, *Conditions*, Report No.608, March 1935, p.66.

the end of the decade.⁸⁴ Therefore most rail purchases corresponded to the State Railways, which acquired materials from the Continent as members of the International Steel Cartel offered advantageous prices. The State Railways were in a stronger position than British-owned companies. Having resolved their chronic financial difficulties and been reorganised under engineer Pablo Nogués, they launched an ambitious extension programme.⁸⁵ This programme, a part of the government strategy of public works and approved by the Concordancia-dominated Congress in October 1933, resulted in substantial rail orders being placed in the Continent for its implementation. Work was proceeding on over 15 different lines by 1937, and a total of 1,732 kilometres of new lines were opened in 1938.⁸⁶ The achievements of the State Railways construction programme were considerable.

The Second World War and its aftermath only aggravated problems. There were steel import shortages and the future of the private railways was precarious, not least because operating concessions would expire in 1947. The war severely affected imports as traditional sources of supply, which were involved in the conflict or occupied by Germany, vanished and imports dropped sharply (see Table 4.12). This contrasted clearly with events in the aftermath of the Depression, when import levels improved once Argentine economic recovery gathered momentum. At a time when extensive renovations were critical, British companies remained crippled. The continued absence of renewals threatened to reduce efficiency and increase difficulties in the marketing of rural production, as 66% of the cereal and linseed crops were still transported along the 28,714 kilometres of British-owned lines.⁸⁷ However, British companies failed in their attempt to obtain government assistance. The State Railways, on the other hand, fared better at least until 1942. They temporarily, and partially, replaced Continental supplies with imports from the United States of America, until the Americans entered the war in December 1941 and US-Argentine antagonism intensified. The Concordancia régime attempted to overcome shortages of imported materials for the State

⁸⁴ DOT, *Report*, No.683, p.73.

⁸⁵ Carlos Aguinaga and Roberto Azzareto, *Ni década ni infame, del '30 al '43* (Buenos Aires, 1991), p.266.

⁸⁶ DOT, *Conditions*, No.608, p.67, and *Report*, No.683, p.73, and No.733, June 1939, p.121.

⁸⁷ Communication from the British-owned railways to Salvador Oria, Minister of Public Works, Buenos Aires, 3 February 1942, *The Review of the River Plate (RRP)*, 20 February 1942, p.22.

Railways, and presented Congress with a proposal to manufacture rails in the Fábrica Militar de Aceros. Local production was to supply the requirements of the State network, which were 10,000 tons per annum for maintenance and 10,000-15,000 tons per annum for the planned expansion of the network. However, the most significant feature of the proposed legislation was the acknowledgement that domestic rail manufacturing was not viable. It specified that local production would only be undertaken for the duration of the Second World War, as high costs and low output levels would make production in peacetime uncompetitive.⁸⁸ This proposed legislation was not approved before the military closed Congress in 1943.

Supply difficulties persisted after the war. Although import levels improved (see Table 4.12), these were insufficient to meet requirements as the railways were in desperate need of extensive renewals.⁸⁹ On the surface, shortages of imported materials could have fostered local production - not least because of State plans for the railways. The *Peronista* government initially confined itself to completing State lines under construction and providing new ones, allowing the State Railways to import materials through the Instituto Argentino para la Promoción del Intercambio.⁹⁰ Nevertheless the régime, having acquired the French railways in late 1946 and with the purchase of the British ones in sight, incorporated the needs of the private companies in an ambitious programme launched in 1947. The Five-Year Railway Plan needed 250,000 tons of rails over 5 years (or 50,000 tons per annum).⁹¹ Unfortunately, in terms of volume and technology, this did not warrant the undertaking of domestic rail manufacturing. The annual requirements of the Five-Year Railway Plan were 50% lower than the minimum level necessary to sustain efficient domestic production. Furthermore, although it was not made explicit, this programme needed rails with varying lengths, shapes and weights as a result of the proliferation of gauges. Hence, different rail types would have to be produced in fairly small volumes in equipment used to manufacture a range of other goods in relatively small

⁸⁸ Message from the Executive Power containing information on the cost of expanding the Fábrica Militar de Aceros for the production of rails, Buenos Aires, 24 November 1941, presented at the session of 29 May 1942, Congreso Nacional, *Diario de Sesiones de la Cámara de Diputados*, Año 1942, Tomo I, p.76.

⁸⁹ RRP, 21 June 1946, p.11.

⁹⁰ RRP, 29 November 1946, p.18; *Business Conditions in Argentina*, No.255, July-August 1947, p.67.

⁹¹ Drive Telegram no.769 from Sir Reginald A. Leeper, British Ambassador to Argentina, to the FO, 4 December 1947. FO 371 AS 6617/16/2.

tonnages, thereby making production inefficient. Existing facilities were also unsuitable. Private sector suppliers of rolled goods utilised semi-continuous mills. These comprised a reversing roughing train of one or two stands, and a continuous finishing train of four or more stands placed in tandem through which steel travelled without reversing at any stage.⁹² Such equipment was not used to make rails, which were usually produced in two-high mills.⁹³ The latter were either reversing or non-reversing and had two driven rolls of equal diameter.⁹⁴

Lacking the possibility of obtaining supplies domestically in the immediate postwar period, the country could only procure materials abroad. According to an estimate by the Banco Central, these purchases would cost upto m\$n 400,000,000 annually.⁹⁵ However, three factors hindered their obtention: supplies from traditional sources were limited, the country faced a crisis in the late Forties, and the railways were crippled by problems. As part of Anglo-Argentine negotiations, Britain was expected to provide the necessary materials for the Five-Year Railway Plan. The authorities wanted these delivered in roughly equal annual installments.⁹⁶ The United Kingdom could not deliver. Imported rails were not only scarce, but their purchases became increasingly restricted by the depletion of foreign exchange reserves in the late Forties. Moreover, the difficulties faced by the railways in the Thirties subsisted subsequently. There was no growth in traffic, operations ran at a loss, and continued financial difficulties prevented any acquisitions of new materials. However, there were two differences with the Thirties. (a) The State covered the deficit of the entire network as the British companies had been nationalised in 1948. (b) Whatever funds the railways might have had available for renewals were used by the *Peronista* régime for featherbedding and shielding its supporters from economic hardship in the late Forties.

Although it was clear that economically viable domestic rail production was unfeasible as a result

⁹² UN, ECE, *The European steel industry and the wide-strip mill* (Geneva, 1953), p.98.

⁹³ UN, ECE, *Railways*, p.3.

⁹⁴ UN, ECE, *Wide-strip mill*, p.98.

⁹⁵ *RRP*, 18 July 1947, p.13.

⁹⁶ Drive Telegram No.769 from Leeper to the FO. FO 371 AS 6617/16/2.

of specific market conditions and the nature of the product itself, the DGFM showed no concern with economic considerations. When the PSA was finally realised in the early Sixties, rail production was undertaken at great cost. The final acknowledgement that steel rails could not be produced locally only came three decades later with the privatisation of SOMISA. The recommendations for the latter specified that unprofitable lines such as rails would have to be abandoned as their production resulted in cash losses and high cash operating costs and that, as a result of inefficient use, the blooming mill producing such goods should have to be closed down.⁹⁷ The failure of domestic rail production is a clear indicator that if military planners had given priority to economics rather than national defence, the PSA might have been better designed and more economically viable.

CONSTRUCTION: THE LEADING CONSUMER (Product case-studies: iron girders and cast-iron pipes)

While the share of transportation in total consumption declined, building constantly represented the largest slice of the market. Construction was rated as the second largest industry in 1939.⁹⁸ It is estimated that in 1955 almost 50% of iron and steel consumed went to construction and associated industries, and that this proportion was even higher in earlier years.⁹⁹ A complete picture of the requirements for iron and steel by the sector is unobtainable due to the inadequate information available on material consumption. Nevertheless, the only detailed construction statistics, which are furnished in the *Censo Industrial de 1935*, provide useful indications. As Table 4.13 shows, the leading activity was building construction. As a result, demand for iron and steel goods was principally for bars, strip, shapes and structural materials. Reflecting this, the product case studies selected to illustrate the market trends for building products are those of iron girders and cast-iron pipes. The choice of these products is justified on three accounts: (i) they were specifically used in buildings and complementary works; (ii) they could be produced locally, and domestic output displaced imports as the leading source of supply after 1930; and (iii) their consumption reflects shifts

⁹⁷ Ministerio de Defensa, *Developing a Strategy for the Turnaround, Restructuring and Privatization of Sociedad Mixta Siderurgia Argentina (SOMISA)* (Buenos Aires, 16 January 1992), pp.13,14,27.

⁹⁸ Randall, *History*, p.129.

⁹⁹ UN, ECLA, *Análisis y proyecciones, V: Argentina, Segunda parte - Los sectores de la producción: agricultura e industria* (Mexico, 1959), p.172.

Table 4.13

OUTPUT VALUE OF THE CONSTRUCTION INDUSTRY, 1 JULY 1934 - 30 JUNE 1935
(in millions of pesos)

CATEGORIES	TOTAL	FEDERAL CAPITAL	SHARE (%)
Buildings and complementary works and repairs	73.5	46.9	62.7
Roads, bridges, pavements and work excluding buildings	29.0	5.3	18.3
Companies that carry out all kinds of construction	24.1	10.2	42.3

Source: Calculated from the statistics in *Censo Industrial*, pp.701,702,704,706.

in demand by the construction sector. However, an observation is necessary as regards data. First, import statistics were not disaggregated before 1928. Up to that point, cast-iron pipes were encompassed in a broad category that included a wide range of types of pipes and tubes. Second, there are substantial gaps in national industrial production figures. Therefore, the relation between changes in import levels and in domestic output levels are not easily determined.

Table 4.14

BUILDING ACTIVITY IN BUENOS AIRES AND IMPORTS OF GIRDERS AND PIPES, 1921-1950
(annual averages)

PERIOD	COVERED AREA		GIRDER IMPORTS		PIPE IMPORTS	
	'000 m ²	% change	'000 t	% change	'000 t	% change
1921-1925	1,913.3		54.3		n/a	
1926-1930	2,240.5	17.1	69.9	28.7	37.5*	
1931-1935	1,577.7	-29.6	17.5	-75.0	9.5	
1936-1940	1,577.2	-0.02	11.1	-36.6	11.4	20.0
1941-1945	2,110.7	33.8	0.3	-97.3	4.4	-61.4
1946-1950	2,290.1	8.49	24.5	8066.7	10.3	134.1

* Annual average for the period 1928-1930 only.

Sources: Calculated from the Buenos Aires building statistics in *Business*, No.165, January 1925, p.25; No.201, January 1934, p.17, No.241, January 1944, p.20; and No.271, July 1951, p.44; and the data in *Anuario del Comercio*, volumes for 1921-1942; *Comercio Exterior*, volumes for 1944-1947; *Anuario Estadístico*, Tomo II, Años 1948 y 1949-1950.

Overall trends in construction can be depicted by employing one measure used in reports on local

economic conditions in this period: the covered area in square metres built annually in the Federal Capital. Table 4.14 measures these trends against those visible in imports of our case studies, thereby allowing an accurate assessment of market behaviour with the exception of cast-iron pipe imports in the Twenties. Building, which had slumped during the First World War and its immediate aftermath, recovered in the early Twenties. New building activity in the Federal Capital rose rapidly, and peaked in 1923 with 2,366,800 m² per annum.¹⁰⁰ Growth in manufacturing and tertiary activities had encouraged the construction of processing plants (eg, the meat packing plants of Armour, Swift and La Plata Cold Storage) and commercial property (eg, the bank headquarters of Ernesto Tornquist & Co., the Nuevo Banco Italiano, the Banco de Galicia and the National City Bank of New York).¹⁰¹ Urbanisation had also fostered residential building in the outlying districts.¹⁰² High prices for land and rents in the central area had encouraged the population to spread towards more spacious neighbourhoods made accessible by the rapid expansion of public transport.¹⁰³ Although most of this building was undertaken by the private sector, the State had some initiatives of its own. As Buenos Aires faced increasing traffic congestion and numerous areas had to be modernised if the city was to retain its cosmopolitan image, the authorities embarked on a programme of urban beautification. Projects included the widening of key streets such as Santa Fe and the opening of new avenues such as the *diagonales* Julio A. Roca and Roque Sáenz Peña.¹⁰⁴

Widespread building activities boosted the market for structural materials such as iron girders. They did the same for consumption of products used in complementary works such as cast-iron pipes for water mains, for which Obras Sanitarias de la Nación (OSN) was the leading customer.¹⁰⁵ Imports, which

¹⁰⁰ Banco de la Nación Argentina (Banco Nación), *Revista Económica* 2 (1929) No.1, p.7; *Business Conditions in Argentina*, No.165, January 1925, p.25.

¹⁰¹ 'Las industrias nacionales: Compañía Argentina de Hierros y Aceros de Pedro Vasena e Hijos, Limitada', *La Época*, Buenos Aires, 10 September 1918; *Revista de la Sociedad Anónima Talleres Metalúrgicos San Martín TAME*, May 1933, p.9.

¹⁰² Richard J. Walter, *Politics and Urban Growth in Buenos Aires: 1910-1942* (Cambridge, 1993), p.84.

¹⁰³ Raúl García Heras, *Transportes, negocios y política: la Compañía Anglo-Argentina de Tranvías, 1876-1981* (Buenos Aires, 1994), pp.13,14.

¹⁰⁴ *Ibid.*, pp.51,52.

¹⁰⁵ DOT, *Report*, September 1925, p.30.

were provided by Continental exporters controlling the market through dumping (see Chapter 1), were the key source of supply and expanded to unprecedented levels as construction activities resumed in the late Twenties (see Table 4.14).¹⁰⁶ Demand for materials such as girders and cast-iron pipes subsequently declined during the Thirties and early Forties. The onset of the Depression hit construction severely. The covered area built in the Federal Capital dropped sharply in the early Thirties (see Table 4.14), with the larger projects being those most affected.¹⁰⁷ The building of office and residential premises, factories, warehouses and other major facilities was curtailed. Furthermore, the OSN postponed most undertaken and planned work, and was out of the market due to financial difficulties. Therefore, requirements for girders and cast-iron pipes were reduced and imports fell (see Table 4.14).¹⁰⁸ Nevertheless, the share of construction goods in total national iron and steel consumption rose during those years (see Table 4.7 above). This arose from the contraction in trade and in imports of items such as rails.

Urban construction recovered in the mid-Thirties with a revival of private construction and the large government public works programmes. With strong public support and intent on a splendid celebration of the fourth centenary of the national capital, the Justo régime continued the urban modernisation and beautification process begun in the Twenties.¹⁰⁹ Grandiose government buildings (the Ministry of Public Works, the Ministry of Finance, the Ministry of War) were commissioned.¹¹⁰ The widening of major arteries such as Corrientes and sections of new avenues - eg, 9 de Julio and Juan B. Justo - were completed, monuments such as the massive Obelisco were erected, and numerous residential *barrios* were developed.¹¹¹ However, consumption of iron and steel commodities in the late Thirties was affected by

¹⁰⁶ DOT, *Commercial, Economic and Financial Conditions in the Argentine Republic*, October 1928, p.29.

¹⁰⁷ Banco Nación, *Revista* 3 (1930) No.9, p.160; 4 (1931) No. 10, p.193; and 5 (1932) No.5, pp.85,86.

¹⁰⁸ DOT, *Conditions*, Report No.551, 31 January 1933, pp. 48,54.

¹⁰⁹ García Heras, *Transportes*, p.126.

¹¹⁰ Poder Ejecutivo Nacional, *Tarea que realizó el gobierno nacional en el periodo 1932-1938* (Buenos Aires, 1938), Volume 3, unpaginated.

¹¹¹ Ibid., Volume 5, unpaginated.

various difficulties. The building industry was brought to a virtual standstill by the bricklayers' strike in late 1935 and early 1936.¹¹² This was followed by the recession of 1938 and the outbreak of the Second World War, which renewed the problems as costs of materials increased and imported products became once again unobtainable.¹¹³

Table 4.15

**PRODUCTION OF STRUCTURAL MATERIALS AND CAST-IRON PIPES
(in tons)**

YEAR	IRON BARS, SHEETS, SHAPES, GIRDERS	CAST-IRON PIPES
1935	19,423	15,429
1938	14,673	15,074
1941	31,044	11,935
1948	n/a	20,566

Sources: *Censo Industrial*, pp.612,622; Ministerio de Hacienda, *Estadística Industrial de la República Argentina*, 1938 (Buenos Aires, 1940), p.74; *Estadística Industrial de 1941*, pp.307,309; *Anuario Estadístico, Años 1949-1950*, Tomo III, p.453.

The most crucial long-term effect of the Depression on construction was a shift in the nature of materials used. As a consequence of import shortages at the trough of the crisis and with support of high tariffs, import substitution was promoted through national production of building materials. Favoured by rising domestic cement production and technological changes in construction, the most preferred material was reinforced concrete. Increased cement consumption led to lower demand for structural steel, whose use was limited to the building of sheds, gantries and some factories.¹¹⁴ Even more crucial, imports - which were still supplied by Continental sources now assembled into the ISC - never attained pre-1929 levels (see Table 4.14). The main sources of structural steel products and cast-iron pipes were now domestic. Based on the available data, Table 4.15 shows national output of these goods. Output levels were considerable. Imports of structural commodities remained low as national producers strengthened their position to meet

¹¹² *Business*, No.209, January 1936, p.19; No.213, January 1937, p.22.

¹¹³ *Business*, No.217, January 1938, p.22; No.221, January 1939, p.19; No.225, January 1940, p.19.

¹¹⁴ DOT, *Conditions*, Report No.608, p.65.

local needs, and imports of cast-iron pipes depended on OSN requirements since the merchant trade was supplied by domestic manufacturers.¹¹⁵

National production of construction materials had a key role in maintaining supplies in the Forties. The Second World War and the immediate postwar disrupted imports far more severely than the Depression. While imports of structural commodities and cast-iron pipes plunged to record lows, local production enabled the growth of building during the harshest years of the war. This was reflected in the increase in the newly built covered area in square metres in the Federal Capital (see Table 4.14). Although domestic manufacturing of construction goods continued to expand after the Second World War (see Table 4.10) and import levels increased as a result of postponed wartime demand (see Table 4.14), these facts do not reveal much about overall trends in the building industry. During the Forties, there were two major shifts affecting the sector: (i) the rise of the State to the position of leading investor, and (ii) the increased use of substitutes for iron and steel products.

The rise of the State to the position of leading investor resulted in a shift away from private to State building in urban construction, which required a lower iron and steel content, and the undertaking of large numbers of public works during the *Peronato*. Private building had dominated urban construction before the Second World War, developing residential property, commercial facilities and industrial installations. The necessary materials had been furnished by construction firms, which imported the inputs required, and by the leading metallurgical firm Talleres Metalúrgicos San Martín TAMET, which both imported and manufactured essential building items. TAMET had supplied goods to a wide range of industries, including storage tanks with a 6,500 ton capacity for the oil industry, structural steel for the Compañía Argentina de Cemento Portland and the Sociedad Anónima Tubos Mannesmann, and a chimney for YPF installations.¹¹⁶ With the advent of the *Peronista* régime, the State expanded into the construction industry through a low-cost housing programme designed to overcome housing shortages aggravated by the drift to the cities, and

¹¹⁵ DOT, *Report*, No.683, p.67, and No.733, p.47.

¹¹⁶ *Revista de la Sociedad Anónima Talleres Metalúrgicos San Martín TAMET*, December 1932, p.14; April 1933, pp.12-13; May 1933, p.9.

the promotion of public works. The government set aside vast sums for its large-scale low-cost housing programme and progress had been made by the late Forties in various housing projects undertaken by the Buenos Aires municipality.¹¹⁷ Established major private firms did not contribute to low-cost housing as this type of construction did not require a large iron and steel content. However, they were able to continue doing so for industrial projects and some government non-housing projects. For instance, TAMET provided materials for private and State industrial installations (eg, the General Motors car plant and the CADE power station), for State-owned infrastructure (eg, grain elevators and the Correo Central building), and for conspicuous government waste such as the renewal of lamp posts in Plaza Colón in Buenos Aires.¹¹⁸

Besides low-cost housing construction, State involvement in building also included a large number of public works projects. This required iron and steel finished goods, for whose provision the government relied on the military steel plant. During the war, the Fábrica Militar de Aceros met the requirements of various DGFM undertakings, supplying structures for the Altos Hornos Zapla, docks for the Río Santiago naval base, and storage tanks for the Fábrica Militar de Pólvoras y Explosivos. With the return of peacetime, the Fábrica Militar de Aceros diversified from exclusively military public works into non-military public construction. It furnished materials for the extension of the General Paz ring road in Buenos Aires and the Banco de la Nación headquarters; for dams, irrigation works and bridges comissioned by the Ministry of Public Works; and for a pipeline supplying Buenos Aires with gas from the refinery in La Plata.¹¹⁹ In October 1945 the DGFM inaugurated the Altos Hornos Zapla, which also contributed to meet steel demand by the State investment programme. Steel produced from Zapla iron was used in bars for the building of dams, bridges and housing; in tubes for water supplies; and in shapes required by the national railways and oil production.¹²⁰

¹¹⁷ *Business*, No.253, January-February 1947, p.14; No.257, January-February 1948, p.16; No.261, January-February 1949, p.107.

¹¹⁸ 'TAMET S.A.', *La Metropole*, Antwerp, 12-13 July 1947.

¹¹⁹ Ministerio de Guerra, *Dirección General de Fabricaciones Militares, 1941 - 9 de Octubre - 1945* (Buenos Aires, 1945), unpaginated.

¹²⁰ General Humberto Sosa Molina, *Inauguración del segundo alto horno Zapla* (Argentine Republic, April 1951), unpaginated.

By the end of the Forties, construction was affected by the severe economic crisis resultant from *Peronista* mismanagement. Private building faced high costs, and uncertainty over working conditions as well as supplies (ie, domestic producers were cutting back output and imports were increasingly unavailable owing to foreign exchange shortages).¹²¹ The government, confronted with financial difficulties, curtailed the public works programme and the DGFM was forced to diversify both its output and customers in order to maintain its industrial capacity active. Although 50% of goods manufactured by the DGFM were still destined to defence in 1950, 34% went to the private sector and only 16% to the non-military public sector.¹²² Building only remained the leading single source of iron and steel demand because the Republic was not fully industrialised and had not developed industries consuming substantial volumes of iron and steel. The construction industry *per se* could not serve as a base for domestic iron and steel production. Despite sustained demand in some areas, other developments (eg, the shift to cement and the growth in low-cost housing) limited the effectiveness of construction as a source of strong and continuous demand for iron and steel.

NON-CONSTRUCTION METALLURGICAL GOODS (Product case-studies: windmills and ploughs)

Besides transportation and the building industry, the other large consumer of iron and steel was the emergent metallurgical industry. Production of finished goods by this sector had been initially based on imported inputs. However, as seen above, import shortages during the Second World War had forced firms to integrate their operations and produce crude steel for 'in house' consumption. Notwithstanding the low levels of output, the locally produced range of metallurgical goods was varied and included rural implements. An assessment of the market for the latter is useful as an indicator of what extent the domestic production of finished iron and steel goods (other than construction materials) was substituting imports. The chosen product case-studies are windmills and ploughs, which are justified on three accounts. (i) These items were originally mostly imported but increasingly produced nationally. (ii) Windmills and ploughs were of particular importance to the national economy given their vital role in the rural sector, the key

¹²¹ *Business*, No.257, p.16.

¹²² Sosa Molina, *Inauguración*, unpaginated.

source of cash for the country. Windmills were very serviceable for the water supply required by cattle stocks at a relatively low cost, and ploughs were key tools in agriculture.¹²³ (iii) Demand for these goods varied with shifts in rural production and general domestic economic conditions.

From the supply perspective, the most distinctive feature of windmill and plough imports is that trade was dominated by the Americans. In the early part of the century, Argentina was one of the largest markets for rural equipment in the world. Implements had become the largest import from the USA on the eve of the First World War, and the country had become the principal market for US machinery exporters by the Twenties.¹²⁴ Since farming conditions in the USA and the Republic were somewhat similar, rural implements supplied by the Americans were cheaper and more suited to Argentine conditions than those produced in countries like Britain, which would have had to produce equipment especially for the Argentine market.¹²⁵ From the demand viewpoint, implement requirements depended on the situation of the rural sector, and the balance between arable and pastoral activities within the latter.

The leading market for windmills were agricultural districts, where they were required to raise water from semi-artesian wells to supply cattle and other farming needs, with demand mostly for 6, 8, 10 and 12 foot types with an 8-inch stroke.¹²⁶ Most of the 150,000 plus windmills installed in the country dotted the rural landscape of the provinces of Buenos Aires, Santa Fe, Córdoba and Mendoza. The larger ranches had often 10 to 15 windmills, whilst a few of the most important ranches had as many as 200. The high windmill demand was generated by some 'modernisation' in grazing practices and a shift in rural production from grains to pasture. Over time, ranchers tended to divide their large fields and install more windmills to avoid having to take animals over long distances to seek water.¹²⁷ Regarding the shift in

¹²³ RRP, 18 March 1932, p.27.

¹²⁴ Jeremy Adelman, *Frontier Development: Land, labour and capital on the wheatlands of Argentina and Canada, 1890-1914* (Oxford, 1994), p.236.

¹²⁵ DOT, *Report*, September 1924, p.22, and September 1927, p.27.

¹²⁶ DOT, *Conditions*, 31 October 1930, p.38, and No.608, p.81.

¹²⁷ DOT, *Conditions*, November 1929, p.41.

production, the difficulties faced by the rural sector after 1930 led to a decline in the overall area planted with cereals and an increase in cattle production. This required a rise in the number of watering holes and hence windmills.

Table 4.16

IMPORTS OF WINDMILLS AND PLOUGHES, 1921-1950
(annual averages)

PERIOD	WINDMILLS		PLOUGHES	
	tons	% change	units	% change
1921-1925	n/a		54,294	
1926-1930	4,782		64,652	19.1
1931-1935	605	-87.3	7,454	-88.5
1936-1940	1,781	194.4	12,828	72.1
1941-1945	232	-87.0	228	-98.2
1946-1950	583	151.3	7,788	3315.8

Sources: Calculated from the data in *Anuario del Comercio*, volumes for 1921-1942; *Comercio Exterior*, volumes for 1944-1947; *Anuario Estadístico*, Tomo II, Años 1948 y 1949-1950.

Table 4.17

PRODUCTION OF WINDMILLS AND PLOUGHES
(value in pesos)

YEAR	WINDMILLS	PLOUGHES
1935	727,497	781,821
1938	748,385	589,368
1941	446,951	416,253
1948	4,134,352	3,146,711

Sources: *Censo Industrial*, p.624; *Estadística Industrial*, 1938, pp.74,75, and 1941, pp.309,313; *Anuario Estadístico*, Años 1949-1950, Tomo III, pp.451,461.

Demand for windmills was largely satisfied through imports, whose tonnage is shown in Table 4.16.

Having been the first supplier of metal windmills, the Americans controlled the market from early on.¹²⁸

Although unable to dislodge US dominance, local producers entered the market with the Depression. Before

¹²⁸ DOT, *Conditions*, No.551, p.66.

1929, local production had been undertaken by La Cantábrica and output, amounting to 100 units per month, had a negligible effect on the market.¹²⁹ Growth in production was fostered by a contraction in imports, dollar shortages, and tariff protection. Output levels cannot be determined from available statistics, as there are significant gaps in the data and production is measured by its value in pesos (see Table 4.17). However, it is known that several types of windmill were made nationally and competed with imports.¹³⁰ Although domestically produced units were cheaper and enjoyed a ready sale, preference was given to imported types on quality grounds. However, national manufacturing contributed to sharply reduce imports of one component: windmill towers.¹³¹

Demand for ploughs depended on plantings and the prices and profit margins obtained by farmers. The growth in plantings of cereals during the Twenties resulted in an increase in plough imports, particularly towards the end of the decade (see Table 4.16). The onset of the Depression, combined with the large carry-over of equipment purchased in 1929, the unfavourable credit situation for farmers and a rather poor harvest, resulted in a sharp fall in imports in 1930.¹³² Imports dropped further despite the excellent harvest in 1931, as farmers obtained low prices which left them with inadequate profit margins to provide capital for investment in rural equipment.¹³³ Demand was largely supplied from stocks which had been imported at unusually high levels in 1929 and remained unsold at the trough of the crisis.¹³⁴

Business in rural equipment improved substantially from the mid-Thirties. The government had actively supported rural producers by purchasing major crops at minimum guaranteed prices. Basic prices had been fixed for wheat, maize and linseed, and the Banco de la Nación paid an immediate advance of 80%

¹²⁹ DOT, *Conditions*, November 1929, p.41.

¹³⁰ DOT, *Conditions*, No.551, p.66, and No.608, p.81.

¹³¹ DOT, *Report*, No.683, p.83.

¹³² DOT, *Conditions*, 31 October 1930, p.36.

¹³³ DOT, *Conditions*, 31 October 1931, p.43.

¹³⁴ DOT, *Conditions*, No.608, p.73.

of the estimated crop value.¹³⁵ Within the area devoted to cereals, plantings of wheat had declined in favour of maize as prolonged droughts in North America enabled Argentine maize exports to increase their trade share in the mid-Thirties (see Chapter 2). In addition, maize prices improved relative to wheat. Furthermore, the credit standing of farmers improved as firms in the agricultural machinery trade accepted greater facilities of payment.¹³⁶ These circumstances enabled farmers to devote more land to grain cultivation and to carry out long overdue renewals. Their spare capital was invested in the renovation of equipment, which was available from two sources: local producers and imports. It is unclear to what extent nationally produced ploughs satisfied requirements in the mid and late Thirties, as available output statistics are in monetary terms rather than volume (see Table 4.17). Imports of ploughs revived (see Table 4.16), but not for long as they fell sharply starting in 1939. Crop prices were depressed by bumper harvests in North America, which limited cereal export opportunities in Europe, and therefore farmers had less money available for new purchases.¹³⁷ Matters worsened with the outbreak of the Second World War, which deprived the country of its already restricted European markets and seriously disrupted the import trade.

The war hit the rural sector severely. Large volumes of grain output could not be exported due to shipping space scarcity, and crop prices fell. Plantings decreased, especially of maize. Maize was practically unsaleable.¹³⁸ As it does not keep well, storage was problematic and over 3,300,000 tons of the 1939-1940 harvest had to be destroyed.¹³⁹ Throughout the war, maize surpluses were burned for fuel and market conditions provided little incentive to plant.¹⁴⁰ Production shifted from wheat and maize to other crops, and the market for ploughs still subsisted even though imports declined. Local production of ploughs, which was available before the Second World War, was able to satisfy demand. In 1941, 12,408

¹³⁵ Roger Gravil, 'La intervención estatal en el comercio de exportación argentino entre las dos guerras', *DE* 10 (1970-1971) Nos.39-40, p.408.

¹³⁶ DOT, *Report*, No.683, p.74.

¹³⁷ DOT, *Report*, No.733, p.50.

¹³⁸ *Business*, No.234, April 1942, p.53.

¹³⁹ *Business*, No.231, July 1941, p.70.

¹⁴⁰ *Business*, No.233, January 1942, p.29.

units were produced.¹⁴¹ This figure, being close to annual import levels in the mid and late Thirties (see Table 4.18), indicates that local output must have gone a considerable way towards meeting wartime demand for ploughs. The latter was sustained by the growth in plantings of crops such as sunflower, which rose from 333,000 hectares in 1939 to 1,573,000 hectares in 1944.¹⁴²

As with ploughs, windmill imports dropped. However, they were continued owing to two factors. First, rural production shifted away from cereals towards cattle, sheep and pigs, which required a greater number of watering holes and hence windmills. Second, British requirements of Argentine meat supplies. Though the USA was attempting an economic blockade to coerce the Republic into breaking with the Axis, it could not hamper British purchases of Argentine meat as the USA could not cover any shortfall.¹⁴³ Guided by self-interest, the Americans decided to avoid problems for their British allies. As windmill demand increased with the growth in output of meat sources for Britain at a time of import shortages, US suppliers met Argentine requirements of windmills.

The end of the conflict brought no relief to the rural sector. Government policy killed the market for iron and steel implements. The pricing policy of the IAPI squeezed farmers by purchasing crops at fixed prices below those prevailing internationally and accumulated enormous profits avowedly used to finance *Peronista* development programmes. For wheat and maize, the leading crops, producers operated either at a loss or a very narrow profit margin.¹⁴⁴ Little incentive was given to farmers, who reacted by planting less. Furthermore, farmers were deprived of spare capital to invest in rural implements and thereby requirements for renewals and additions of agricultural equipment only increased. This pent-up demand was

¹⁴¹ Ministerio de Hacienda, *Estadística Industrial de 1941*, p.313.

¹⁴² Díaz Alejandro, *Essays*, pp.440,441.

¹⁴³ E. Louise Peffer, 'Cordell Hull's Argentine Policy and Britain's Meat Supply', *Inter-American Economic Affairs* X (1956-1957) No.2, p.16.

¹⁴⁴ Edward J. Chambers, 'Some Factors in the Deterioration of Argentina's External Position, 1946-1951', *Inter-American Economic Affairs* VIII (1954-1955) No.3, p.44.

not met by either imports or domestic production.¹⁴⁵ Both plough and windmill imports remained at low levels after the war (see Table 4.16) owing to: (a) the mounting problems faced by the rural sector, and (b) balance of payments difficulties in the late Forties. Domestic suppliers of rural implements were also affected by government policy priorities. Economic conditions in the immediate postwar provided a critical opportunity to import industrial equipment required to modernise and expand local output of iron and steel commodities, which the régime did not use. The consequences of this failure are illustrated by La Cantábrica - a major supplier of rural equipment produced from the firm's own steel output.¹⁴⁶ The company urgently required capital goods imports to replace and modernise machinery, but like other businesses endured restrictions on vital imports in the late Forties due to foreign exchange shortages and exchange controls.¹⁴⁷

Import restrictions aided the growth of domestic manufacturing of implements, which could be efficient as the market was large enough to sustain production - not least because of an ever accumulating pent-up demand. Production had already been undertaken before the war. It involved the assembly of foreign components to some extent, complemented by sales of imported implements in the case of La Cantábrica.¹⁴⁸ Despite the hardship endured by metallurgical firms, output was expanded and thereby unnecessary foreign exchange outlays averted. Among the methods employed to this end was the obtention of production licences from foreign companies which had supplied rural articles in the past. La Cantábrica itself reached an agreement with The Oliver Corporation, enabling it to manufacture ploughs under licence,

¹⁴⁵ Board of Trade, Export Promotion Department, Overseas Economic Surveys, *Argentina*, October 1947, p.33.

¹⁴⁶ La Cantábrica S.A.M.I.y C., 'Memoria y balance general correspondiente al 44º Ejercicio cerrado el 30 de Junio de 1946', *Boletín de la Bolsa de Comercio*, 16 September 1946, p.1301.

¹⁴⁷ La Cantábrica, 'Memoria y balance general correspondiente al 46º Ejercicio cerrado el 30 de Junio de 1948', *Boletín*, 29 November 1948, p.1072; La Cantábrica, 'Memoria y balance correspondiente al 47º Ejercicio cerrado el 30 de Junio de 1949', *Boletín*, 16 January 1950, p.405; La Cantábrica, 'Memoria y balance correspondiente al 48º Ejercicio cerrado el 30 de Junio de 1950', *Boletín*, 4 December 1950, p.1151.

¹⁴⁸ La Cantábrica, 'Memoria y balance general correspondiente al 50º Ejercicio cerrado el 30 de Junio de 1952', *Boletín*, 1 December 1952, p.499.

and also expanded production of its Huracán brand of windmills.¹⁴⁹ As a result of such initiatives, output of rural implements rose substantially. Although production data for ploughs and windmills contains major gaps and is usually measured by their value in pesos, some figures in terms of volume are available. Windmill production attained 3,789 units in 1948 and increased to 14,619 units in 1953; and that of windmill towers rose from 1,949 units in 1948 to 7,336 units in 1953. Plough output attained 14,102 units in 1948, and increased to 18,557 units in 1953.¹⁵⁰ However, notwithstanding its growth, local production remained inadequate for domestic requirements.¹⁵¹ This suggests that, although production of rural implements could not be the base of iron and steel manufacturing, output of such goods needed to be expanded considerably - even at the expense of other metallurgical goods of no great significance to the national economy which were produced in relatively small volumes.

CONCLUSION

Although the Republic had the highest iron and steel consumption in Latin America, the market remained limited. This should not have been the case. The country was populous and given the high degree of urbanisation (particularly in the national capital), the market was concentrated. Moreover, the population enjoyed both a relatively even income distribution and good income levels. Combined with the expansion of agro-exports, these conditions had generated demand for manufactures and the growth of manufacturing activities. Manufacturing made a substantial contribution to GDP and thereby industrialisation should have been deepened. However, there was a major difficulty. Industrial growth occurred in sectors unlikely to foster demand for iron and steel. Activities established before 1930 were not genuinely representative of what is normally regarded as *manufacturing* and the industrial base remained circumscribed despite the 'forced' import substitution undertaken during the Depression and the Second World War. In the absence

¹⁴⁹ La Cantábrica, 'Memoria y balance general correspondiente al 49º Ejercicio cerrado el 30 de Junio de 1951', *Boletín*, 10 March 1952, p.202.

¹⁵⁰ Ministerio de Asuntos Técnicos, *Anuario Estadístico*, Años 1949-1950, Tomo III, pp.451,461; Secretaría de Estado de Hacienda, *Censo Industrial 1954*, pp.294,336.

¹⁵¹ Board of Trade, Commercial Relations and Exports Department, Overseas Economic Surveys, *Argentina*, May 1956, p.59.

of a genuine industrialisation process, which was reflected in a lack of major steel-transforming industries, demand for iron and steel products arose principally from the construction industry. The emergence of domestic steel production did not bring about changes in the market. The industry was neither modern or large-scale, which restricted the scope of production. Although the range of goods produced was relatively broad, output volumes were low. The Plan Siderúrgico Argentino sanctioned in 1947, which was not implemented on schedule, might have resolved these problems if it had been better prepared. Military planners were merely concerned with self-sufficiency goals rather than economic requirements. The underlying assumption that the coming on stream of an integrated steelworks would automatically lead to the flowering of a whole string of related transforming industries - thereby expanding the market - was misconceived, and the wide range of products to be manufactured by SOMISA included many goods which were hindered on two accounts: (a) they could not be produced efficiently, and (b) their market was limited as no incentives had been given to guarantee minimum consumption levels. As seen above, failures associated with the size of the market could have been avoided if the PSA would have been moulded along the lines followed by the South Korean heavy industry project two decades later.

Chapter 5

THE SUPPLY OF NATIONAL AND FOREIGN RAW MATERIALS: INPUT CONSTRAINTS AND THE DEVELOPMENT OF AN INTEGRATED INDUSTRY

This chapter examines the availability of raw materials, a factor critical to the success of attempts at establishing heavy industry, and demonstrates the existence of two key difficulties. Foremost was the deficiency of domestic raw materials. Supplies of scrap, which were regarded as an essential resource in countries poorly endowed with minerals (like Argentina), were inadequate and sources of iron ore and coal, which were developed in the Forties to satisfy the self-sufficiency goals of the Dirección General de Fabricaciones Militares (DGFM), were constrained by location, poor quality and volume. The second problem identified in this chapter is that the 'window of opportunity' to develop steel production provided by the outbreak of the Second World War was limited by the restricted availability of foreign inputs and the domestic economic crisis at the end of the Forties, which reduced the capacity to import.

The raw materials used in steel production are closely linked with the technology employed. Iron ore and coal are necessary to manufacture pig iron, and scrap and pig iron are required in steelmaking. Since the emergent domestic industry was semi-integrated and steel production in Siemens-Martin furnaces was undertaken before pig iron production and the preparation of the military integrated steelworks project, supplies of resources will be assessed on the basis of the order in which the stages of production developed. The chapter comprises five sections. The first section considers the issue of the supply of scrap, and the second examines pig iron production. These two products were the main raw material inputs used by the industry in the period. It will be argued that scrap was an inadequate resource, despite the fact that it was viewed as the major raw material for nations consuming large volumes of iron and steel and lacking the necessary minerals, and that demand for pig iron remained satisfied by imports notwithstanding import shortages during the Second World War and the start of national production in 1945. The third section discusses the leading resources for a modern industry, which became available in the Forties albeit on a modest scale, and demonstrates that iron ore and coal sources were characterised by inadequate reserves, poor quality and remote location. The following part of the chapter assesses charcoal, the fuel employed at the Zapla blast furnace, whose production was inefficient and at considerable distance from the plant.

As domestically available raw materials presented major constraints, the final section will discuss the alternative enshrined in the Plan Siderúrgico Argentino (PSA) for the projected SOMISA steelworks: the use of both foreign and national resources. Though this was the most feasible proposal, the section will show that it would not have been practicable, since the launch of the PSA coincided with both the inadequacy of local resources and the unavailability of imported raw materials.

THE SUPPLY OF SCRAP IRON AND STEEL

Scrap is a part of the cycle in which iron is reduced from the mineral, transformed into steel, presented for consumption, and after some time returns to the steel plants as scrap and is given a new lease of life. The volume of scrap available was higher if the timespan during which iron and steel products were in use was short. Although scrap was a relatively cheap input (see Chapter 7), the belief that it was an essential raw material in countries poorly endowed with minerals was ill-founded. In the short-run, the use of scrap in steel production circumvented the absence of local sources of raw materials. However, the critical long-term problem was sources of supply - particularly in countries with limited industrialisation. While advanced economies had abundant sources of scrap (ie, it was generated by diverse sectors such manufacturing, transport and shipbuilding), countries with limited industrialisation had circumscribed sources. Insufficient volumes of scrap were generated, and thereby lower stocks of scrap were available in underdeveloped than in industrialised countries.¹

The inadequacy of sources ultimately exposed the long-term unsustainability of scrap-based steel production, as demonstrated by the emergent Argentine private steel producers in the Forties and the comparable case of the pre-Second World War Japanese iron and steel industry. The latter was the prime example of scrap-based steel production in the Thirties, and could have well served as a model for the ambitious Argentine military heavy industry project. Its growth was driven by military nationalism and strategic requirements and, as with both the early version of the DGFM plan and the emergent Argentine

¹ United Nations (UN), Department of Economic Affairs, *World Iron Ore Resources and Their Utilization* (Lake Success, 1950), p.25.

private producers, it depended on large volumes of scrap.² Compared to the Argentine producers, who employed local scrap supplies, the Japanese industry faced a more extreme predicament. Although Japan imported some minerals and pig iron from various Far East countries, it depended almost entirely on scrap imports from the United States of America. In 1939, the Americans provided 85% of total Japanese scrap stocks.³ Dependence proved fatal. Japan was deprived of vital supplies by the escalating confrontation between Tokyo and Washington in 1940-1941. This led to a full-scale and rigorously enforced American embargo, unlike that applied on Argentina after September 1942, and ultimately war. Japanese steel producers struggled to maintain output, and partially overcame scrap shortages by employing raw materials from conquered territory in Manchuria, China, Korea, the Philippines and Malaya.⁴ Dependence on scrap conclusively failed in Japan, as it did in Argentina. However, as is seen below, Argentine difficulties with supplies of scrap arose from different circumstances to those of Japan. The rise of import-substituting domestic steel production during the Second World War rapidly exhausted national scrap stocks which had limited demand before 1939, and import sources in the early postwar years were severely restricted.

Argentine scrap consumption before 1939 was narrow. In the Twenties, around 60,000 tons of scrap became available annually in the Republic, of which only 14,000 tons were required by the Talleres Metalúrgicos Vulcano plant. The latter employed 10,000 tons in its open-hearth furnaces and 4,000 tons in rolling. Unused scrap was thereby exported. Scrap exports had amounted to 30,000 tons at the outset of the First World War. Banned for 'strategic' reasons during the global conflict, they resumed in 1923.⁵ Table 5.1 below, which displays data on Argentine trade in scrap and pig iron imports, shows exports between 1924 and 1941 - when the export ban was reintroduced under Law 12,709. Two interesting features emerge from the data. First, there were substantial scrap exports in the middle and late Twenties, which suggests the existence of large stocks not used domestically. Second, the export ban introduced in 1941

² Kenneth Warren, *World Steel* (Newton Abbot, 1975), pp.100,110.

³ UN, Department of Economic Affairs, *Iron*, p.19; Warren, *Steel*, p.100.

⁴ Jean Bienfait, *La Sidérurgie Japonaise* (Lausanne, 1965), p.28.

⁵ Sven Wässman, *Sobre las posibilidades de una industria siderúrgica en la República Argentina* (Buenos Aires, 1927), p.6.

Table 5.1

ARGENTINE TRADE IN SCRAP AND PIG IRON IMPORTS, 1921-1952
(in tons)

YEAR	SCRAP EXPORTS	SCRAP IMPORTS	PIG IRON IMPORTS
1921	-	-	5,507.4
1922	-	-	9,991.2
1923	-	-	7,411.4
1924	52,548	-	10,959.7
1925	65,448	-	13,622.9
1926	8,897	-	14,060.4
1927	41,693	-	17,305.1
1928	41,290	-	25,852.9
1929	96,991	-	26,946.8
1930	48,683	655	33,402.2
1931	-	25	17,484.9
1932	6,000	-	13,150.4
1933	-	-	15,568.3
1934	-	50	20,569.7
1935	-	35	24,969.1
1936	-	50	26,720.9
1937	-	236	52,106.1
1938	-	66	28,235.4
1939	-	245	55,784.4
1940	-	75	28,180.0
1941	-	288	28,121.1
1942	-	1,301	8,051.3
1943	-	898	22,988.4
1944	-	1,063	17,865.7
1945	-	713	21,652.4
1946	-	1,492	34,358.7
1947	-	26,605	65,114.8
1948	-	44,061	113,650.9
1949	-	89,565	82,259.8
1950	-	62,747	93,297.6
1951	-	18,075	77,264.3
1952	-	13,964	56,341.5

'-' represents nought.

Sources: Compiled from Ministerio de Hacienda, *Anuario del Comercio Exterior de la República Argentina*, volumes for 1921-1942; Dirección Nacional de Investigaciones, Estadística y Censos, *Anuario Estadístico de la República Argentina: Comercio Exterior*, Años 1944 y 1945-1946; Ministerio de Asuntos Técnicos, *Anuario Estadístico de la República Argentina*, Tomo II, Años 1948 y 1949-1950; Secretaría de Estado de Hacienda, *Comercio Exterior*, Años 1951-1954.

merely formalised an existing situation as, with the exception of 1932, there had been no exports since 1930.

The sudden drop in exports was not due to the contraction in trade but to a decline in scrap supplies initiated in the Thirties. This was the result of: (i) decreases in the replacement of railway materials, the leading

source of scrap, and (ii) changed demand conditions in the Forties, as import shortfalls of finished steel led to the rise of domestic scrap-based steel production. The decreasing renewals of railway materials were the result of the severe problems faced by the railway starting in the Twenties. Investments in railways contracted as the horizontal expansion process ceased.⁶ More crucially, during the Thirties, both the British-owned and State railways confronted financial difficulties that impaired their ability to refurbish materials. The problem was particularly acute in the case of the British-owned companies, which controlled most of the national network. The companies could not replace materials that dated back to the period 1904-1913 and which required renovation.⁷ They were hindered by foreign exchange provisions, which affected remittances to be used for purchases of materials, and suffered from competition by road transport and a prolonged depression, which sharply reduced receipts.⁸

The decline in scrap supplies, noted in the Thirties, accelerated with the growth of scrap-based local output of finished iron and steel products in the Forties. Consumption of scrap, which was parallel to rolled goods production, rocketed from 10,000 tons in 1938 to 175,000 tons annually by the end of the Second World War.⁹ Scrap reserves, which stood at 400,000 tons in October 1939, were drained by an annual wartime demand of 130,000 tons and could not be easily replenished.¹⁰ Annual scrap output at the height of the war was estimated at 25,000 tons, which was less than 20% of annual wartime consumption, and this level was not expected to change for some time.¹¹ Stocks were badly depleted by 1945, and it had become clear that they were far from adequate to sustain domestic steel production. The scrap requirements of steel producers for the period 1946-1950, working with existing methods and without increasing production, had

⁶ Guido Di Tella and Manuel Zymelman, *Las etapas del desarrollo económico argentino* (Buenos Aires, revised 2nd ed., 1973), p.88.

⁷ Wässman, *Posibilidades*, p.6.

⁸ 'Republic of Argentina: Special Review'. Supplement to *The Economist*, 8 February 1936, p.13.

⁹ Banco Central de la República Argentina (BCRA), *Informe sobre el mercado local e industria nacional en laminados de hierro y acero* (Buenos Aires, May 1945), p.40.

¹⁰ Coronel Julio Sanguinetti, *La industria metalúrgica nacional* (Córdoba, 1950), p.17.

¹¹ General Manuel N. Savio, 'Bases para la industria del acero en la República Argentina', in SOMISA, *Obras del General Manuel N. Savio* (Buenos Aires, 1973), pp.385,387.

been calculated (with no evidence as to how) at 1,000,000 tons for the five-year stretch or 200,000 tons per annum.¹² Therefore, annual demand equalled 50% of the reserves available in 1939 and exceeded fourfold the stock existent in July 1946, which merely totalled between 50,000 and 55,000 tons.¹³

The rapid exhaustion of domestic scrap stocks during the Second World War and, as seen below, the subsequent difficulties in obtaining imported supplies clearly demonstrate the serious weaknesses of scrap-based steel production. In the absence of national iron ore deposits, scrap had been the only raw material available.¹⁴ The supply crisis arose as the rapid fall in reserves was coupled with a sharp increase in demand. In 1942, the Fábrica Militar de Aceros alone consumed 20,000 tons obtained from obsolete materials and scrap provided by the Dirección General de Puertos and the State Railways.¹⁵ Mounting problems in acquiring scrap prompted individual attempts to acquire every available ton of material, such as lifting abandoned tram lines between the Buenos Aires suburbs of Olivos and San Isidro, which provided 803 tons of rails.¹⁶ Nonetheless, such efforts were inadequate. The consequence was growing dependence on imports of scrap to sustain steel production.

Table 5.1 above clearly shows that Argentina shifted from being an exporter to importer. Imports, which were non-existent in the Twenties and relatively modest during the Thirties, increased subsequently as demand for scrap outstripped available supplies. Two interesting features of the trade during the Forties emerge from Table 5.1. First, the Republic was able to import scrap in wartime. Second, the sharpest increase in imports occurred in the postwar period, which reflects the inability to meet demand for scrap from national sources. Concerning wartime, Argentine neutrality enabled the acquisition of some imports

¹² BCRA, *Informe*, p.40.

¹³ Secretaría de Industria y Comercio, *Hierro Laminado sin trabajar* (Buenos Aires, August 1947), p.44.

¹⁴ General Manuel N. Savio, 'Ley de Fabricaciones Militares: conceptos que fundamentaron su proyecto', in SOMISA, *Obras*, pp.410,411; Congreso Nacional, *Diario de Sesiones de la Cámara de Diputados*, Año 1939, Tomo IV, p.107.

¹⁵ Alberto S.J. de Paula, 'Reestructuración operativa de la industria bélica argentina', in María Haydée Martín, Alberto S.J. de Paula and Ramón Gutiérrez (eds.), *Los ingenieros militares y sus precursores en el desarrollo argentino (1930-1980)* (Buenos Aires, 1980), p.82.

¹⁶ *Review of the River Plate*, 21 May 1943, p.20.

from both Latin American and overseas sources. Imports from neighbouring Latin American countries resulted from increased regional trade, which compensated for the loss of traditional trading partners during the war (see Chapter 2). Imports from overseas included supplies from the United Kingdom which, despite the strain of the war effort and American pressure on Britain to participate in the anti-Argentine embargo (see below), responded to two wartime British trade requirements. First, they contributed to reduce the balances of blocked sterling, and second, they were used as a sweetener for countries supplying Britain with vital commodities.¹⁷ Imported supplies contributed modestly to alleviate Argentine scrap shortages. However, as domestic reserves continued to be depleted, import levels rose dramatically in the aftermath of the war (see Table 5.1). Given the projected postwar growth in consumption indicated earlier, the increase in imports was insufficient to offset shortfalls in national stocks. Consequently, the flaws of depending on scrap for steelmaking were again exposed. Imports were increasingly necessary at a time when sources of supply were restricted. The *Peronista* régime was willing but unable to resolve the crisis, handicapped by a worldwide scrap shortage and subsequently by the failure of its own economic policy.

Facing major limitations on sources of imports, the government resorted to the Anglo-Argentine negotiations as a springboard to resolve the mounting crisis. It turned to the United Kingdom for the much needed renovation of railway materials, which would release scrap for steelmaking, and for imports of scrap. The Five-Year Railway Plan was a leading capital project and required 250,000 tons of steel for rails over 5 years, which the Argentine authorities requested should be delivered over roughly equal annual installments.¹⁸ In addition, when the British mission headed by Sir Clive Baillieu was presented with Argentine requirements in December 1947, the list included 250,000 tons of scrap.¹⁹ Since annual consumption of scrap had been estimated at 200,000 tons (see above), the release of 50,000 tons of discarded rails per annum and a single procurement of 250,000 tons of scrap were insufficient to offset the fall in

¹⁷ Remarks on the cover of the folder containing various documents relating to wartime controls on exports from the United Kingdom and neutral European countries to Latin America, 28 July - 13 August 1942. FO 371 32466 W 12313/37/49.

¹⁸ Drive Telegram No.769 from Sir Reginald Leeper, British Ambassador to Argentina, to the FO, 4 December 1947. FO 371 61130 AS 6617/16/2.

¹⁹ Telegram no.796 from Leeper to the FO, 12 December 1947. Bank of England Archive, OV 102/123.

domestic scrap supplies. In the event, this mattered little as Britain was unable to meet the request even though it had much at stake in these negotiations. Given the harsh economic conditions faced by the United Kingdom in the postwar period, it could only supply 75,000 tons of steel.²⁰ This offer was far too low, and there were difficulties in meeting that commitment. Rails were not the only steel goods requested by the Republic, and exports were already restricted due to steel shortages.²¹ Regarding scrap imports from Britain, Argentina fared even worse. Given the worldwide scrap shortage, Britain could not provide scrap. Furthermore, Britain and the USA were exploring all possible overseas sources to meet their own needs.²² The Baillieu Mission was aware that the success of the negotiations and Argentine willingness to back the British programme of rural commodity purchases for 1948 depended on the country obtaining the goods requested, but there was little it could do.²³ The supply predicament, manifested in shortages of imported scrap, was further aggravated by domestic difficulties. The severe economic crisis, which as seen in Chapter 2 was caused by *Peronista* policy, resulted in the curtailment of imports owing to foreign exchange shortages. In the early Fifties, with lower imports of vital inputs (see Table 5.1), private sector steel producers such as La Cantábrica suffered from shortages of raw materials and steel production dropped.²⁴

Dependence on scrap as the major resource was a failed strategy. Although scrap was relatively cheap and believed to be the ideal raw material for steel production in countries with high steel consumption and inadequate domestic sources of minerals, reliance on this raw material was dangerous. The problem was that insufficient volumes of scrap were generated domestically in the absence of industrialisation (ie,

²⁰ Drive No.745 from the FO to the British Embassy in Buenos Aires, 6 December 1947. FO 371 61130 AS 6617/16/2.

²¹ Telegram No.797 from the FO to the British Embassy in Buenos Aires, 18 December 1947. Bank of England Archive, OV 102/123.

²² Telegram No.796 from the FO to the British Embassy in Buenos Aires, 18 December 1947. Bank of England Archive, OV 102/123.

²³ Telegram No.795 from Leeper to the FO, 12 December 1947. Bank of England Archive, OV 102/123.

²⁴ La Cantábrica S.A.M.I. y C., 'Memoria y balance general correspondiente al 48º Ejercicio cerrado el 30 de Junio de 1950', *Boletín de la Bolsa de Comercio*, 4 December 1950, p.1151; La Cantábrica, 'Memoria y balance general correspondiente al 50º Ejercicio cerrado el 30 de Junio de 1952', *Boletín*, 1 December 1952, p.499.

the main Argentine source were railway materials) and were available through foreign trade. Consequently, supplies increasingly failed to satisfy consumption - particularly if the latter expanded. In the case of Japan, the problem was aggravated by the fact that its scrap requirements were almost wholly imported from a country with which relations were highly conflictive. However, scrap was not the only raw material employed in steelmaking. Steel production in open-hearth furnaces required a mix of scrap with pig iron (see Chapter 1). Demand for the latter was covered by imports, which increased sharply starting in 1946 to overcome scrap shortages (see Table 5.1).

THE SUPPLY OF IMPORTED AND NATIONAL PIG IRON

Unlike the case of scrap, domestically produced pig iron did not become available until October 1945. Even then, as will be shown below, it was only obtainable in relatively modest volumes. Therefore, pig iron consumption was satisfied through imports. As seen in Table 5.1, the period was characterised by sharp fluctuations in import volumes. Furthermore, there was instability in terms of sources of supply. Unsurprisingly, the greatest difficulties were experienced during the Second World War (see Table 5.2 below). This section assesses the Argentine pig iron trade: three features become apparent. (a) Continental producers participating in the steel cartel, which obstructed the development of steel production in the Republic (see Chapters 3 and 6), successfully jockeyed to dominate the pig iron trade before 1939. (b) Increased dominance of the market by the cartel largely affected Britain, which struggled to maintain its presence in the market as close Anglo-Argentine political and economic ties were steadily waning. (c) Wartime disruption led to the replacement of Continental suppliers by non-traditional sources, despite US attempts to disrupt deliveries owing to the anti-Argentine policy pursued by Washington.

Trade before the Second World War

The pig iron trade was characterised in the Twenties and Thirties by the increased predominance of Continental producer-exporters. This was achieved largely to the detriment of the United Kingdom, which had been the traditional pre-1914 supplier of iron and steel goods, and arose from: (i) the European

Table 5.2

PIG IRON IMPORTS: SHARE OF LEADING SOURCES, 1921-1952*
 (as a percentage)

YEAR	UK	BELGIUM	FRANCE	GERMANY	BRAZIL	INDIA
1921	35.7	9.4	15.6	6.6	-	-
1922	32.1	35.8	9.8	16.4	-	-
1923	28.9	29.7	20.2	11.5	-	-
1924	39.0	29.4	13.0	2.3	-	-
1925	34.5	22.2	30.3	4.3	-	-
1926	26.0	41.3	18.8	5.0	-	-
1927	31.5	25.2	27.5	6.8	-	-
1928	20.3	29.8	13.7	7.5	-	-
1929	44.4	23.2	8.1	18.7	-	-
1930	40.4	16.8	1.7	32.2	-	-
1931	16.5	17.5	1.9	9.4	35.7	-
1932	16.4	19.4	15.4	1.0	26.2	19.5
1933	17.3	12.9	41.5	0.8	-	19.0
1934	19.7	15.8	22.1	3.1	-	13.9
1935	25.9	14.6	21.5	1.1	-	-
1936	15.8	15.5	4.2	1.8	-	-
1937	17.5	4.0	69.1	0.3	-	0.1
1938	13.6	12.7	60.5	-	7.7	-
1939	4.2	8.6	50.5	0.4	29.2	-
1940	9.2	1.4	9.8	-	70.7	-
1941	-	-	-	-	94.4	-
1942	-	-	-	-	74.8	20.2
1943	-	-	-	-	75.5	9.5
1944	-	-	-	-	37.1	8.8
1945	-	-	-	-	75.6	-
1946	7.2	1.0	-	-	54.5	0.6
1947	16.7	1.1	0.6	-	42.5	0.9
1948	-	19.1	9.5	-	49.6	0.9
1949	0.1	6.0	43.2	-	21.2	-
1950	-	-	6.5	-	-	-
1951	-	3.7	20.9	4.9	13.1	-
1952	-	0.9	2.5	3.7	7.6	-

* Since the data only corresponds to the main foreign sources of pig iron, their share of the import trade does not total 100% for all years. When this is the case, it reflects the presence of a diversity of minor suppliers whose share of the market is far too low to be of any significance.

Source: Calculated from the data in *Anuario del Comercio*, volumes for 1921-1942; *Comercio Exterior*, Años 1944 y 1945-1946; *Anuario Estadístico*, Tomo II, Años 1948 y 1949-1950; *Comercio Exterior*, Años 1951-1954.

currency situation in the Twenties, and (ii) the oligopolistic practices of the International Steel Cartel or ISC in the Thirties. Currency depreciation in the Twenties enabled Belgium and France to strengthen their

presence in the market.²⁵ To a lesser extent, Germany temporarily regained a large share of the trade during both the early and late Twenties (see Table 5.2). In the early part of the decade, this was achieved exclusively through low prices caused by currency devaluation. Nevertheless, Germany was unable to sustain this trade for long with an inflated and unstable currency.²⁶ In the late Twenties, the increased share of imports reflected conditions in the German iron and steel industry. As seen in Chapter 1, Germany had reconstructed and expanded its steel output capacity after the First World War. The result was that by the end of the Twenties, supply outstripped domestic demand and the only means of disposing of overproduction was dumping in export markets.

The strong position of France and Belgium (and Germany to a much lesser extent) in the market for pig iron reflects a broader issue within the thesis: the efforts of these founder members of the steel cartel to frustrate domestic manufacturing and dominate the market for iron and steel products. Concerning efforts to thwart the development of local steel production, the supply of products at short-term, artificially low prices discouraged the establishment of local manufacturing in the long-run. Regarding control of the market, the pig iron trade in Argentina demonstrates how predominance by Continental producer-exporters forced outside competitors to intensify their efforts to sustain their market position. In the Argentine case, it was Britain which struggled. In the Twenties, the British competed with Belgium and occasionally France to maintain the largest market share (see Table 5.2). However, the trade figures conceal the tactics to which the British resorted to maintain their position. During the early Twenties, they did so through re-exports. Most pig iron coming through from Britain was supplied from France or Belgium, as low quotations for Belgian and French iron made its delivery to the Midlands possible at a lower cost than that produced in the British region.²⁷ In the Thirties, although it was among the three leading pig iron suppliers, the United Kingdom again struggled hard to fend off French and Belgian competition. Although the data in Table 5.2 points to success against Belgium, this was not the case with France. In fact, the latter was the main

²⁵ *Board of Trade Journal*, new ser. CXII (1924) No.1415, pp. 36,37, and new ser. CXIX (1927) No.1619, p.616.

²⁶ *The Board of Trade Journal*, new ser. CIX (1922) No.1361, p.730.

²⁷ Board of Trade, Department of Overseas Trade, *Report on the Market for Iron and Steel in the Argentine Republic* (London, 1922), p.16.

supplier in 1933-1934 and again in 1937-1939. This French success resulted from the dumping policies of the ISC, of which Britain was not a member. Having been the top supplier in the Twenties and managed to retain the second place in 1934-1938, the United Kingdom again went to great length to maintain supplies when its ability to sustain its position in the market faltered. It made supplies available from the Empire. At the trough of the Depression, it made available supplies from India. The latter temporarily acquired a major share of the market (see Table 5.2) and in fact became the second leading supplier in 1932-1933. Supplies from India were again made accessible during the Second World War, which contributed to alleviate import shortages despite the attempts to disrupt supplies which were part of the antagonistic American policy towards Argentina (see below).

Trade during the Forties

The disarray in the pig iron trade caused by the Second World War was far more severe than that during the Depression. Supplies ceased from both the Continent and Britain, and the loss of traditional sources was compensated by closer ties with Brazil. The latter, which had previously only been a supplier at the trough of the Depression (see Table 5.2), was able to provide substantial quantities of pig iron as it had initiated steel production before the Republic and had authorised pig iron exports. Brazilian supplies averaged 17,494 tons between 1940 and 1942, which represented 82% of the Argentine market for pig iron.²⁸ Brazil dominated the market during the war, and retained a marked presence in the early postwar years (see Table 5.2). However, its market position declined sharply in the early Fifties as Argentina curtailed imports and Brazilian consumption of pig iron rose with the coming on stream of Volta Redonda.

Brazil was not the only wartime source of imported pig iron. The United Kingdom was increasingly dependent on Argentine commodities and, having to offer something in exchange for bargaining purposes, made available stocks of Indian pig iron during the decisive years of the war.²⁹ These substantial

²⁸ Gabriel Porcile, 'The Challenge of Cooperation: Argentina and Brazil, 1939-1955', *Journal of Latin American Studies* 27 (1995) No.1, p.152.

²⁹ Letter from E.A. Mather-Jackson, FO, to K. Anderson, India Office, 17 March 1943. FO 371 33573 A 2502/2177/2.

provisions, which transformed India into a major Argentine supplier in 1942-1944 (see Table 5.2), caused controversy between London and Washington over the implementation of the US Policy Directive towards Argentina. Washington had devised the Directive to press the Republic into line with other American republics over relations with the Axis through an economic blockade, and expected its British and Canadian allies to adhere to the embargo.³⁰

The difficulty was that Washington, in its attempt to coerce Argentina, was prepared to go to any length to sustain the embargo. It wanted to extend adherence to the Directive to other parts of the British Empire such as India. In early 1943, the United States of America attempted to force the British into preventing Indian exports to the Republic. It nonsensically claimed that pig iron was being shipped notwithstanding that cast iron mill rolls had been supplied to India under Lend-Lease. The 'evidence' was that 1,800 tons were being provided by Tata Iron and Steel Company, of which 800 were for the British-owned railways.³¹ It soon became obvious that the American assertion was ludicrous. The shipments did not contravene the terms of the White Paper on the US Policy Directive.³² Moreover, India was a regular pig iron exporter and cast iron rolls could not be produced in that country.³³

The United Kingdom had two reservations over the Directive. First, the attempt to control steel shipments affected the maintenance of British-owned railways in Argentina. Second, if the Americans were concerned over shipments of iron and steel to Argentina, they themselves would have to scrutinise consignments.³⁴ Scrutinising in India was carried out by the colonial authorities, with export license

³⁰ US Directive on policy towards Argentina, 24 September 1942. Bank of England Archive, OV 102/17.

³¹ Telegram from Viscount Halifax, British Ambassador to Washington, to the Board of Trade, No.134 Askew, 15 February 1943. FO 371 33573 A 2502/2177/2.

³² Copy of the letter from A.C.B. Symon, India Supply Mission to Washington, to R.K. Jopson, Commercial Secretary at the British Embassy in Washington, 15 March 1943, sent to Anderson by the Board of Trade, 30 March 1943. FO 371 33573 A 2502/2177/2.

³³ Letter from A. Dibdin, India Office, to Mather-Jackson, 16 April 1943. FO 371 33573 A 3660/2177/2.

³⁴ Letter from Mather-Jackson to Anderson, 17 March 1943. FO 371 33573 A 2502/2177/2.

applications being checked against the War Trade Lists and all shipments being accompanied by documents disclosing the ultimate consignee.³⁵ If the latter was unknown, the Consular Offices in Buenos Aires could obtain their name through British intermediaries in the trade.³⁶ Therefore, if Washington wished to restrict Indian exports it had to approach the Indian Government, for it was the latter which had the authority to control these exports.³⁷

Despite resistance to American pressure, the British strategy to sustain pig iron exports to Argentina by drawing on supplies from third parties ran into trouble. Indian exports were lower than anticipated owing to transport bottlenecks in India and the impact of the war on British pig iron supplies. The transportation difficulties had to be eased by temporarily suspending all shipments, including that of a consignment of 2,238 tons purchased from the Bengal Ingot Company in 1943 by the South American Mining Company of Buenos Aires.³⁸ The situation improved with repairs to breaches in the East Indian Railway and a drop in coal raisings, which made wagons available for transport and permitted the resumption of shipments. However, only 1,111 tons of the Argentine order were licensed, with the remainder pending authorisation.³⁹ Any further export licensing was affected by conditions in Britain. Indian exports to Argentina deflected potential supplies for Britain, whose pig iron stocks had sharply deteriorated during the war. Therefore, when the British Iron and Steel Control indicated that its monthly requirements were 20,000 tons for the first quarter of 1944, it requested assurances that this tonnage would have priority over other export orders.⁴⁰ Substantial pig iron stocks had accumulated following clearance of transport bottlenecks and a

³⁵ Letter from J.M. Troutbeck, Ministry of Economic Warfare, London, to Dibdin, 7 May 1943. FO 371 33573 A 3660/2177/2.

³⁶ Letter from W.W. Nind, India Office, to Troutbeck, 13 May 1943. FO 371 33573 A 3660/2177/2.

³⁷ Letter from Mrs. Margaret McArthur Campbell, Board of Trade, to R.A. Gallop, FO, 22 November 1943. FO 371 33573 A 10701/2177/2.

³⁸ Telegram No.880 Askew from the Minister at the British Embassy in Washington, to the Board of Trade, 27 October 1943. FO 371 33573 A 10000/2177/2. Letter from the Ministry of War Transport to Gallop, 17 November 1943. FO 371 33573 A 10435/2177/2.

³⁹ Inward Telegram No.14211 CS from the Supply (MP) Department, Government of India, Calcutta, to the Secretary of State for India, 11 December 1943. FO 371 33573 A 10701/2177/2.

⁴⁰ Cypher Telegram 28927 from the Secretary of State for India to the Supply (MP) Department, Government of India, 18 December 1943. FO 371 33573 A 10701/2177/2.

large Indian output surplus was available, even after supplying British needs.⁴¹ Nevertheless, as shipping space was limited, deliveries to Argentina at British expense were not contemplated.⁴² When a shipment of 1,400 tons was requested for the Argentine railways, no ships were available.⁴³ Consequently, the Iron and Steel Controller in Calcutta did not sanction the export.⁴⁴

This hitherto unknown information on Indian pig iron exports to the Republic is of particular value for three reasons. First, it provides background detail relevant to the inclusion of India as a supplier in some of the Argentine data for wartime pig iron imports. Second, it is directly connected to US policy towards Buenos Aires and demonstrates the extent to which Washington was prepared to go in order to sustain the anti-Argentine economic boycott and of Britain to resist this pressure. By attempting to interfere in Indian trade with Argentina, the Americans aimed beyond the countries required to comply with the US Directive and thereby broaden the embargo. The effects of the latter went beyond interference in trade since it also had an adverse effect on the DGFM integrated steelworks project (see Chapter 6). Finally, the Indian pig iron exports episode illustrates the problems of compensating lost trade with non-traditional sources which had other major commitments.

Difficulties in obtaining imported pig iron persisted in the aftermath of the Second World War as a result of worldwide iron and steel shortages. The traditional pre-1939 suppliers struggled slowly to regain their share of the market, and imports from non-traditional wartime suppliers declined. Although Brazil remained the leading source of pig iron from 1939 to 1948 and a significant source in 1949 (see Table 5.2), its exports decreased as domestic requirements took priority. Imports of Indian pig iron were reduced to insignificant levels and ceased altogether in 1949 (see Table 5.2). The result was that by 1950, supplies still

⁴¹ Telegram No.1328 from the FO to Washington, 15 February 1944. FO 371 37692 AS 221/43/2.

⁴² Inward Telegram from the Department of Supply, Government of India, to the Secretary of State for India, 24 December 1943. FO 371 37692 AS 44/43/2.

⁴³ Copy of a Telegram from the British Merchant Shipping Mission, Washington, to the Shipminder, London, Telegram Amast 10532, 20 August 1944. FO 371 37692 AS 4651/43/2.

⁴⁴ Telegram Amast 10149 from the Ministry of War Transport to the British Merchant Shipping Mission, Washington, 18 September 1944. FO 371 37693 AS 4651/43/2.

remained vulnerable to external factors. The problem was further aggravated by the fact that the Republic could not afford imports owing to the exchange crisis. During the Second World War, pig iron shortages and military ambitions of self-sufficiency in 'strategic' commodities were at the root of the decision to develop domestic pig iron production based on local iron ore and charcoal sources (see below).

National production of pig iron

Domestic pig iron production was inaugurated at Palpalá in the province of Jujuy in October 1945, with the claim that national pig iron supplies were secure and that output from Palpalá could replace imports in times of emergency.⁴⁵ However, this was far from the truth, at least at this time. Consumption of pig iron continued to be satisfied largely by imports (see Table 5.3). The military initially considered the Altos

Table 5.3
PIG IRON CONSUMPTION, 1945-1952
(in tons-equivalent of crude steel)

YEAR	TOTAL	IMPORTS		ZAPLA OUTPUT	
		Volume	Share of total	Volume	Share of total
1945	28,403.1	25,190.1	88.7%	3,213	11.3%
1946	50,366.5	38,049.5	75.5%	12,317	24.5%
1947	84,595.5	68,860.5	81.4%	15,735	18.6%
1948	135,373.8	118,025.8	87.2%	17,348	12.8%
1949	103,743.0	85,184.0	82.1%	18,559	17.9%
1950	114,543.1	96,709.1	84.4%	17,834	15.6%
1951	101,102.5	82,081.5	81.2%	19,021	18.8%
1952	90,951.4	59,187.4	65.1%	31,764	34.9%

Source: *Boletín Informativo Techint*, October-December 1965, p.11.

Hornos Zapla (AHZ) an experiment, in order to verify their efficiency and the aptitude of the raw materials.⁴⁶ With the performance of the works deemed satisfactory from a strictly technical viewpoint,

⁴⁵ Congreso Nacional, *Diario de Sesiones de la Cámara de Senadores*, Año 1947, Tomo I, p.225.

⁴⁶ Dirección General de Fabricaciones Militares (DGFM), *Fabricaciones Militares: Visión de una gran empresa* (Buenos Aires, 1973), p.64.

the DGFM decided to increase capacity and a second blast furnace was inaugurated in 1951.⁴⁷ Output from the AHZ, however modest when compared to that of major producers, was not insignificant (see Table 5.3). It initially satisfied over 10% of requirements and, once the second blast furnace was added, over 30% in 1952. However, it must be noted that the market share of 1952 production in total consumption is distorted. As shown in Table 5.3, growth in pig iron output coincided with a curtailment in imports, which resulted from the post-1949 crisis. With shortages of scrap, private sector steel producers could only offset supply deficiencies by increasing the volume of pig iron used for steelmaking in Siemens-Martin furnaces. Foreign supplies were increasingly unavailable since permits for imports were not being issued as exchange reserves were depleted. Domestic output could not compensate for import shortfalls. Zapla pig iron processed at the Fábrica Militar de Aceros furnished the steel requirements of the DGFM and State investment programmes.⁴⁸ This resulted in severe scarcities of pig iron that threatened to paralyse private sector firms, whose steel production was utilised for construction, transportation and public works by Obras Sanitarias de la Nación and Gas del Estado. Dependent on imports, large enterprises such as TAMET had little choice but to cut back output.⁴⁹

Consequently, domestic pig iron production was insufficient to reduce dependence on foreign supplies. Nonetheless, the AHZ remained a considerable technical achievement by Argentine standards. As will be shown in Chapter 6, the DGFM were not prevented by the US embargo from obtaining the necessary foreign technological assistance, and domestic engineering capabilities enabled the successful completion of the project - the first undertaking of its kind. Yet it remained part of a broader military strategy guided by national defence considerations. The aim of self-sufficiency in 'strategic' goods had already been formalised through Law 12,709 in 1941, which established the DGFM and its functions. These included exploration for mineral resources, the construction of the facilities necessary for their extraction,

⁴⁷ DGFM, *El hierro de Zapla* (Buenos Aires, 1954), p.4.

⁴⁸ General Humberto Sosa Molina, *Inauguración del segundo alto horno Zapla* (Argentine Republic, April 1951), unpaginated.

⁴⁹ *Metalurgia*, November 1951, p.14, and December 1951, p.7.

and the promotion of related industries.⁵⁰ The Armed Forces wielded considerable power in government at the time, and their aspirations ultimately resulted in substantial finds of iron ore and coal.

NATIONAL IRON ORE AND COAL RESOURCES

The period was largely characterised by a lack of exploitable domestic resources. As late as 1914, no search for iron ore had been undertaken.⁵¹ To some extent, this applied also to coal. The Río Turbio basin, which was to become the largest domestic coal source, had been pinpointed in the late nineteenth century but no action was taken.⁵² Therefore, prior to the discovery of substantive iron and coal deposits in the Forties, erratic efforts were made with little success to tap the wealth of what some nationalists erroneously believed were vast mineral reserves.⁵³ As was indicated in Chapter 3, nationalists within the Armed Forces pressed for the exploitation and processing of minerals throughout the Twenties. General Isidro Arroyo, appointed *inspector de siderurgia* in 1922, was the most prominent officer involved in this campaign. He was convinced that the country was rich in minerals, and that there were no excuses for not exploiting them.⁵⁴ These views led to sporadic efforts to develop mining in the Andean region, but the problems were enormous: finds were small, the quality of minerals poor, and transportation costs high.⁵⁵

The outbreak of war in 1939 gave new impetus to exploration for mineral resources, which was driven by the military and their quest for strategic self-sufficiency. The result was the discovery of iron ore

⁵⁰ Ricardo Lesser and Marta Panaia, 'Las estrategias militares frente al proceso de industrialización (1943-1947)', in M. Panaia, R. Lesser and P. Skupch (eds.), *Estudios sobre los orígenes del peronismo*, Volume 2 (Buenos Aires, 1973), p.105.

⁵¹ José García Vizcaíno, *Tratado de política económica argentina*, Volume II (Buenos Aires, 1975), p.257.

⁵² Luis Calliari, *El yacimiento 'Presidente Perón' en la cuenca carbonífera de Río Turbio* (Buenos Aires, 1952), p.13.

⁵³ Ministerio de Hacienda, *Iron* (Buenos Aires, 1971), p.7.

⁵⁴ 'El gobierno posee informes que aseguran la vasta existencia de hierro, carbón y otros minerales, y el éxito de la explotación'. Reprint of an interview to General Arroyo by the newspaper *La Nación* in *Revista de Economía Argentina* XVI (1926) No.93, pp.219,225.

⁵⁵ Wässman, *Posibilidades*, p.3.

at Zapla in Jujuy and near Sierra Grande in Río Negro, and coal at Río Turbio in Santa Cruz. While the actual discoveries of iron ore were accidental, that of coal was the result of a concerted effort. In the case of iron ore, it was five local individuals who stumbled across the Cerro Zapla deposit in 1940, and a local person who found the Sierra Grande deposits in 1945.⁵⁶ In the case of coal, due to import shortages, Yacimientos Petrolíferos Fiscales (YPF) was entrusted in 1941 with carrying out studies and prospecting. The División Carbón Mineral of YPF was created and explorations were carried out from Jujuy to Tierra del Fuego, which led to the development of Río Turbio.⁵⁷ Substantial reserves by Argentine standards, though not on the scale the nationalists had hoped for, were discovered as a result.

The '9 de Octubre' mine, the iron deposit at Zapla which became operational in 1944, had verified reserves of 20,000,000 tons of hematite and, according to studies carried out in 1943, possible reserves of 36,000,000 tons.⁵⁸ With the addition of the 'Puesto Viejo' mine in the late Fifties, Zapla iron ore reserves increased to 80,000,000 tons.⁵⁹ The verified iron stocks at Sierra Grande were calculated in 1946 at 19,950,000 tons, and possible reserves at 65,000,000 tons.⁶⁰ When compared to iron ore reserves in major producing areas, these quantities were modest. In the Fifties, the measured, indicated and inferred reserves of the four countries that shared the Western European coal and iron basin (ie, West Germany, France, Belgium and Luxembourg) totalled 8,360,000,000 tons, and those of the United Kingdom amounted to 3,760,000,000 tons.⁶¹ As for coal, proven reserves of the 4 seams comprising the Río Turbio deposit amounted to 180,000,000 tons, and possible reserves to 350,000,000 tons.⁶² When compared with the stocks of leading coal producers, these volumes were again modest. In 1950, the United States of America

⁵⁶ Ricardo Fernando Marcos, *Altos Hornos Zapla* (Jujuy, 1980), unpaginated; Raúl Larra, *Savio: el argentino que forjó el acero* (Buenos Aires, 1980), fn.pp.166-167.

⁵⁷ Presidencia de la Nación, *Carbón* (Buenos Aires, 1969), p.6.

⁵⁸ DGFM, *Fabricaciones*, p.64; Marcos, *Zapla*, unpaginated.

⁵⁹ Ministerio de Hacienda, *Iron*, p.9.

⁶⁰ Instituto Latinoamericano del Fierro y el Acero (ILAFA), *Argentina* (Santiago de Chile, 1963), p.199.

⁶¹ Calculated from the data in UN, Department of Economic and Social Affairs, *Survey of World Iron Ore Resources* (New York, 1955), p.27.

⁶² Calliari, *Yacimiento*, p.27.

had proven reserves of 200,000,000,000 tons and possible reserves of 2,028,000,000,000 tons. In that same year, West Germany had proven reserves of 80,455,000,000 tons and possible reserves of 260,000,000,000 tons.⁶³ Argentine iron and coal deposits, already hindered by inadequate reserves, suffered from two further critical problems: location and transportation, and poor quality of the minerals.

Location of the deposits and transportation

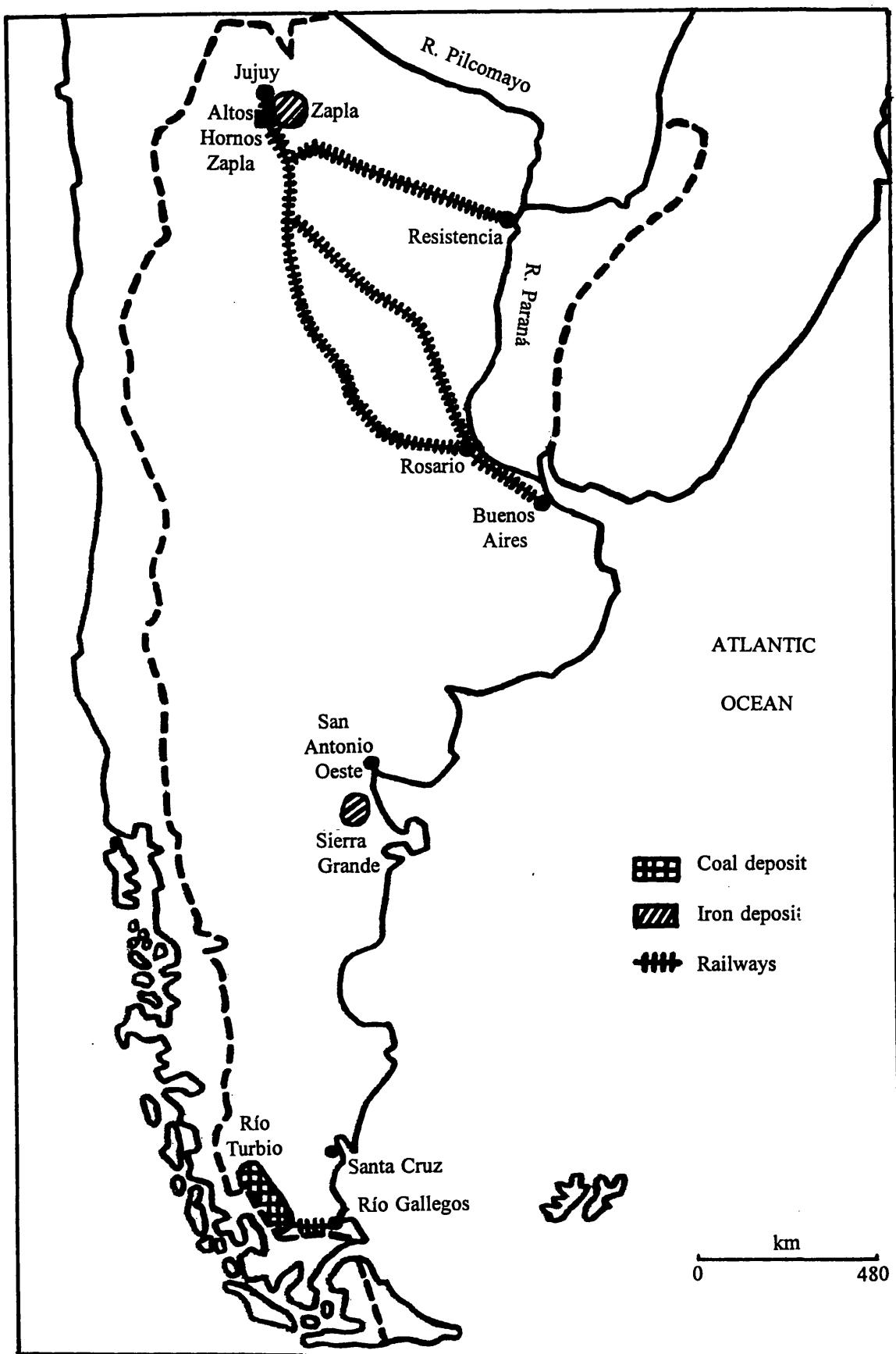
All the newly located deposits of iron ore and coal were distant from Buenos Aires. Zapla was located 1,300 kilometres from the national capital, and Sierra Grande and Río Turbio were 1,265 and 3,000 kilometres away respectively. The disadvantage of remoteness was more serious for the Patagonian discoveries, as effective transportation was mostly lacking. Compared with the deposits near Sierra Grande and the coal basin at Río Turbio, the iron mine at Zapla and its related development the Altos Hornos Zapla enjoyed significant advantages. The '9 de Octubre' mine was situated 16 kilometres away from the AHZ at Palpalá.⁶⁴ Palpalá itself was located on a direct railway line to Buenos Aires and connected to three branch lines that reached the Paraná river (see Map 5.1). This enabled the AHZ to receive charcoal supplies (see section below) and provide locally produced ore for the SOMISA project, which would utilise both foreign and national inputs. In addition, the AHZ was near the city of Jujuy, which could provide human and other sources and also had the necessary services and facilities.⁶⁵

In sharp contrast, deposits near Sierra Grande did not enjoy such beneficial conditions notwithstanding that two of the deposits, 'Banco de Crédito Industrial Argentino' and 'General Perón', were located 8 kilometres to the north of the town, and the other two, 'Pecheca' and 'General Belgrano', were 10 kilometres to the south. Sierra Grande lacked the facilities and resources which made the Zapla development possible. The Ruta Nacional 3 required modification in order to improve communications, and

⁶³ UN, Department of Economic Affairs, *Iron*, p.11.

⁶⁴ DGFM, *Fabricaciones*, p.64.

⁶⁵ Marcos, *Zapla*, unpaginated.



Map 5.1 DOMESTIC SOURCES OF RAW MATERIALS

major investments in infrastructure were needed for the ores to be employed by SOMISA. Rail links would have to be established with San Antonio Oeste, a coastal town where a port would have to be built so that the mineral could be shipped (see Map 5.1 for location). Proposals for local processing of the ore (as was done at Palpalá) were not feasible as the only available fuel was coal from remote Rio Turbio, which was unsuitable for coking and could not be used elsewhere as large-scale facilities to ship it were non-existent.⁶⁶

Given the lack of effective transportation and the investment levels required to develop the deposit, the discovery of Sierra Grande did not generate enthusiasm. Nevertheless, it must be stressed that other factors also had a bearing. The Second World War was over, Fabricaciones Militares was processing Zapla ores at the AHZ, and the *Peronista* régime had other economic priorities. Although the Banco de Crédito Industrial granted the first loan for preparatory work in 1947, the DGFM took no immediate action. In fact, it only sent its chief geologist to the area in 1949.⁶⁷ The Río Turbio coal basin also suffered from inadequacies in terms of location and transportation. However, unlike Sierra Grande, it was the largest known domestic coal source and its development was regarded as essential to offset import shortages. Imported coal was not used in the early efforts to produce iron and steel, and instead largely consumed by power stations, the railways, the gas company, the emergent merchant fleet, and the Navy.⁶⁸

The development of Río Turbio was encouraged by two factors. First, the country depended on thermal power, with coal-fired power stations having generated 80% of national energy requirements in 1939.⁶⁹ Second, the military envisaged the use of national raw materials in iron and steel production. Given the remote location of the deposit in relation to the leading markets, the problem requiring foremost attention was again the lack of effective transportation. The basin was situated in Santa Cruz at around 3,000 kilometres from Buenos Aires and 260 kilometres from the Atlantic coast, in the extreme southwest

⁶⁶ *Revista de la Facultad de Ciencias Económicas*, May 1950, pp.336,338.

⁶⁷ Ministerio de Hacienda, *Iron*, p.11; Larra, *Savio*, fn. pp.166-167.

⁶⁸ Julio Sanguinetti, *Nuestro potencial económico industrial y la defensa nacional* (Buenos Aires, April 1946), p.134.

⁶⁹ Calculated from the data in Vicente Vázquez-Presedo, *Estadísticas Históricas Argentinas: Compendio 1873-1973* (Buenos Aires, 1988), p.211.

of Patagonia near the border with Chile (see Map 5.1).⁷⁰ The construction and improvement of roads was necessary, and tenders were called for the improvement of highway 293. The latter covered the 260 kilometres separating the deposit from Río Gallegos, the potential site for port facilities to ship the coal. There was also the idea of building a railway link, which was considered as early as 1943.⁷¹

Initially two proposals for a rail link were prepared, but subsequently abandoned because of poor planning. The first option, an outlet through Puerto Natales in Chile, was immediately discarded as its dependence on Chilean goodwill was politically and economically unacceptable. The second option, that of transporting coal to an Argentine port on the Atlantic and then shipping it to the consumption centres, was considered more viable. However, the project was dropped owing to significant flaws. The proposed railway spanned 390 kilometres to Santa Cruz rather than the 260 kilometres to Río Gallegos (see Map 5.1 for location), its estimated cost of m\$n 350,000,000 was considered high as the government had other public expenditure priorities, and the construction period would be lengthy given the problems in obtaining vital materials such as imported rails due to the worldwide iron and steel shortage.⁷² Despite these failures, the urgency of the transportation problem resulted in a third project. This was an economic industrial railway from Río Turbio to Río Gallegos, which covered the shortest distance to the Atlantic coast (thereby reducing construction costs) and allowed the use of the stocks of discarded rails and railroad materials abandoned at the Patagonian coastal town of Puerto Madryn.⁷³ The Dirección General de Combustibles Sólidos Minerales (DGCSM) was authorised by Decree No.9,754 of 13 May 1950 to agree with the Ministries of Public Works and Transport all the measures necessary for the preparatory work, construction and completion of the project.⁷⁴ Opened in May 1951, the line was named Ramal Industrial Eva Perón.⁷⁵

⁷⁰ Presidencia, *Carbón*, p.6.

⁷¹ Speech by Captain Arturo Kunz, adviser to the Dirección General de Combustibles Sólidos Minerales (DGCSM), on LRA 1 Radio del Estado, 1 October 1948, DGCSM, *Primer cargamento de carbón mineral de Río Turbio, 1º de Octubre de 1948* (Buenos Aires, 1949), unpaginated.

⁷² *Revista de la Facultad*, July 1950, p.635.

⁷³ Calliari, *Yacimiento*, p.50.

⁷⁴ *Revista de la Facultad*, July 1950, p.636.

⁷⁵ Calliari, *Yacimiento*, p.50.

Hasty construction led to severe deficiencies: it was a narrow-gauge railway with steep gradients on $\frac{1}{3}$ of the line, no ballast on most of the track, and light rails that restricted the maximum load per axel to 6 tons.⁷⁶ This created serious transportation bottlenecks, reflected in the volumes of coal transported - which were relatively low when compared with actual output (see Tables 5.4 and 5.6 below). Problems were only aggravated by the lack of progress made in developing the port at Río Gallegos.

Table 5.4

COAL TRANSPORTED FROM RÍO TURBIO TO BUENOS AIRES, 1951-1958
(in tons)

YEAR	BY RAIL FROM RÍO TURBIO TO RÍO GALLEGOS	BY SEA FROM RÍO GALLEGOS TO BUENOS AIRES
1951	10,879	-
1952	44,653	-
1953	47,039	3,858
1954	69,550	31,936
1955	63,649	25,840
1956	70,071	43,457
1957	90,941	46,880
1958	91,544	72,630

Source: Consejo Federal de Inversiones, *Programa de desarrollo de la cuenca de Río Turbio*, Tomo I (Buenos Aires, 1963), Primera parte, p.62.

Río Gallegos required new port facilities to accomodate the growth in coal traffic. A dock was under construction by 1948, and conveyor belts with an hourly capacity of 200 tons were being fitted for loading coal from a storage bay.⁷⁷ However, planners considered these facilities incomplete and inadequate as the projected (but subsequently unachieved) daily capacity of the industrial railway was 12,000 tons. Therefore, Decree No.9,754 also authorised the DGCSM to agree with the relevant Ministries all the measures necessary for the construction and completion of a terminus, port facilities, and accessory

⁷⁶ UN, Economic Commission for Latin America (ECLA), Serie Análisis y proyecciones del desarrollo económico, V: *El desarrollo económico de la Argentina*, Segunda parte - Los sectores de la producción: energía y transporte (Mexico, 1959), p.158.

⁷⁷ Despatch from the Subsecretaría de Informaciones, Dirección General de Prensa, Presidencia de la Nación, 29 September 1948, DGCSM, *Cargamento*, unpaginated.

installations at Río Gallegos.⁷⁸ This required vast capital outlays which could not be afforded due to economic difficulties, and thereby the project was scaled down. The start of the construction of mechanised loading facilities at Río Gallegos was authorised by Decree No.13,163 of 4 July 1951. This undertaking, for which international tenders were invited, was budgeted at m\$n 123,900,000.⁷⁹ Completed in the late Fifties, it enabled the loading of 300 tons per hour directly from the train wagon to the ship hold.⁸⁰ No other installations were built, as the Administración General de Puertos concentrated on planning new major capital investments to modernise infrastructure in the leading national ports (which served the Pampas and were located on the River Plate, the Paraná river and the Atlantic coast of the province of Buenos Aires).⁸¹ In the absence of adequate facilities at Río Gallegos, ships could not operate in secure conditions and those of only 3,000 to 4,000 tons could be handled - even at times of high tide.⁸² As a result, even lower volumes of coal were shipped in relation to actual output and consignments on the Ramal Industrial Eva Perón (see Tables 5.4 above and 5.6 below).

Notwithstanding such difficulties, production had already begun at Río Turbio and the DGCSM was determined to prove that domestically produced coal could reach the main market. Its resolve was epitomised by the way the first shipment reached Buenos Aires in October 1948. As facilities were lacking at Río Gallegos, 1,600 tons were shipped on an LST-type military transport. This craft, which was built in the USA in 1943-1945 and acquired after the 'normalisation' of Argentine-American relations in 1947, could land on the beach itself and open its bow doors for easy loading and unloading.⁸³ This was an attractive temporary solution, but no real substitute for the necessary improvement of the port at Río Gallegos. However, it proved more than temporary. There was little progress with the development of new

⁷⁸ *Revista de la Facultad*, July 1950, pp.635,636.

⁷⁹ Calliari, *Yacimiento*, p.50.

⁸⁰ UN, ECLA, *Análisis y proyecciones, V: Argentina, Segunda parte - Energía y transporte*, p.170.

⁸¹ Ministerio de Obras y Servicios Públicos, *A long range Transportation Plan for Argentina*, Main Report (Buenos Aires, 1962), p.72.

⁸² UN, ECLA, *Análisis y proyecciones, V: Argentina, Segunda parte - Energía y transporte*, p.158.

⁸³ Despatch from the Subsecretaría de Informaciones, DGCSM, *Cargamento*, unpaginated; *Revista de la Facultad*, October 1948, p.1048, fn.1.

and modern facilities as a result of the high investment levels required, and thereby LST-type craft continued to serve the many primitive Patagonian ports as late as the Sixties.⁸⁴

The quality of iron ore and coal resources

Combined with adverse location and transportation factors was the poor quality of domestic minerals. Regarding the quality of iron ore in general terms, iron-bearing minerals (which included hematite, the type found in Argentina) were normally expected to have a content of 60 to 72%.⁸⁵ At the Argentine deposits, the iron content was below these levels and therefore larger volumes of mineral had to be extracted. The content of the Zapla ores from the '9 de Octubre' mine averaged 48%.⁸⁶ The quality of Zapla minerals did not improve with the coming on stream of the 'Puesto Viejo' mine in the late Fifties. Situated at about 60 kilometres from Palpalá, 'Puesto Viejo' was an open cast mine consisting of a seam which was 3 to 5 metres thick with an iron content of merely 40%. The ore had to then be transported by rail to the AHZ after processing and classification, thereby increasing its cost.⁸⁷ Quality was higher at Sierra Grande, where the iron content was 55 to 56%.⁸⁸

As regards coal, it was unsuitable for steel production. The mineral extracted from two seams at Río Turbio which came into exploitation before the Fifties was of poor quality. Tests in the Manto Superior, the first seam to be mined, showed that 650 kilograms of coal for commercial purposes were available for every ton extracted. However, fixed coal amounted to 46%, the ash content was 13%, and the tenor of volatile substances was 34%.⁸⁹ Quality was similar in the Manto Dorotea. Its coal was again

⁸⁴ UN, ECLA, *Análisis y proyecciones, V: Argentina, Segunda parte - Energía y transporte*, p.157.

⁸⁵ UN, Department of Economic and Social Affairs, *Survey*, pp.7,8.

⁸⁶ DGFM, *Fabricaciones*, p.64.

⁸⁷ DGFM, *Pasado, presente y futuro de los Altos Hornos Zapla* (Argentine Republic, 1975), p.3; DGFM, *31º Aniversario, 9 de Octubre 1941-1972* (Buenos Aires, October 1972), p.81.

⁸⁸ ILAFA, *Argentina*, p.199.

⁸⁹ *Revista de la Facultad*, June 1948, p.472.

poor, with an ash content of 12% and a high tenor of volatile substances.⁹⁰ Notwithstanding such disadvantages, efforts persisted to supply Río Turbio coal for steelmaking and to achieve self-sufficiency in 'strategic' commodities. To overcome the problem of high content of ash and volatile substances, treatment became essential. Although depuration was initially done by hand, a plant with a daily capacity of 200 tons was under construction by 1948 and completed in May 1951.⁹¹ With growth in coal output, this plant was expanded in various successive phases and attained a daily capacity of 1,500 tons by the early Sixties.⁹² It had been originally intended to complement the depuration plant with a coking plant, which would have enabled the supply of industrial coke for steel production.⁹³ By the early Sixties, the coking plant had not been built. By then the SOMISA steelworks, which would rely on imported coal (see below), had finally come on stream and had its own coking facilities.

Development of iron ore and coal production

Despite the major disadvantages in terms of location and quality, the drive for self-sufficiency in 'strategic' commodities led to the rapidly-paced development of the '9 de Octubre' iron mine at Zapla and the 'Presidente Perón' coal deposit at Río Turbio. Since both efforts were guided by wartime considerations and occurred at a time not only of increased State intervention in the economy but of military participation in government (see Chapter 2), it was the State companies associated with the Armed Forces which undertook the exploitation of domestic raw material resources.

Following the discovery of iron at the Cerro Zapla in 1940, samples of ore were sent to

⁹⁰ *Diputados*, Año 1951, Tomo I, p.244.

⁹¹ Calliari, *Yacimiento*, p.46; Despatch from the Subsecretaría de Informaciones, DGCSM, *Cargamento*, unpaginated.

⁹² Consejo Federal de Inversiones, *Programa de desarrollo de la cuenca de Río Turbio*, Tomo I (Buenos Aires, 1963), Primera parte, p.58.

⁹³ Speech by Rear-admiral Bautista Frola, director of the DGCSM, during the ceremony marking the unloading of the first shipment of Río Turbio coal at Buenos Aires, 1 October 1948, DGCSM, *Cargamento*, unpaginated.

Fabricaciones Militares and successfully tested at the Fábrica Militar de Aceros.⁹⁴ Given military interest in 'strategic' reserves, the acceptance of private sector applications for exploration and mining at Zapla and a large surrounding area were suspended by the provincial authorities in September 1941. With the announcement in February 1942 that the few individuals that registered applications in the provincial Dirección de Minas had donated the exploitation rights to the Nation, Zapla became a reserve and applications expired by decree on 9 April 1942.⁹⁵ In September 1942 the DGFM confirmed that the deposit was extensive. The extension of the deposit into the Puesto Viejo district was confirmed later.⁹⁶ A definitive profit-sharing agreement on the exploitation of the ore - no details are available - was reached on 21 August 1942 between the DGFM and the provincial finance minister.⁹⁷ The '9 de Octubre' mine became operational in 1944, and

Table 5.5

IRON ORE PRODUCTION, 1944-1955
(in tons)

YEAR	TOTAL OUTPUT	ZAPLA OUTPUT	SHARE (%)
1944	1,921	3	0.2
1945	43,375	40,947	94.4
1946	50,477	48,729	96.5
1947	39,495	38,500	97.5
1948	36,439	31,686	87.0
1949	37,601	34,556	91.9
1950	39,873	37,519	94.1
1951	55,063	52,271	94.9
1952	66,671	63,598	95.4
1953	76,621	74,090	96.7
1954	77,145	71,280	92.4
1955	76,270	73,802	96.8

Sources: Ministerio de Industria y Comercio de la Nación, *Estadística Minera de la República Argentina*, Años 1945-1949, pp.61,63; Ministerio de Comercio e Industria de la Nación, *Estadística Minera*, Años 1950-1952, p.15, and Años 1953-1956, p.94.

⁹⁴ Marcos, *Zapla*, unpaginated.

⁹⁵ Altos Hornos Zapla (AHZ), *Revista de adhesión al 25º aniversario de la primera colada del arrabio argentino* (Argentine Republic, 1970), p.12.

⁹⁶ Marcos, *Zapla*, unpaginated.

⁹⁷ AHZ, *Revista*, p.12.

daily output amounted to 330 tons.⁹⁸ Between 1944 and 1949, 200,000 tons of ore were extracted.⁹⁹ In the absence of iron ore imports, Zapla became the leading source of iron and had the largest share of national output (see Table 5.5).

In the case of Río Turbio, rapid development was facilitated by the fact that the basin had been pinpointed in the nineteenth century and studies carried out in 1922. Systematic exploration began in February 1943, combined with small-scale extraction to satisfy local demand. With the confirmation that exploitation was viable, the DGCSM (later renamed Yacimientos Carboníferos Fiscales) was created in January 1946.¹⁰⁰ The length of the Río Turbio deposit from north to south was estimated at 40 kilometres, the width in its middle portion at 5 kilometres, and it consisted of 4 seams (Manto Superior, Manto Dorotea, Manto 'A', and Manto Inferior) each with a thickness of 1 to 2 metres.¹⁰¹ Development began in 1943 in the Manto Superior, the only known layer at the time. Two pits were opened, the Mina No.1 and the Mina No.2. The former produced coal from the start, and 60,000 tons had been extracted by 1951. However, it was to be abandoned as only 35,000 tons remained available, its 1,023 metre-long main gallery was limited by the Chilean frontier, and the lower parts of the seam were under exploitation through the Mina No.2. The latter opened in mid-1947, the length of its main gallery being 720 metres and extendable to a maximum 5,000 metres, and whose total production was calculated at 300,000 tons. Following the assessment of the Manto Dorotea, exploitation of the latter was begun. Preparatory work began in November 1946 for the Mina No. 3, which was to be the main one of the deposit. The projected length for its main galleries was 6,300 metres, and its output was estimated at 11,000,000 tons of coal. Further development of the Manto Dorotea would be undertaken in 1952 with the Mina No.4, which was expected to supply another 4,500,000 tons.¹⁰²

⁹⁸ DGFM, *El hierro de Zapla* (Buenos Aires, 1954), p.7.

⁹⁹ Ricardo Piccirilli, Francisco L. Romay and Leoncio Gianello (eds.), *Diccionario Histórico Argentino*, Volume VI (Buenos Aires, 1954), p.470.

¹⁰⁰ Calliari, *Yacimiento*, p.22.

¹⁰¹ Diputados, Año 1951, Tomo I, p.244.

¹⁰² Calliari, *Yacimiento*, pp.34,36,38.

Locational factors made high mechanisation essential at the coal basin. Unlike Zapla, Río Turbio was virtually isolated and no local labour supply was available. To offset labour shortages, machinery was purchased in Britain for £ 500,000 and in the USA for US\$ 200,000 in 1948. These acquisitions were possible as the country had not yet completely exhausted its exchange reserves and relations with the USA had been 'normalised' in 1947. To satisfy the power requirements of the imported equipment, the installation of a 30,000 kw plant was planned.¹⁰³ However, the deterioration of public finances at the end of the Forties prevented the construction of this plant, since large expenditure outlays were not affordable. Moreover, national power supplies were deficitary and, if urgent improvements would have been carried out, priority would have presumably gone to the main consumption areas. In the event, mechanisation of work was achieved in the Fifties with the installation of a 12,000 kw thermal power plant.¹⁰⁴

Table 5.6

COAL CONSUMPTION, 1944-1958
(in tons)

YEAR	TOTAL	IMPORTS		OUTPUT	
		Volume	Share of total	National	Río Turbio
1944	625,864	616,818	98.5%	9,046	4,443
1945	772,493	767,872	99.4%	4,621	58
1946	1,146,447	1,144,368	99.8%	2,079	1,647
1947	1,228,950	1,214,610	98.8%	14,340	13,247
1948	2,194,693	2,177,200	99.2%	17,493	16,838
1949	1,358,046	1,340,837	98.7%	17,209	15,885
1950	1,473,576	1,447,087	98.2%	26,489	25,192
1951	2,207,541	2,167,638	98.2%	39,903	37,587
1952	1,852,518	1,740,228	93.9%	112,290	109,100
1953	1,267,096	1,183,920	93.4%	83,176	80,516
1954	1,599,444	1,506,161	94.2%	93,283	92,523
1955	1,313,221	1,177,241	89.6%	135,980	132,617
1956	1,504,854	1,351,465	89.8%	153,389	149,024
1957	1,364,216	1,155,496	84.7%	208,720	203,238
1958	1,614,299	1,353,315	83.8%	260,984	259,367

Sources: Compiled from *Comercio Exterior*, Años 1944 y 1945-1946; *Anuario Estadístico*, Tomo II, Años 1948 y 1949-1950; *Comercio Exterior*, Años 1951-1954 y 1955-1957; Secretaría de Estado de Hacienda, *Comercio Exterior*, Año 1958; *Estadística Minera*, Años 1945-1949, 1950-1952 y 1953-1956; Ministerio de Economía de la Nación, *Estadística Minera*, Años 1957-1961.

¹⁰³ Ibid., p.41.

¹⁰⁴ UN, ECLA, Análisis y proyecciones, V: *Argentina*, Segunda parte - Energía y transporte, p.51.

The Río Turbio basin represents 99% of proven national coal reserves and became the main domestic source of coal supply.¹⁰⁵ However, notwithstanding that coal imports did not attain pre-1939 levels for reasons described below and that petroleum was replacing coal as the leading fuel, Río Turbio output was insufficient to offset the predominance of imports in consumption (see Table 5.6). Despite growth in iron and coal production, dependence on national resources was impractical and uneconomic. The remoteness of deposits and severe transport bottlenecks resulted in high costs and the poor quality of the minerals, manifested in an iron and coal content below levels normally accepted, affected the efficiency and profitability of the mines. These considerations were taken into account in the planning of the SOMISA project and led to the recommendation that a combination of both domestic and imported inputs should be used. However, before this issue is addressed in the final section, one other domestic raw material must be assessed.

THE SUPPLY OF CHARCOAL, THE FUEL FOR THE ALTOS HORNOS ZAPLA

The use of charcoal for fuel at the wartime development of Zapla responded to three factors. First, as seen in Chapter 1, charcoal had been the 'original' fuel employed to smelt iron ore.¹⁰⁶ Second, the Republic was exploiting iron ore but lacked coal and, as in other countries facing similar problems (eg, Brazil and Sweden), the use of charcoal enabled iron and steel production based on exclusively national raw materials. Finally, owing to the superior properties of charcoal, pig iron produced in charcoal-based blast furnaces was of higher quality than that produced with coke.¹⁰⁷ However, charcoal-based iron and steel production was not viable in the long-term. In order to understand why this was the case, a comparison between Zapla and Brazilian charcoal-based steel producers is very useful. Unlike the AHZ, Brazilian firms had the necessary initial advantages to employ charcoal. Forests and the labour required for cutting and converting the wood into charcoal were concentrated in the proximity of the mills. Nonetheless, the initial

¹⁰⁵ Ministerio de Hacienda y Finanzas, *Siderurgia* (Buenos Aires, 1973), p.17.

¹⁰⁶ Douglas A. Fisher, *Steel Serves the Nation* (New York, 1951), p.119.

¹⁰⁷ UN, ECLA, *A study of the iron and steel industry in Latin America*, Volume II (New York, 1954), p.157.

cost advantages of charcoal-based production decreased in the long-term. Few of the Brazilian steelmakers had established tree plantations to meet their charcoal requirements. Natural wood supplies close to the plants dwindled, and thereby costs rose for many firms as timber had to be transported over longer distances.¹⁰⁸

In contrast, the AHZ did not enjoy even the initial advantages enjoyed by Brazilian producers as a result of two major difficulties. The first was the availability of natural wood supplies to meet the charcoal requirements of the AHZ. The forests which once had the best economic value (ie, those of easy access from major cities) were already depleted.¹⁰⁹ Remaining stocks of timber were also being depleted owing to rapid wartime growth in charcoal demand, which resulted from imported coal shortages, and the absence of a national reforestation policy. Consumption of charcoal, which before 1939 was used exclusively as fuel in northern Argentina, totalled 644,000 tons in the period 1922-1938. It then rose steeply during the Second World War, to annual volumes exceeding the total consumption for 1922-1938. Consumption rose to 762,000 tons in 1941 and 815,000 tons in 1942. Therefore, 45,000,000 tons of firewood were extracted between 1922 and 1942.¹¹⁰ The second difficulty were the primitive techniques employed to process firewood and produce charcoal. Production and transport of firewood was unmechanised and labour-intensive, which prevented economies in the costs of both firewood and charcoal. Charcoal production in the forests of northern Argentina was undertaken by a large number of small producers scattered all over the region.¹¹¹ Charcoal was produced in ovens which required more than 6 to 10 tons of firewood to obtain 1 ton of charcoal, and wastage caused by the lack of modern procedures prevented industrialisation of byproducts which would have reduced total production costs.¹¹² Once elaborated, charcoal could not compete as an industrial fuel with coal. Notwithstanding the advantages relating specifically to pig iron production, the problems with charcoal were that its volume was 3 times that

¹⁰⁸ Werner Baer, *The Development of the Brazilian Steel Industry* (Nashville, 1969), p.10.

¹⁰⁹ Wässman, *Posibilidades*, p.4.

¹¹⁰ Sanguinetti, *Potencial*, pp.142,143.

¹¹¹ AHZ, *Revista*, pp.58,60.

¹¹² Sanguinetti, *Potencial*, p.143.

of coal and only had $\frac{1}{2}$ to $\frac{1}{3}$ of its thermal value per ton.¹¹³

In an attempt to overcome the problems of firewood availability and reliance on scattered suppliers, the DGFM devised a reforestation programme in 1947.¹¹⁴ Comprising a Plan de Carbonización and a Plan Forestal, its goals were plant self-sufficiency in charcoal supplies and to increase annually the availability of firewood until it matched the future requirements of the AHZ.¹¹⁵ Military planners envisaged a Centro Forestal, which for economic reasons could not be located more than 100 kilometres from the AHZ. The selected site was only 4 kilometres from the plant and covered an area of 17,250 hectares. Following the expropriation of land, the Programa de Forestación began in 1948.¹¹⁶ Its centrepiece was the planting of 35,000,000 eucalyptus between 1948 and 1954.¹¹⁷ The first 660 hectares were forested with 1,625,000 eucalyptus trees. Work proceeded rapidly and a plant for charcoal production was built, which comprised 131 furnaces of the kind used in Brazil and had a capacity of 1,400 to 1,800 kilograms per furnacing.¹¹⁸ The DGFM reforestation plan was the largest national project of its kind.¹¹⁹ Eucalyptus trees, which were fast-growing, had been chosen to restrict the phosphorus content in charcoal. The charcoal fines were obtained from the bark of trees, where the phosphorus content was highest, and tests in Brazil had shown that some eucalyptus varieties were virtually phosphorus-free.¹²⁰ Charcoal production at Zapla began in 1950, using firewood obtained in the land clearing preceding the reforestation, and 10,000,000 eucalyptus were protected in greenhouses and another 7,000,000 had been placed in their final location by 1951.¹²¹

¹¹³ H. Foster Bain, *Las posibilidades de la manufactura de hierro y acero en la Argentina* (Buenos Aires, 1925), p.31.

¹¹⁴ General Humberto Sosa Molina, *Inauguración del segundo alto horno Zapla* (Argentine Republic, April 1951), unpaginated.

¹¹⁵ Marcos, *Zapla*, unpaginated.

¹¹⁶ Ibid.

¹¹⁷ Sosa Molina, *Inauguración*, unpaginated.

¹¹⁸ Marcos, *Zapla*, unpaginated.

¹¹⁹ Sosa Molina, *Inauguración*, unpaginated.

¹²⁰ UN, ECLA, *Study*, Volume II, p.165.

¹²¹ Sosa Molina, *Inauguración*, unpaginated.

However, the Centro Forestal did not meet military expectations. Because production of firewood was unmechanised and labour-intensive, it remained as inefficient as the scattered suppliers which the reforestation programme had aimed to replace. The Centro Forestal only provided 10 to 15% of charcoal requirements of the AHZ by 1970, while third parties remained the predominant suppliers of charcoal - as in the past.¹²² The use of charcoal, like that of national iron ore and coal resources, had major disadvantages. Nevertheless, as is seen below, there yet remained one way in which domestic raw materials could be employed in iron and steel production.

THE SOMISA PROJECT: A COMBINATION OF NATIONAL AND FOREIGN INPUTS

The underlying assumption behind the Plan Siderúrgico Argentino and the SOMISA project was that limited steel production based on foreign inputs could not continue and therefore national sources of minerals had to be exploited, despite their strategic and cost disadvantages.¹²³ Hence, the objective was self-sufficiency in iron and steel production and in raw material supplies. However, during the preparation of the PSA it became clear that pursuing an autarkic policy for raw material supplies was a mistake owing to transportation bottlenecks, the inadequate location of deposits, and high costs of production.¹²⁴ As a result, private sector industrialists participating in SOMISA recommended that the projected plant should operate mainly with imported inputs - although this did not entirely exclude the use of national inputs. Their proposal recommended that, for economic reasons, the use of imported minerals was more advantageous in peacetime and that national inputs should be preserved for emergencies.¹²⁵

The specific details of the mix of foreign and national inputs to be utilised by SOMISA were

¹²² AHZ, *Revista*, p.58.

¹²³ Savio, 'Bases', p.389.

¹²⁴ Debate on the PSA, 8-9 May 1947, *Diputados*, Año 1947, Tomo I, p.288.

¹²⁵ Proposal presented by TAMET S.A., La Cantábrica S.A., SIAM Di Tella Ltda., and ARMCO Argentina S.A. at the contest held by the DGFM, 3 November 1944, in DGFM, *Plan Siderúrgico Argentino* (Buenos Aires, 1946), p.150; Consideration of the report of the Comisión de Defensa Nacional on the Draft Bill of the PSA under revision, 13 June 1947, *Senadores*, Año 1947, Tomo I, p.225.

stipulated in the PSA. Although the proportion of domestic raw materials to be used was 30% (this was the percentage of requirements that could be met by national pig iron output), the minimum obligatory consumption of domestic inputs was 10%. The remaining 20% was to become part of a raw material reserve enshrined in the PSA in the event of a cut-off in overseas supplies.¹²⁶ Under Article 60, SOMISA undertook to form and maintain a permanent strategic reserve of foreign and national inputs sufficient to maintain production. Furthermore, the PSA established that stocks of imported minerals to cover 6 months production were to be accumulated along with national raw materials for at least 2 months production.¹²⁷ The volume of foreign raw material stocks to be held by SOMISA was also related to national defence requirements. Though the plant was required a 6 month stock for its normal operation, the DGFM believed that an additional foreign raw material reserve of an undetermined volume should be stockpiled for *seguridad nacional* purposes. As a result, a progressive investment of m\$n 20,000,000 in this extra stock would be made over 8 years. The extra stock was to be stored at the steelworks and under the custody of SOMISA, as it would be DGFM property and thereby under State jurisdiction. SOMISA could make use of it with authorisation from the DGFM and then replace it or reimburse its cash value to the Ministry of Finance.¹²⁸

Planning for the PSA coincided with severe limitations imposed by the Second World War on potential foreign sources of minerals. The two nearest possible sources of iron were Chile and Brazil. Chilean deposits offered the best prospects, as the ores had a high iron content, required low investment for mining and loading facilities, and were reasonably located in relation to ports.¹²⁹ However, the possibility of importing them was low as Chilean minerals would be required in domestic steel production at the

¹²⁶ Debate on the PSA, *Diputados*, Año 1947, Tomo I, pp. 312,342.

¹²⁷ Estatutos de Siderurgia Argentina, Sociedad Anónima Mixta, in DGFM, *Plan*, pp.126,127.

¹²⁸ General Manuel N. Savio, 'Conceptos fundamentales de orden económico-financiero', Buenos Aires, 17 August 1945. In the Análisis de los aspectos técnicos, económicos y financieros de la propuesta SOMISA, in DGFM, *Plan*, p.50.

¹²⁹ Estudio técnico-económico de la producción de acero semiterminado en la República Argentina presentado por ARMCO Argentina S.A., in DGFM, *Plan*, p.81.

Huachipato works.¹³⁰ Brazilian ores presented serious problems. Notwithstanding the advantages of quality, prices were high owing to the poor transport infrastructure. The railway network was inadequate, freight rates high, and port facilities lacking.¹³¹ The difficulty in obtaining imported coal proved far greater, as wartime shortages were not resolved with the end of the war. Britain, traditionally the leading coal supplier, was unable to meet Argentine needs and struggled to maintain its prominence in a market which had provided very favourable treatment. The launch of the PSA coincided with a major crisis in the world coal supply. Although the preparatory studies recommended the use of a specific mix of domestic and foreign inputs, they also acknowledged the crisis. The principal European producers could not produce coal in quantity, as war had led to a shortage of labour and transport facilities and, far more critical, there was no knowledge of when prewar output levels would be restored.¹³²

Table 5.7

**ESTIMATED ANNUAL RAW MATERIAL REQUIREMENTS OF SOMISA
(in tons)**

RAW MATERIALS	FOR 315,000 TONS	FOR 500,000 TONS
Ore (Fe 62% content)	394,000	600,000
Coal	264,500	400,000
Scrap iron	35,000	70,000
Other metallic elements	2,200	3,500

Source: *Estudio técnico-económico de la producción de acero semiterminado en la República Argentina presentado por ARMCO Argentina S.A., in Dirección General de Fabricaciones Militares, Plan Siderúrgico Argentino (Buenos Aires, 1946)*, p.80.

Nevertheless, the calculations of the annual raw material requirements of SOMISA - for when the plant was fully operational - were elaborated by ARMCO Argentina (see Table 5.7). They were prepared for two different capacities: 315,000 tons, the capacity requested by the DGFM when inviting tenders for the project, and 500,000 tons, the capacity recommended by ARMCO Argentina to allow for an increase

¹³⁰ UN, Department of Economic Affairs, *Iron*, p.30.

¹³¹ Estudio técnico-económico, in DGFM, *Plan*, p.81.

¹³² Ibid., p.82.

from the initial capacity without incurring extra costs. The quality of imported ore to be employed was specified, and the iron content was within the normally expected levels (see above) and higher than that of domestic sources. On the basis of initial capacity estimates, coal imports for SOMISA, were calculated at 264,000 tons. Based on total prewar requirements, PSA supporters claimed that this would merely represent a rise of under 10% in imports since pre-1939 coal imports attained 3,000,000 tons.¹³³ It was perhaps fortunate that the government took no further action on the steelworks once the project was approved by Congress (see Chapters 2 and 3), because had they come on stream within schedule they could have not become operational given the continuing coal shortages. Established suppliers such as Britain faced serious difficulties, and traditional trade currents had not normalised.¹³⁴ It would have been impossible to obtain the tonnage required by SOMISA. Furthermore, the decision in 1948 to increase the capacity of the projected plant from 315,000 to 500,000 tons raised coal import requirements for the steelworks to 400,000 tons (see Table 5.7). This target could not have been attained had SOMISA been completed on schedule, due to mounting problems in Anglo-Argentine trade and the national economic crisis.

Since the volume of British coal that could be imported was sufficient to meet pressing demands from the major consumers (ie, power stations and the railways), the issue of British coal supplies became critical to Anglo-Argentine negotiations. At 1,000,000 tons, the total volume of British coal that could be made available to the Republic in 1948 was well below prewar levels.¹³⁵ Fearful of the wane in its relations with Buenos Aires, London agreed to supply this volume under the trade agreement initialled on 12 February 1948.¹³⁶ Nonetheless, coal shortages prevented the British from fully meeting their commitment. Only 880,000 tons were provided, from which the power stations received 440,000 tons, the

¹³³ Consideration of the report from the Comisión de Defensa Nacional on the Draft Bill of the PSA under revision, *Senadores*, Año 1947, Tomo I, p.225.

¹³⁴ Ibid.

¹³⁵ Telegram No.237 from the FO to the British Embassy in Buenos Aires, 10 February 1948. Bank of England Archive, OV 102/125.

¹³⁶ Agreement on Trade and Payments between the Government of the Argentine Republic and the Government of the United Kingdom of Great Britain and Northern Ireland, Buenos Aires, 12 February 1948. Title and text despatched in Telegram No.255 from Leeper, 12 February 1948. Bank of England Archive, OV 102/125.

railways 345,000 tons, and Gas del Estado 25,000 tons.¹³⁷ Aware that the volume supplied was far below real requirements and of the importance of the negotiations, Britain unsuccessfully considered providing coal out of the additional 77,000 tons available per week for export to all destinations in 1948.¹³⁸ However, the proposal to supply another 500,000 tons would have not been feasible given the scarcity of coal.¹³⁹

Although the level of supplies was subsequently renegotiated, problems mounted. The difficulties in obtaining imported coal as a result of shortages combined with a balance of payments crisis, which crippled the country's ability to pay for imports. The British agreed to supply 1,500,000 tons of coal under the agreement of June 1949, an amount which was to be maintained for each year until the accord expired in June 1954 or was terminated by either contracting party.¹⁴⁰ No sooner had this happened, the Bank of England voiced its concern to the Treasury over backlogs in Argentine payments.¹⁴¹ Such an anxiety appeared justified as the country continued to fall behind in its obligations despite measures to remedy exchange shortages. The British Government considered suspending coal supplies, but this was not possible. The Republic had not formally broken the agreement, and Britain would be in breach by withholding supplies. This was tantamount to declaring an economic war at a time when contracts existed for almost full obligation until June 1950.¹⁴² London was anxious to avoid serious economic dislocation in the country, which depended on a transport system that until the Second World War had been powered by British railway and bunker coal.¹⁴³ It was believed that alternative sources could not fully substitute

¹³⁷ Telegram No.286 from Leeper to the FO, 18 February 1948. Bank of England Archive, OV 102/125.

¹³⁸ Telegram No.364 from the FO to the British Embassy in Buenos Aires, 27 February 1948. Bank of England Archive, OV 102/125.

¹³⁹ Telegram No.334 from Leeper to the FO, 28 February 1948. Bank of England Archive, OV 102/125.

¹⁴⁰ Agreement on Trade and Payments between the Government of the United Kingdom of Great Britain and Northern Ireland and the Argentine Government, with Schedules, Annex and Exchange of Notes, Buenos Aires, 27 June 1949. Bank of England Archive, OV 102/133.

¹⁴¹ Letter from G.M.Watson, Bank of England, to L. Petch, HM Treasury, 8 July 1949. Bank of England Archive, OV 102/133.

¹⁴² Draft of an Argentine Working Party Report on Coal and Oil Supplies from HM Treasury to the FO, 30 December 1949. FO 371 AA 1531/1.

¹⁴³ Ibid.

British supplies. American coal would be unavailable owing to Argentine shortages of foreign exchange and to continuing instability in relations between Buenos Aires and Washington, and South Africa and Poland could only replace British provisions very partially. The British Government did not want economic warfare, and thereby engaged in the discussion of all aspects of the agreement that required adjustment.¹⁴⁴

It was during the negotiations of 1950 that SOMISA should have been completed. Had this been the case, it would have had little opportunity of obtaining its coal requirements owing to the balance of payments crisis. The issue of coal supplies became part of the row over Argentine meat shipments. Buenos Aires limited the issue of import licenses, thereby frustrating the British undertaking to supply 1,500,000 tons of coal. In February 1950 the Argentine Government purchased 45,000 tons of Polish coal for shore depots, which was ranked against the Argentine-Polish barter agreement.¹⁴⁵ In July 1950, while licenses were not issued for large volumes of British coal, permits were granted for 150,000 tons of Polish coal and 3,000 tons of South African coke, for which prices were not quoted. Each would be paid in dollars, and delivered before September that year.¹⁴⁶ In these circumstances, the British National Coal Board decided it could not allow arrears for past deliveries to accumulate further and suspended shipments to the Argentine State Railways, which owed £ 250,000.¹⁴⁷ However, the suspension of British coal shipments over the backlog of Argentine payments made little difference, given that the National Coal Board could not fulfill contracts with Argentine buyers for coal deliveries.¹⁴⁸ This happened at a particularly awkward moment in the negotiations over Argentine meat. Although the problem arose from the failure to maintain coal output levels, it was difficult for HM Government to convince the Argentine authorities that the inability

¹⁴⁴ Report to the Chancellor of the Exchequer on the proposed suspension of coal and oil supplies to Argentina, 7 January 1950. FO 371 AA 1531/6.

¹⁴⁵ Telegram No.54 from the FO to Buenos Aires, 8 February 1950. FO 371 AA 1531/8.

¹⁴⁶ Despatch SA No.112 from the Commercial Department of the British Embassy in Buenos Aires to the American Department of the FO, 14 July 1950. FO 371 AA 1531/12.

¹⁴⁷ Telegram No.134 from the FO to the British Embassy in Buenos Aires, 29 March 1950. FO 371 AA 1531/9.

¹⁴⁸ Telegram No.348 from the British Embassy in Buenos Aires to the FO, 16 August 1950. FO 371 AA 1531/13.

to meet commitments was not some reprisal for their suspension of meat shipments.¹⁴⁹ In the event, a compromise was reached over coal supplies, by which the Britain would attempt to make 500,000 tons of coal available in 1951.¹⁵⁰ Given the priority awarded to the largest consumers, this would have been an inadequate volume for SOMISA to have obtained its requirements. As a result, the proposal that the SOMISA project should employ a mix of both foreign and national minerals was not practicable - even though it was the most feasible proposal. The launch of the PSA had coincided with both the inadequacy of local resources and the unavailability of imported raw materials.

CONCLUSION

In a period fraught with problems created by adverse external conditions, the difficulties in obtaining raw materials for iron and steel production remained unsolved. Domestic resources were inadequate. Although scrap stocks were considerable, they depended on decreasing renewals of rails and were exhausted owing to the rapid growth of scrap-based steel production during the Second World War. National sources of iron ore and coal were discovered during the Forties as a result of military concerns of 'strategic' commodities, but were hindered by location and quality problems. Deposits were located in remote regions, with little transportation infrastructure to cover the distance to the markets, and the poor quality of the minerals made these resources unsuitable for use in heavy industry. Finally, there was the matter of charcoal being employed as fuel. Though it was the only alternative for the AHZ, production was costly and unmechanised, and transport of large volumes from outlying areas was also problematic.

Foreign inputs were also difficult to obtain, particularly during the Forties. With the sharp decline in iron and steel imports, military concerns over supplies of 'strategic' materials increased and therefore the

¹⁴⁹ Letter to the Chancellor of the Exchequer from E. Bevin, Foreign Secretary, 16 November 1950. FO 371 AA 1531/15.

¹⁵⁰ Letter No.4 from John Edwards, the Economy Secretary to HM Treasury, to Roberto A. Ares, Argentine Minister of the Economy, Buenos Aires, 23 April 1951. Protocol supplementing the Agreement on Trade and Payments between the Government of the United Kingdom of Great Britain and Northern Ireland and the Government of the Argentine Republic of 27 June 1949 [with Schedule and Letters], Buenos Aires, 23 April 1951. Bank of England Archive, OV 102/148.

Army embarked on two heavy industry projects. The first of these was pig iron production, based entirely on domestic resources. Given the quality of the raw materials, and that the latter had the greatest bearing on costs, Zapla bears true testimony to military determination to attain self-sufficiency in iron and steel supplies at any price. The second project, the SOMISA steelworks, was to be based on a combination of foreign and domestic minerals, since the use of the former would be economically advantageous. Nonetheless, the availability of foreign sources was constrained by the Second World War and its aftermath, as exemplified by the crisis in coal supplies. The real difficulty was that development of heavy industry simply because the Armed Forces had to 'have' it was an insufficient condition. A lack of adequate raw materials, combined with the international crises, made the success of such attempts impossible.

Chapter 6

THE AVAILABILITY OF TECHNOLOGY AND THE INTERNATIONAL SETTING

Access to imported modern technology was critical for the development of domestic steel production. Foreign technology transfers were limited by international factors and, at the end of the period, by domestic considerations. Two external constraints can be clearly identified. First were the deliberate efforts of the leading steel producer-exporters in the Twenties and Thirties to frustrate growth in national production. This led to a refusal to provide strategic 'lumps' of technology and the acquisition of local firms (or the establishment of branch firms) in order to limit domestic production to certain finishing lines. Second was US antagonism towards Argentina following the 1943 coup and the rise of Perón. The American economic boycott in the Forties initially aimed to penalise the Republic for its refusal to join the Inter-American system, and was subsequently a function of the determination to prevent the development of heavy industries in 'small' economies. Towards the late Forties, domestic economic difficulties also restricted technology transfers. Diminished foreign exchange earnings and the exhaustion of gold and foreign exchange reserves, which were vital to cover import costs, prevented any equipment purchases.

This chapter argues that, despite these adverse constraints, technology scarcity was on occasions circumvented by competent and ingenious local engineers - particularly during the Second World War. Plants were built, equipment was adapted, existing (previously imported) machinery copied, foreign designs modified, and vital capital generally manufactured. Arguably, this pointed to a domestic capacity to foster iron and steel production. Yet, even though other 'small' economies faced identical difficulties and resolved them in a similar fashion, it will be seen that Argentina was unable to emulate other countries by successfully upgrading equipment following the end of the Second World War owing to continued problems in relations between Buenos Aires and Washington and national economic factors.

This chapter comprises two sections. The first considers the capital goods shortage, and argues that the successful emergence of local steel production was largely frustrated by deliberate pressure from foreign firms. Intentional foreign coercion is reflected in the attempt to control world steel production and

distribution by the International Steel Cartel, which finally collapsed with the outbreak of the Second World War. The section also argues that, notwithstanding the curbs on foreign supplies of technology, Argentine engineers at times were able to bypass restrictions on technology transfers. The second section assesses the impact of the Argentine-American relations on the implementation of the Plan Siderúrgico Argentino, the greatest attempt of the period to create a modern, large-scale steel industry, and will argue that fluctuations in the continuously strained relations had a direct bearing on the Argentine reaction to the involvement of the US company ARMCO in the project.

RESTRICTIONS ON TECHNOLOGY TRANSFERS AND THEIR CIRCUMVENTION, c.1920-1945

Before the outbreak of the Second World War, the leading European iron and steel producer-exporters attempted to frustrate efforts by 'small' economies to develop heavy industry through the International Steel Cartel (ISC). As seen in Chapter 2, this consortium implemented oligopolistic policies whose goal was controlling world steel production and distribution. In Argentina, ISC practices involved a degree of control over one of the few large metallurgical producers and a calculated denial of technical assistance for any serious independent attempt to develop steel production. However, this section shows that the cartel ultimately failed to achieve its objectives owing to two factors. (i) Already in the Thirties, the Armed Forces built a steel plant with equipment imported from outside the ISC sphere. (ii) The outbreak of war in September 1939 destroyed the cartel and resulted in severe shortages of imported iron and steel. This provided the opportunity to develop domestic steel production by private sector metallurgical firms, whose engineers copied old foreign designs or reconditioned second-hand equipment to overcome restrictions on foreign technology transfers.

The oligopolistic practices of the main Continental steel producer-exporters in the Twenties and Thirties aimed to protect their shrinking export markets by obstructing the growth of steel production overseas. In Argentina, one of the few remaining major 'open' markets, the only existing steel producer at the end of the First World War was an ephemeral firm that posed no threat to foreign suppliers. The Talleres Metalúrgicos Vulcano was a modest plant located in Buenos Aires, the leading market and source

of access to scrap and fuel, which had turned out low-grade crude and rolled steel as well as steel rods since 1896. Vulcano utilised inefficient, low capacity equipment. Its six Siemens-Martin furnaces each produced 7-8 tons of steel every 12-20 hours while consuming large quantities of fuel oil. The daily foundry capacity was only 60 tons.¹

However, while Vulcano caused no concern for Continental producer-exporters, any possibility of further local initiatives to develop steel production was unwelcome. In the Twenties, such a prospect arose. The firm which eventually became the Sociedad Anónima Talleres Metalúrgicos San Martín TAMET was rapidly growing through the acquisition of various workshops and small firms (see Chapter 3). From the perspective of European steel producer-exporters, this expansion represented a threat. It could enable TAMET to integrate plant and even consider developing steel production at an efficient scale. Attempts to 'control' TAMET were pioneered by the colossal metallurgical and mining consortium ARBED-Terres Rouges of Luxembourg, which soon acquired a substantial shareholding in the firm. This move was particularly significant on two accounts. (a) It involved a major Continental producer-exporter, whose oligopolistic practices would shape the methods of the steel cartel it helped found in 1926. (b) It offers the possibility to contrast the actions of ARBED in Argentina with those of its Brazilian subsidiary company, the Companhia Siderúrgica Belgo-Mineira.

Reflecting the economic union between Luxembourg and Belgium, in which the former was the junior partner, ARBED brokered its deals in both Brazil and Argentina through interests associated with Belgium. The Brazilian arrangement arose from the willingness of the Minas Gerais government to grant iron ore concessions to groups other than the predominant British and American interests, in exchange for further development of the embryonic local iron and steel industry. The proposal was presented to the Belgian monarch during his visit to Brazil in 1920, and elicited a positive response from the Luxembourgeois group. ARBED purchased the deposits of the Companhia Siderúrgica Mineira in return for acquiring and expanding the industrial plant of this company. This firm, which was chosen because one

¹ H. Foster Bain, *Las posibilidades de la manufactura de hierro y acero en la Argentina* (Buenos Aires, 1925), p.103.

of its founders was the Belgian consul in Belo Horizonte, became the ARBED subsidiary Companhia Siderúrgica Belgo-Mineira in 1921.² The Argentine arrangement was almost certainly negotiated by the Tornquist group (the key shareholder in TAMET) through the Sociedad General Belga Argentina. The latter was registered in Antwerp and devised to obtain European investment in the various industries controlled by Tornquist - such as the ARBED stake in TAMET.³

Participation in both Belgo-Mineira and TAMET was part of the ARBED strategy to sustain its position in the few remaining 'open' markets. In the aftermath of the First World War, ARBED-Terres Rouges faced severe difficulties in placing output surpluses on the market. With limited outlets in Luxembourg owing to insignificant domestic demand, the only alternative was to increase exports (see Chapter 2). To attain this goal, ARBED created a worldwide sales network covering 50 countries which was based upon its sales organisation Columeta and specific national licensed distributors such as TAMET.⁴ In Brazil, steel production had already emerged and therefore the Luxembourg group successfully strove for outright control of the market. Belgo-Mineira established itself as both the leading domestic steel producer and a major supplier of ISC products as local output did not keep pace with demand. In line with the objectives of its parent company and the steel cartel, Belgo-Mineira maintained its prominent market position by organising and dominating an association with other local producers. This trust regulated output through quotas, set prices and even paid some blast furnaces not to operate.⁵ In Argentina, the leading Latin American market and a traditional iron and steel importer, the stock in TAMET enabled the Luxembourgeois enterprise to secure outlets for its products. The Argentine firm, which became a licensed distributing company for ARBED, was allowed a 'controlled' expansion which would complement the corporate objectives of the group.

² Carlos Manuel Peláez, *História da Industrialização Brasileira* (Rio de Janeiro, 1972), p.147.

³ Donna J. Guy, 'La industria argentina, 1870-1940: Legislación comercial, mercado de acciones y capitalización extranjera', *Desarrollo Económico* 22 (1982-1983) No.87, p.362.

⁴ Carlo Hemmer, *L'Économie du Grand-Duché de Luxembourg*, Volume 2 (Luxembourg, 1953), p.157.

⁵ John D. Wirth, *The Politics of Brazilian Development 1930-1954* (Stanford, 1970), p.88.

Amongst the acquisitions made by TAMET was that of the former workshops and equipment of the defunct Compañía Argentina de Hierros y Aceros de Pedro Vasena e Hijos in 1926. These facilities were located on the banks of the Riachuelo in Buenos Aires and highly modern by local standards. They comprised a small foundry and machinery for the production of screws and bolts, wire drawing and galvanising equipment, and an up to date internal transportation system for machinery and finished goods.⁶ TAMET expanded these metallurgical workshops, but was prevented by its ARBED shareholders from utilising the equipment set up for steel production by Vasena. These installations comprised 2 Siemens-Martin furnaces with a capacity of 15 tons and rolling sections. With an output capacity of 60-80 tons of steel per day, the Riachuelo workshops had the potential for an annual production of 20,000 tons.⁷ TAMET imported vital iron and steel inputs required for metallurgical goods production from countries participating in the International Steel Cartel, while the steelmaking equipment acquired from Vasena remained idle until the collapse of the cartel and the outbreak of the Second World War. The rolling mill was then purchased by the firm La Cantábrica when it expanded into steel production, and the Siemens-Martin furnaces were brought into use by TAMET when imports were no longer available and domestic production was substituted instead.⁸

Efforts such as those of ARBED and its ISC partners to 'control' production and distribution of steel in the extra-European world were based on an internationally regulated supply of goods sold at prices just below those likely to be charged by small would-be independent producers in markets such as Argentina. This practice, along with restrictions on technology made it virtually impossible for new firms to enter into production. However, such practices in the Argentine market only succeeded in the private sector. The case of the Fábrica Militar de Aceros, established in the Thirties as a result of increasing military concerns over the deteriorating international situation and *seguridad nacional*, demonstrates that

⁶ 'Las industrias nacionales: Compañía Argentina de Hierros y Aceros de Pedro Vasena e Hijos, Limitada', *La Época*, Buenos Aires, 10 September 1918.

⁷ Foster Bain, *Posibilidades*, p.104; Talleres Metalúrgicos San Martín S.A., *Reseña gráfica* (Buenos Aires, 1928), unpaginated.

⁸ *Revista de la Sociedad Anónima Talleres Metalúrgicos San Martín*, September 1930, p.3; Banco Central de la República Argentina (BCRA), *Informe sobre el mercado local e industria nacional en laminados de hierro y acero* (Buenos Aires, May 1945), p.48; *TAMET*, September-October 1943, p.3.

some initiatives could successfully circumvent restrictions on technology transfers and foreign assistance.

The Fábrica Militar de Aceros was completed despite the disadvantages of its location in suburban Buenos Aires. Located in marshland in the upper reaches of the Riachuelo, the site could only be reached through a restricted Ministry of Public Works railway and lacked power supplies until electricity was generated in the plant.⁹ The Dirección General de Arsenales, which was responsible for the project, overcame both the constraint on technology transfers, and the shortage of experts and skilled labour. It circumvented the ISC by purchasing a Siemens-Martin furnace with a capacity of 12 tons and complementary facilities in the USA, a country then outside the cartel. Although purchase contracts for equipment normally included the provision of technical assistance, the military factory had no such arrangement. The Armed Forces, aware that the Fábrica Militar de Aceros had little support outside military nationalist circles, were determined to prove that they could execute the enterprise on their own and awarded the supervision of the project to an undisclosed Army engineer.¹⁰ The latter was trained at the Escuela Superior de Guerra, which had been founded by General Savio in November 1930 to address military concerns with industrial development and capability.¹¹ The engineer successfully completed the undertaking, notwithstanding the lack of experience in the industry. The mass of workers which built the plant were provided by the Armed Forces and assisted by three civilian technicians. It comprised foremen from the Arsenal Esteban de Luca, supplemented by junior officers and conscripts. When the factory became operational, skilled labour shortages were overcome by employing most of the workers engaged in its construction. Initial production problems were successfully mastered by modifying the furnace substantially, a task completed by 22 November 1937.¹²

Although little else is known about the construction and commissioning of the plant, the fact that

⁹ Eduardo A. Garimaldi, *Industria siderúrgica argentina* (Buenos Aires, December 1947), pp.23,24.

¹⁰ Ibid., p.30.

¹¹ Emilio J. Corbière, 'Manuel N. Savio, pionero de la industrialización argentina', *Todo es Historia*, No.158, July 1980, p.39.

¹² Garimaldi, *Industria*, pp.24,30,31,32.

the Fábrica Militar de Aceros was successfully completed demonstrates that restrictions on transfers of foreign technology could be skirted. Competent and ingenious local engineers such as those employed at the military plant became essential with the collapse of the ISC and the outbreak of the Second World War. They enabled private metallurgical firms to develop domestic steel production in order to overcome import shortages of key inputs. The severe restrictions on technology transfers and lack of technical assistance were surmounted by copying old designs of open-hearth furnaces and acquiring second-hand rolling equipment. The best known example of a firm that copied old furnace designs for steelmaking is ACINDAR, which was established in 1942 (see Chapter 3). General Savio, head of the Fabricaciones Militares (DGF), favoured the location of ACINDAR in Rosario as this company was a potential customer of the relatively nearby SOMISA project. As an incentive, he provided the plans of an American designed 15 ton capacity Siemens-Martin furnace.¹³ These plans in turn corresponded to the second furnace installed at the Fábrica Militar de Aceros, which was built by the military in 1942 and itself based on the originally imported first furnace of the plant. The ACINDAR engineers regarded the furnace capacity of 15 tons as low and inefficient, and displayed skill by successfully modifying the design. They built a 25 ton capacity furnace.¹⁴

Efforts of Argentine engineers such as those of ACINDAR resulted in rapid growth in steel output capacity. The number of Siemens-Martin furnaces, having augmented from 7 in 1937 to 22 by 1947, trebled within a decade and total furnace capacity, having expanded from 58 tons in 1937 to 327 tons by 1947, increased almost sixfold within the same timespan.¹⁵ The furnaces were complemented with rolling mills, which enabled the metallurgical sector to satisfy its requirements for both crude steel and finished goods. Rolling equipment was acquired second-hand, and the best known examples of firms that did so are La Cantábrica and ACINDAR. As indicated earlier, La Cantábrica purchased and reconditioned the abandoned Vasena mill. ACINDAR acquired an idle rolling mill from INDAC of Chile, one of the original shareholders in the company (see Chapter 3).¹⁶

¹³ ACINDAR, *Historia de una Voluntad de Acero* (Buenos Aires, 1986), pp.78,79.

¹⁴ Garimaldi, *Industria*, Appendix: Table N°1; ACINDAR, *Historia*, p.79.

¹⁵ Garimaldi, *Industria*, Appendix: Table N°1.

¹⁶ BCRA, *Informe*, p.48; ACINDAR, *Historia*, p.78.

Although the use of copies of old equipment designs and second-hand equipment enabled metallurgical producers to overcome shortages of imported iron and steel and surmount restrictions on technology transfers, the problem was the level of technology. Notwithstanding the good condition of the equipment and installations, output was affected by low capacity and inefficiency.¹⁷ During the Second World War this mattered little, as local steel producers were shielded from foreign competition. However, once peacetime conditions returned, the industry had to modernise its facilities in order to compete with or substitute imports. Under the *Peronato*, this was unfeasible. Government policy had other economic priorities, and imports of capital goods were unavailable in the late Forties owing to the severe domestic crisis and foreign exchange shortages (see Chapter 2).

In the aftermath of the Second World War, Argentine equipment lagged behind that of other steel producers. Furnaces had a much lower capacity than those used in the USA, where the standard capacity was 160 tons.¹⁸ They were even modest when compared with furnaces in steelworks erected in wartime in other 'small' economies. The Altos Hornos de México (AHMSA), which became fully operational in October 1945, originally comprised two 65 ton furnaces.¹⁹ Argentine rolling mills were simple and outdated.²⁰ The primitiveness of methods was clearly illustrated by ACINDAR. While modern rolling mills had its basic input of molten steel shaped into billets and slabs between rollers and subsequently transformed into finished goods, the process at ACINDAR started with the filling of a billet-shaped metal box with scrap. This box was placed in a reheating furnace to smelt its contents, and any material spilled over the edges of the billet was later axed by a worker. The contents of the box were then pushed with an iron crowbar into the rolling sections, where they were shaped into bars.²¹

¹⁷ Secretaría de Industria y Comercio, *Hierro Laminado sin trabajar* (Buenos Aires, August 1947), p.50.

¹⁸ Estudio técnico-económico de la producción de acero semiterminado en la República Argentina presentado por ARMCO Argentina S.A., in Dirección General de Fabricaciones Militares (DGFM), *Plan Siderúrgico Argentino* (Buenos Aires, 1946), pp.73,77.

¹⁹ William E. Cole, *Steel and Economic Growth in Mexico* (Austin, 1967), pp.14,15.

²⁰ BCRA, *Informe*, p.48.

²¹ ACINDAR, *Historia*, p.84.

The continued use of obsolete equipment, with low capacity and output levels, made the emergent steel producers uncompetitive and inefficient. However, military concerns with the need for self-sufficiency in 'strategic' commodities for national defence requirements had intensified during the Second World War and resulted in the preparation of the Plan Siderúrgico Argentino (PSA). The requirements of this project were more complex than those of the private sector, whose facilities were semi-integrated and whose production was based on scrap (as seen in previous chapters). The PSA entailed the development of an efficient, modern and integrated iron and steel industry which, at least on paper, was to be internationally competitive. Successful completion of this undertaking again depended on transfers of foreign technology, and these were not easily forthcoming. Unlike in the Twenties and Thirties, as is seen below, the difficulties in obtaining imported equipment were owed to poor US-Argentine relations.

ARGENTINE-AMERICAN RELATIONS AND THE DEVELOPMENT OF THE PSA, 1942-1952

The greatest attempt to establish a modern heavy industry of the period was the PSA, which consisted of two projects devised in the early Forties. The first of these, the Altos Hornos Zapla, was completed in wartime with Swedish technology despite the American economic boycott of Argentina and US efforts to coerce other countries (including Sweden) into cooperating with the embargo. The second project, the SOMISA steelworks, was at the core of the PSA and the most ambitious. Its successful completion depended on technology transfers from the USA, which were difficult given the tension in Argentine-American relations. To understand why the relationship between Buenos Aires and Washington had a major effect on the PSA, this section first assesses the long-term strains which lay at the root of the problem.

The roots of antagonism and American assistance for industrial development

Tension and difficulty in relations had existed since the nineteenth century, and survived well into the twentieth century. Three factors played a part in this process: Argentine economic perceptions on what export-led growth might achieve, the expanding US role in the Argentine economy (particularly in foreign

investment and trade), and both American and Argentine strategic considerations influenced by events in the Thirties and Forties. Concerning economic perceptions, the Republic and the United States of America appeared to have parallel development paths (both countries were world leaders in cereal exports until the Depression), and were regarded as rivals striving for leadership of the western hemisphere. Some Argentines believed that their country was destined for greatness and would overtake the USA. Since there was no realistic chance of Argentina playing a major role among the world powers, failure to achieve this aspiration became one of the roots of resentment against the Americans.²²

The second cause of tension lay in the expanded US role in the Argentine economy. The United States of America increased exports to the Republic and made inroads into the economy which were concerned largely with industry. As seen in Chapter 2, penetration began in the meat-packing industry, and after the First World War and during the Twenties had fanned out to branches as metallurgy, machinery and vehicles, electric equipment and goods, and pharmaceuticals.²³ This was made possible by shifts in the Anglo-Argentine connection and the triangular relationship that evolved between Argentina, Britain and the USA as a result of fundamental changes in the international economy after 1914 that included the dramatic growth of US influence.²⁴ American expansion was increasingly resented by the Argentine ruling classes, not because it could threaten traditional Anglo-Argentine trade links but owing to the lack of reciprocity. While the Republic purchased US industrial goods, Washington was unwilling to purchase Argentine products in order to protect its domestic farming interests. The United States of America imposed tariffs and restrictive sanitary orders. The Fordney-McCumber Act of 1922 imposed prohibitive levies on wheat, maize, meat, hides, wool, flax and sugar, thereby affecting major Argentine exports to the USA. There were other damaging exclusion measures, the most important of which was the decision in 1926 to ban fresh or frozen meat imports from regions infected with foot-and-mouth disease.²⁵ Further rebuffs increased

²² Joseph S. Tulchin, 'The Origins of Misunderstanding: United States-Argentine Relations, 1900-1940', in Guido Di Tella and D. Cameron Watt (eds.), *Argentina between the Great Powers, 1939-46* (Basingstoke, 1989), pp.34,35.

²³ Eduardo F. Jorge, *Industria y concentración económica* (Buenos Aires, 1971), p.98.

²⁴ Tulchin, 'Misunderstanding', p.35.

²⁵ Harold F. Peterson, *Argentina and the United States 1810-1960* (New York, 1964), p.352.

Argentine resentment against the United States of America.

Starting in the Thirties, strategic considerations fuelled further discord between Washington and Buenos Aires. The United States of America capitalised politically on its increased influence over the Americas, and gained the trust of Latin American régimes by vowing to settle continental problems through a Good Neighbor Policy. The basic principles of the latter were non-intervention in the affairs of any country by any other, and the creation of permanent collective mechanisms to resolve continental problems. The policy comprised political principles cast in the Pan-American concept, economic principles presented as Inter-American economic cooperation, and military tenets moulded in the notion of hemispheric defence.²⁶ However, with increased German, Italian, and Japanese aggression after 1936, the Americans shifted the emphasis of the Good Neighbor Policy towards its military aspects. In return for its pledge of non-intervention, the Roosevelt administration expected the republics south of the Rio Grande to join the USA in transforming the Pan-American system into a collective security organisation. From 1936 until 1941, Washington attempted to persuade Latin American governments to view their foreign policy interests as identical with those of the USA and to pledge to regard an attack on one as an attack on all.²⁷

Argentina vigorously resisted the attempt to establish a Pan-American military alliance and maintained a strict policy of neutrality. This posture reflected, as with the American approach to hemispheric defence, strategic considerations. Having developed and progressed in the remoteness of the southern extreme of South America, the Republic had been free to develop its own approach to world affairs. Nonetheless, the outbreak of the Second World War had serious implications. Military planners were concerned with national self-preservation and viewed as a serious possibility that, in the event of hostilities with the Axis, Argentina would be on its own. With no assistance available from the US Caribbean Defense Command, the country's remote location and extended coastline made defence impossible

²⁶ Mario Rapoport, *Gran Bretaña, Estados Unidos y las Clases Dirigentes Argentinas: 1940-1945* (Buenos Aires, 1980), pp.240,241.

²⁷ Randall Bennett Woods, *The Roosevelt Foreign Policy Establishment and the 'Good Neighbor'* (Lawrence, 1979), p.7.

in the event of provocative action such as breaking relations with the Axis causing German retaliation.²⁸

Since the Americans resented Argentine resistance to the Pan-American project and wartime neutrality, US-Argentine relations deteriorated sharply in the early Forties. As is seen below, this affected the PSA as cooperation with the Americans was essential for the realisation of the SOMISA steelworks. Therefore, the Republic was unable to emulate Brazil and Mexico, which successfully secured US assistance for their heavy industry projects by supporting the Allies. American collaboration in Brazilian and Mexican industrial projects contrasted sharply with the traditional attitude towards industrialisation in Latin America. Washington favoured limited industrial development in commodity exporting countries, with American capital being the source of investment in sectors which did not compete with North American industry.²⁹ The wartime policy shift was the result of strategic considerations and Pan-American defence priorities. Both Brazil and Mexico wanted to develop modern steelworks, and secured the necessary financial and technical assistance by pursuing their aspirations at a time when Washington was seeking hemispheric unity.

It must be noted that American motives for cooperating with the Brazilian and Mexican heavy industry projects differed. Washington provided assistance to Brazil on military grounds, and to Mexico for economic reasons. Brazil was politically and strategically important owing to its great northeastern 'bulge', which was mostly defenceless and stretched far into the Atlantic.³⁰ The establishment or use of naval and air facilities in this region by American troops was critical to the hemispheric defence project, but was unacceptable to the Brazilians unless combined with American supplies for military re-equipment and assistance for their steelworks project. The United States of America reluctantly agreed to cooperate in Volta Redonda, paying the price exacted by Brazil not to thwart the hemispheric defence project and remain neutral.³¹ In the Mexican case, it was essential to reduce dependence on the Americans as a source of

²⁸ Ibid., pp.9,13,15.

²⁹ Gerson Moura, *Autonomia na Dependência* (Rio de Janeiro, 1980), p.182.

³⁰ R.A. Humphreys, *Latin America and the Second World War*, Volume One: 1939-1942 (London, 1981), pp.138,139.

³¹ Moura, *Autonomia*, pp.150,153,154.

supply. Mexico relied heavily on the USA for supplies of basic foodstuffs and industrial products which Washington could not afford to supply in wartime.³² Furthermore, the Americans required Mexican strategic materials whose output had to be increased. Growth in the production of these exportables could only be attained with an economic expansion programme. To reduce Mexican dependency on US supplies and expand Mexican output of commodities essential to the war effort, the United States of America did everything possible to assist.³³

The insufficiency of the capital available in Brazil and Mexico for the necessary investments and technology transfers was offset by the financial assistance furnished by the Americans. Brazil obtained a US\$ 20,000,000 loan from the Export-Import Bank in September 1940 to purchase equipment in the United States.³⁴ Further credits from the Export-Import Bank became necessary for the Volta Redonda project to proceed apace, especially with the substantial price rises in 1942 and 1943.³⁵ Prices of American merchandise rose by 50% due to increases in shipping rates and insurance premiums, and costs of US materials increased as did the expenditure arising from contingencies. Furthermore, the Brazilians had decided to build additional installations at Volta Redonda.³⁶ The increased expenditure caused by the war and purchase of additional equipment was covered by two Export-Import Bank loans: one for US\$ 5,000,000 awarded in December 1941, and another for US\$ 20,000,000 granted in 1943.³⁷ In the Mexican case, the Export-Import Bank also provided assistance. However, the precise figure aimed for the AHMSA steelworks is unknown; the funds destined for this project were part of US\$ 50,000,000 loaned to the Mexican

³² Luis G. Zorrilla, *Historia de las Relaciones entre México y los Estados Unidos de América 1800-1958*, Volume II (Mexico, 1966), p.494.

³³ Humphreys, *Latin America*, Volume Two: 1942-1945 (London, 1982), pp.46,47.

³⁴ Humphreys, *Latin America*, Volume One, p.138.

³⁵ Departamento Administrativo do Serviço Público, *Volta Redonda*. Supplement to the *Revista do Serviço Público*, November 1945, p.14.

³⁶ *Ibid.*, pp.19,20.

³⁷ Edmundo de Macedo Soares e Silva, *O Ferro na História e na Economia do Brasil* (Rio de Janeiro, 1972), pp.152,163,164.

Government for several schemes.³⁸

Hence, both Brazil and Mexico were able to purchase American equipment. In the case of Volta Redonda, for which the firm Arthur G. MacKee won the tender to prepare the definitive project, concerns over the steady drift of the United States of America into the Second World War resulted in the bulk of materials being speedily purchased throughout 1941. This was a well-timed move, as many US firms showed little interest in Brazilian consultations after Pearl Harbor.³⁹ In the case of AHMSA, which had secured assistance after the American entry into the war, purchases of capital goods were possible notwithstanding that industrial equipment was a highly restricted item in the USA. Acquisitions were viable as AHMSA was awarded the necessary priority rating by the War Production Board, which had an ulterior strategic short-term motive in doing so.⁴⁰ Wartime demand for steel plates by American shipyards outstripped domestic supplies, and AHMSA could alleviate shortages owing to two reasons. First, Mexico was a neighbouring country and AHMSA would be relatively close to American shipyards. Second, the Mexican steelworks would be equipped to manufacture plates as the technical contractor was ARMCO, a firm which specialised in steel sheet and plate production and owned a subsidiary to help develop overseas steelworks projects (see below). Therefore, Washington had granted AHMSA the necessary priority rating for equipment purchases on condition that it supported the American war effort by supplying US shipyards with steel plates. Plate production from AHMSA was initially used to build 'Liberty Ships', and only at the end of the war became available for the Mexican domestic market.⁴¹

Both Volta Redonda and AHMSA were completed by the end of the war, and showed what wartime cooperation with the United States of America could achieve. In sharp contrast, the PSA was developed as Argentine-American relations deteriorated and was thereby unlikely to succeed as US assistance would not be readily forthcoming. However, the effects of US policy towards the Republic only affected the

³⁸ Zorrilla, *Historia*, Volume II, p.501.

³⁹ Departamento do Serviço Público, *Volta Redonda*, pp.12,13.

⁴⁰ Cole, *Steel*, p.12.

⁴¹ Ibid., pp.12,14,15.

integrated steelworks project, the second phase of the PSA. As is seen below, the first stage of the Plan was completed, like the Fábrica Militar de Aceros in the Thirties, by circumventing restrictions on technology transfers.

The Altos Hornos Zapla, Sweden and the circumvention of the US embargo

The DGFM decision to develop heavy industry accidentally coincided with the breakdown in Argentine-American relations. At the Rio meeting in January 1942, Argentina had rejected the US initiative for a collective continental rupture with the Axis. As a result, the State Department became convinced that Argentine policy exposed a vulnerable flank in continental defences and that the Republic could become a Nazi base for espionage, subversion and financial machinations in the western hemisphere.⁴² To bring Argentina into line with the other Latin American countries, Washington resorted to political and economic pressure. By September 1942, the Board of Economic Warfare had adopted measures such as the arbitrary reduction of export quotas of some critical materials and restrictions on the supply of oil drilling equipment as a weapon in negotiations to get Argentine participation in a hemispheric petroleum pool.⁴³ More critically for the success of the Altos Hornos Zapla, for which Swedish assistance became essential owing to the nature of the project (see below), American measures also called for tighter controls over direct Swedish trade with Argentina.⁴⁴

The Altos Hornos Zapla (AHZ) project, which aimed to achieve domestic pig iron production, was problematic owing to the fact that it was charcoal-based (see Chapter 5). Although iron ore would be obtained from the Zapla deposit near the city of Jujuy, the absence of coking coal in the region could only

⁴² Rapoport, *Gran Bretaña*, pp.248,250.

⁴³ Carlos Escudé, 'Boicot norteamericano contra la Argentina: 1940-1950', *Todo es Historia*, No.177, February 1982, p.13.

⁴⁴ US Directive on policy towards Argentina, 24 September 1942. Bank of England Archive, OV 102/17.

be offset with charcoal procured from the forests in Jujuy, Salta, Formosa, and Chaco.⁴⁵ Given the nature of the technology required, and that the project was the first undertaking of its kind, foreign assistance was essential in the design and construction of the blast furnace.⁴⁶ Despite the potential difficulties in obtaining foreign technology and technical assistance, the DGFM invited international tenders in May 1943. Shortly afterwards a positive reply from Svenska Entreprenad AB, a firm of general contractors created in 1933 to promote exports of Swedish engineering, was received and accepted.⁴⁷ The Swedish firm satisfied the requirements to undertake the design and construction of the AHZ. It originated from one of the few countries which, endowed with iron and lacking coal, had from early on developed charcoal-based pig iron production. Around 85% of Swedish pig iron in 1913 originated from charcoal furnaces, and by the Fifties over 50% of Swedish blast furnaces still operated with charcoal. Given its dependence on this raw material, Sweden had carried out research to reduce charcoal consumption in blast furnaces and successfully improved the design of charcoal-fired blast furnaces.⁴⁸ Furthermore, from the political perspective, Sweden remained neutral during the Second World War.

However, Swedish assistance was endangered by American policies towards Argentina and towards Swedish trade with Germany, countries associated with or occupied by the Third Reich, and neutral states such as Argentina. Washington was specifically embittered by the commercial policy of Stockholm towards Buenos Aires on three accounts. First, it enabled the Republic to circumvent the American boycott, which included the termination of shipments of critical materials such as iron and steel products.⁴⁹ Second,

⁴⁵ Survey on a national steel industry by Coronel Carlos J. Martínez, presented to the Unión Industrial Argentina in 1943, in Ricardo Fernando Marcos, *Altos Hornos Zapla* (Jujuy, 1980), unpaginated.

⁴⁶ General Manuel N. Savio, 'Bases para la industria del acero en la República Argentina', in *Obras del General Manuel N. Savio* (Buenos Aires, 1973), p.391; General Humberto Sosa Molina, *Inauguración del segundo alto horno Zapla* (Argentine Republic, April 1951), unpaginated.

⁴⁷ Marcos, *Zapla*, unpaginated; The General Export Association of Sweden, *Modern Sweden* (Stockholm, 1937), p.416.

⁴⁸ AB Svenska Industriförlaget, *Industry in Sweden* (Stockholm, 1953), pp.154,155.

⁴⁹ Letter from Winfield W. Riefler, Economic Warfare Division, United States Embassy in London, to G.H. Villiers, Ministry of Economic Warfare, 22 February 1943. Copy sent by W. Gallman, First Secretary at the United States Embassy in London, to J.V. Perowne, FO, 23 February 1943. FO 371 37104 N 1290/480/42.

Argentine neutrality resulted in access to and benefits from an exclusive trade with Sweden as well as safety in shipping, which was denied to actual belligerents or countries that broke off with the Axis.⁵⁰ And finally, Argentina obtained various commodities from Sweden which, on account of wartime exigencies, other American republics could not acquire in sufficient quantities from the USA.⁵¹ Given these apprehensions, Washington included an extensive cutback in Swedish trade with Argentina when it coerced Stockholm into curtailing its trade with Germany and its associates. Sweden agreed to restrict exports to the Republic after 1 October 1943 to paper, wood pulp for paper making, and rayon pulp. Furthermore, it agreed not to supply Argentina with any goods to which the American Government would object.⁵² The latter arrangement was the one threatening to derail the DGFM contract with Svenska Entreprenad, as technology transfers for a heavy industry project in a country perceived as hostile was precisely what the United States of America would oppose.

Notwithstanding the danger posed by Swedish compliance with American policy towards Argentina, the DGFM succeeded in completing the AHZ project for two reasons. First, although it could not supply equipment, Svenska Entreprenad remained the technical contractor; second, with the American embargo in force, the DGFM circumvented restrictions on foreign technology transfers by making full use of its engineering capability. Concerning the role of the Swedish firm, it had been contracted before Stockholm was coerced into cooperating with the American embargo. Svenska Entreprenad was in charge of the project and its supervision, and remained the technical manager of the AHZ until 1948. Subsequently, as the blast furnace was in full working order and Argentine technicians had acquired the necessary skills, all activities at Zapla were placed under DGFM control.⁵³ Regarding the circumvention of US trade restrictions, the Argentine military once again showed their capacity to build industrial installations and copy equipment

⁵⁰ Telegram No.1016 from Viscount Halifax, British Embassy in Washington, to the FO, 2 March 1943. For War Cabinet distribution. FO 371 37104 N 1330/480/42.

⁵¹ Letter from Riefler to Villiers, 22 February 1943. FO 371 37104 N 1290/480/42.

⁵² Declaration by the Royal Swedish Government, 30 June 1943, in Department of State, *Foreign Relations of the United States*, Diplomatic Papers 1943, Volume II: Europe (Washington, 1964), p.814.

⁵³ Ministerio de Guerra, *Dirección General de Fabricaciones Militares, 1941 - 9 de Octubre - 1945* (Buenos Aires, 1945), unpaginated; Pedro F. Castiñeiras, *El Plan Siderúrgico Argentino* (Buenos Aires, October 1953), p.15.

designs. The Fábrica Militar de Aceros furnished the necessary materials (produced in accordance with Swedish designs) for the Zapla plant.⁵⁴ The blast furnace was erected in one year and a half, it became operational in October 1945 and had an annual output capacity of 20,000 tons.⁵⁵

Once the technical performance of Zapla was deemed satisfactory, the DGFM considered further development of the plant.⁵⁶ It proposed to establish an integrated operation by increasing the number of blast furnaces to five, installing two or three Siemens-Martin furnaces, and completing the plant with a rolling mill.⁵⁷ However, there were three major disincentives. First, the expansion of the AHZ became less urgent with the emphasis awarded in the PSA to the SOMISA steelworks project.⁵⁸ Second, the technology was unsuitable for a modern plant. Although pig iron produced in charcoal-fired blast furnaces was of better quality than that made with coke and output was based exclusively on local raw materials, the utilisation of charcoal had serious drawbacks - as indicated in Chapter 5. Charcoal production consumed large tracts of woodland, the costs of transporting wood and using charcoal were prohibitive, firewood for charcoal production was inefficiently processed in primitive ovens, transportation of wood to the ovens was problematic, and charcoal had a low thermal value.⁵⁹ The latter flaw was reflected in the modest size of the AHZ blast furnace - its height was 18 metres and its diameter 7 metres.⁶⁰

Finally, there was the postwar domestic economic climate. The AHZ was the result of military wartime considerations, and the promotion of heavy industry and military-related industries became less

⁵⁴ Ministerio de Guerra, *Fabricaciones*, unpaginated.

⁵⁵ *La Nación*, 14 October 1945, p.6; Castiñeiras, *Plan*, p.15.

⁵⁶ Castiñeiras, *Plan*, p.15.

⁵⁷ Debate on the PSA, 8-9 May 1947, Congreso Nacional, *Diario de Sesiones de la Cámara de Diputados*, Año 1947, Tomo I, p.310.

⁵⁸ *Ibid.*

⁵⁹ United Nations (UN), Economic Commission for Latin America (ECLA), *A study of the iron and steel industry in Latin America*, Volume II (New York, 1954), pp.157,165; Douglas A. Fisher, *Steel Serves the Nation* (New York, 1951), p.119; *Revista de la Escuela Superior de Guerra*, No.337, April-June 1960, p.161.

⁶⁰ *Metalurgia*, November 1945, p.14.

pressing for three reasons. (i) The Second World War ended in 1945. (ii) The *Peronista* régime elected in 1946 had other priorities (see Chapter 2). (iii) State funding and the availability of foreign exchange for purchases of imported equipment were restricted by the severe economic crisis of the late Forties. Notwithstanding the disincentives, the DGFM effected a limited expansion at Zapla since self-sufficiency in key commodities remained the military priority. A second blast furnace, nationally designed on the basis of the original Swedish plans, was erected by DGFM engineers and inaugurated in April 1951.⁶¹

The military ability to circumvent obstacles to foreign technology transfers, in this case the result of the US embargo and the foreign exchange shortages of the late Forties, was again demonstrated in the handling of the AHZ project. However, the DGFM was unable to skirt around the barriers to foreign technology transfers for its other major heavy industry venture. As is seen below, the SOMISA integrated steelworks involved a US firm and progress with this project was undermined by the sharp fluctuations in Argentine-American relations.

The Sociedad Mixta Siderurgia Argentina and US-Argentine antagonism

Sharp fluctuations in relations between Buenos Aires and Washington affected the pace at which the SOMISA steelworks project progressed. As the DGFM concentrated on the initial planning in 1943 and 1944, American pressure on the Republic hardened due to the failure of selective coercion and the advent of a military dictatorship with fascist leanings. The two key recommendations in the programme devised by Secretary of State Cordell Hull were the non-approval of development projects for Argentina, and the ban on exports for the Armed Forces.⁶² Such measures were inspired by the US interpretation of the military régime's aspirations of Argentine leadership in South America, and the conflation of the DGFM with the dictatorship. Washington viewed military projects to develop basic industries as a part of Argentine preparations for war, and was convinced that the régime rather than the DGFM participated in the *sociedades*

⁶¹ Sosa Molina, *Inauguración*, unpaginated.

⁶² Escudé, 'Boicot', p.15.

mixtas being developed to produce 'basic' commodities.⁶³

However, despite the misgivings in Washington, the DGFM was in a position to circumvent American restrictions. The embargo was not being enforced by US big business. The war provided export and investment opportunities in Latin American markets formerly supplied from Europe, and US firms engaged in manufacturing activities to meet local requirements previously satisfied by imports.⁶⁴ In Argentina, where British economic influence was rapidly waning, American corporations saw an opportunity to make substantial inroads by promoting industrialisation.⁶⁵ The DGFM project attracted US interests from its inception, despite exhortations by the US Embassy in Buenos Aires that it was not the time to express interest in the project.⁶⁶

The military, intending to involve private and even foreign capital in their heavy industry project (see Chapter 3), stipulated terms for the contest to award the tender to build an integrated steelworks. Any proposal had to include a foundry comprising two or three open-hearth furnaces with a capacity of 40-70 tons in order to attain greater economic efficiency than existing national steelmaking equipment, and a blooming mill with a capacity of 350,000 tons which would result in products of better quality and price than those available locally at the time. In addition, tenders had to include provisions for complementary installations, and conditions were set for the location. As the plant was to be based on the use of scrap and a proportion of national raw materials, its site had to be in an area where transport was economically available. Minerals would be supplied from northern Argentina, while scrap production and the consumption

⁶³ Office of Strategic Services (OSS), Research & Analysis Branch, R & A No.2266, *Data on Argentine preparations for war*. British Library of Political and Economic Science (BLPES), microfilm M(331): OSS/State Department Intelligence Research Reports, Part XIV: Latin America, 1941-1961. Reel 4/10. OSS, Research & Analysis Branch, R & A 2850 (Part III), *Militarization of Argentina on fascist-totalitarian lines*, 15 February 1945, p.6. BLPES, microfilm M(331), reel 5/10.

⁶⁴ Mira Wilkins, *The Maturing of Multinational Enterprise: American Business Abroad from 1914 to 1970* (Cambridge, Massachusetts, 1974), pp.252,262.

⁶⁵ Rapoport, *Gran Bretaña*, pp.256,259.

⁶⁶ Despatch no. 395'E' from C.A.E. Shuckburgh, First Secretary at the British Embassy in Buenos Aires, to the Rt.Hon. Anthony Eden, Secretary of State for Foreign Affairs, FO, London, 24 November 1944. FO 371 37681 AS 6509/4/2.

of semifinished products from the proposed mill was to be centred in Buenos Aires and Rosario. The DGFM recommended the convenience of a riverside location, in the vicinity of one of the ports on the Paraná river situated on the Buenos Aires-Rosario railway route.⁶⁷

The successful proposal accepted by the DGFM was presented by the Argentine companies TAMET, La Cantábrica and SIAM Di Tella, and the local subsidiary of the US firm ARMCO. The project foresaw an initial annual capacity of 300,000 tons, which could be increased progressively to 800,000 tons - the current level of domestic demand. Additionally, the installations were planned in a way that capacity could be expanded through the provision of additional equipment. However, the proposal modified the terms on raw materials, recommending the use of foreign inputs in peacetime as these would be more economic and make for better quality. This modification had no effect on the site of the plant. In fact, it reinforced the need for a riverside location to accommodate import deliveries.⁶⁸ More critically, the proposal opened the possibility of circumventing US export restrictions. The American firm ARMCO and its Argentine subsidiary, which like other US concerns were prepared to break the embargo, were to provide the necessary technological assistance.

Owing to the nature of the plant and wartime conditions, ARMCO was the only firm available that could be contracted as technical adviser and was awarded technical direction of the project only for the indispensable time required. As an incentive to a better fulfillment of its undertakings, ARMCO was awarded a shareholding in the proposed *sociedad mixta* that would own the planned steelworks.⁶⁹ ARMCO would provide assistance through its global subsidiary, the ARMCO International Corporation, which received an initial fee plus royalties from production for its services.⁷⁰ Its credentials as technical

⁶⁷ Bases for the Mixed Company contest for the constitution of the Second Iron and Steel Unit of the DGFM plan, in DGFM, *Plan*, pp.143,144.

⁶⁸ Proposal presented by TAMET, La Cantábrica, SIAM Di Tella and ARMCO Argentina at the DGFM contest, 3 November 1944, in DGFM, *Plan*, pp.150,152,153.

⁶⁹ Summation speech by Sosa Molina, Minister of War, during the debate on the PSA, *Diputados*, Año 1947, Tomo I, p.345.

⁷⁰ William T. Hogan, *Economic History of the Iron and Steel Industry in the United States*, Volume 4 (Lexington, 1971), p.1797.

contractor satisfied DGFM requirements. The US firm owned a major Laboratory of Iron and Steel Research, where technology was developed and constantly improved, and its experience in designing, building and operating steelworks enabled it to solve problems relating to steelmaking.⁷¹ More crucially for Argentine self-sufficiency aspirations were the production lines in which ARMCO specialised. The American company had developed sheets which were employed to manufacture a wide range of products, from automobiles to furniture and appliances, and had diversified into producing finished goods such as oil storage tanks and pipelines from its sheet output.⁷² As part of its services, ARMCO would make its major registered processes available through licensing.⁷³ This was critical to progress in self-sufficiency in oil supplies. The military government and its most influential figure, Perón, wanted to increase production from the state-owned Yacimientos Petrolíferos Fiscales (YPF) and make use of hitherto neglected natural gas sources. However, most of the capital plant of YPF was run down and outdated and equipment imports were difficult to obtain. Washington, having conflated the Argentine régime with fascism, had restricted exports of drilling equipment, refinery apparatus and spare parts, and maintained the controls after Perón's election victory in 1946.⁷⁴ ARMCO collaboration in the DGFM project provided Argentina with the possibility of producing iron and steel goods under license for the oil industry, which could then modernise and expand.

Nonetheless, the collaboration of ARMCO through its Argentine subsidiary continued to be subject to fluctuations in US-Argentine relations.⁷⁵ In early 1945, there was opportunity for the DGFM project to succeed due to shifting American policy. Although officials still condemned Argentina for its undemocratic government and its neutrality, changes in the State Department facilitated Argentine re-admission into the hemispheric community. Stettinius, who became Secretary of State in November 1944,

⁷¹ Antecedentes de la capacidad técnica de ARMCO Argentina S.A., in DGFM, *Plan*, p.66.

⁷² Hogan, *History*, Volume 3, pp.981,982, and Volume 4, p.1797.

⁷³ Antecedentes, in DGFM, *Plan*, p.66.

⁷⁴ Carl E. Solberg, *Oil and Nationalism in Argentina* (Stanford, 1979), p.164.

⁷⁵ Nora Siegrist de Gentile, 'Desarrollo siderúrgico', in María Haydée Martín, Alberto S.J. de Paula, and Ramón Gutiérrez (eds.), *Los ingenieros militares y sus precursores en el desarrollo argentino (1930-1980)* (Buenos Aires, 1980), p.190.

and the new Latin Americanists in the State Department were pragmatic and believed that continental cooperation, secured through US trade and investment, would maintain American security in the western hemisphere.⁷⁶ While Argentine delegations attended the hemispheric gathering held at Chapultepec in early 1945 and the San Francisco meeting which was to set up the United Nations, ARMCO Argentina prepared its study on technical and economic aspects of Argentine steel production. Concerned with efficiency, the study recommended the use of the most modern equipment. It suggested the installation of a blast furnace with a capacity of 1,000 tons, which allowed for an annual output of 350,000 tons, and the use of four open hearth furnaces of 160 tons, which was the standard size in the USA and provided an annual capacity of 400,000 tons. Finally, it advised the use of a duo-reversible blooming mill type of 44 inches that could roll up to 1,000,000 tons per annum.⁷⁷

Steady progress with the preparatory work in early 1945 contrasted sharply with the limited headway the project made subsequently. Argentine-American relations deteriorated again with the appointment of Spruille Braden as Ambassador to Buenos Aires, which was facilitated by the divisions within the State Department, and widespread hostility of the US media and public to overtures towards Argentina.⁷⁸ As Braden arrived in May 1945, there was renewed political turmoil in the military régime. Perón, who rose to power under the patronage of General Farrell in February 1944, served simultaneously as Vice-President, Minister of War, and Secretary of Labour and Social Security. He was the key figure behind the President and was preparing to take power himself.⁷⁹ Braden argued that the danger of fascist influence on Argentina had borne fruit with Perón. He was convinced that a Perón régime intended to dominate neighbouring countries and create an autarkic bloc in the Southern Cone with the support of Nazi elements. Furthermore, Braden maintained that Argentine fascism, by pursuing an autarkic model which he believed would collapse into chaos and social unrest, was an entering wedge for Soviet influence in the

⁷⁶ Joseph S. Tulchin, *Argentina and the United States* (Boston, 1990), pp.89,90,91.

⁷⁷ Estudio técnico-económico, in DGFM, *Plan*, pp.73, 77,78.

⁷⁸ Tulchin, *Argentina*, p.92.

⁷⁹ Peterson, *Argentina*, p.446.

western hemisphere.⁸⁰ Given the views of the US Ambassador, a deterioration in relations became inevitable.

Though recalled and appointed Assistant Secretary of State following the replacement of Stettinius by James Byrnes, Braden intensified his efforts to oust Perón.⁸¹ After the latter survived the dramatic events of October 1945, Farrell called elections for 24 February 1946. This call was welcomed by the Unión Democrática (UD), the united and well organised opposition which conspired against the régime during the campaign and kept close contact with American officials.⁸² Braden's antagonism to the possibility of Perón's election victory became overt intervention on the eve of polling. He released the pretentiously entitled 'Consultation among the American republics with respect to the Argentine situation' or *Blue Book*, the outcome of an investigation commissioned by the State Department which documented alleged Argentine wartime complicity with Germany, analysed the 'Nazi-fascist' character of the post-1943 régime and emphasised US lack of trust in Argentina.⁸³ The release of the *Blue Book* unsuccessfully aimed to improve UD election prospects, and was widely interpreted as an overt attempt to undermine Perón. The latter, who understood the link between Braden and the UD, took advantage of the episode and hinged the final campaigning around the slogan *Braden o Perón!*.⁸⁴

This episode, which contributed to the *Peronista* victory, adversely affected the progress of the DGFM project. The proposal had been formalised into the Plan Siderúrgico Argentino (PSA) and submitted to the government in January 1946. The President paid little attention as the régime concentrated on the

⁸⁰ Callum A. MacDonald, 'The Braden Campaign and Anglo-American Relations in Argentina, 1945-6', in Di Tella and Cameron Watt (eds.), *Argentina*, pp.139,140.

⁸¹ Tulchin, *Argentina*, p.92.

⁸² Joseph A. Page, *Perón, a biography* (New York, 1983), pp. 138,139,140.

⁸³ Ibid., p.146; Roger R. Trask, 'Spruille Braden versus George Messersmith: World War II, the Cold War, and Argentine Policy, 1945-1947', *Journal of Interamerican Studies and World Affairs*, 26 (1984) No.1, pp.77,78.

⁸⁴ MacDonald, 'Braden', p.150; Bryce Wood, *The Dismantling of the Good Neighbor Policy* (Austin, 1985), p.113; Tulchin, *Argentina*, p.93.

election.⁸⁵ However, the PSA was studied by the two ministries with an interest in the project: the Ministry of Agriculture and the Secretariat of Industry. Their responses, which only objected to ARMCO involvement, were influenced by overt US interference in domestic politics. The Ministry of Agriculture had two criticisms. First, that ARMCO was awarded technical direction without a tenders contest. Second, that ARMCO (as both shareholder and contractor) was granted a privileged position in a 'strategic' industry.⁸⁶ Such criticisms were unjustified. ARMCO was part of the successful tender at the contest held by the DGFM in 1944 and, as an incentive for it to effectively fulfill its undertakings as contractor, was allotted a shareholding in the company that would own the steelworks (see above). The Secretariat of Industry raised one objection: that there was no justification for the m\$n 3,700,000 the State would pay ARMCO for preparatory work for the PSA.⁸⁷ This claim reflects the lack of detail on calculations of costs in the arrangements. However, given the initiating role envisaged for the State in industrial development (see Chapter 3), this was the agreed State contribution to the m\$n 4,000,000 estimated necessary to cover the three undertakings in the agreements on preparatory work. These were the preparation of specifications and plans for the steelworks, the calculation of the cost of the remaining work involved in the technical direction, and the purchase of materials necessary for the installation of the plant which were unrelated to technical management (eg, land, machinery, vehicles).⁸⁸

Despite these criticisms against ARMCO, the prospects of the PSA improved once the uproar over the *Blue Book* receded. The American and Argentine Presidents made conciliatory gestures towards each other, and had their own motives for doing so. On the one hand, in the changed environment of the Cold War, the Truman administration was concerned with the communist rather than fascist threat and valued the creation of an Inter-American collective security pact. Therefore, powerful interests in the State Department,

⁸⁵ Raúl Larra, *Savio: el argentino que forjó el acero* (Buenos Aires, 1980), p.145.

⁸⁶ Comments on the first draft of the PSA Bill from the Ministry of Agriculture to Sosa Molina, Buenos Aires, 26 February 1946, in DGFM, *Plan*, pp.39,40.

⁸⁷ Comments on the first draft of the PSA Bill from the Secretariat of Industry and Trade to Sosa Molina, Buenos Aires, 25 February 1946, in DGFM, *Plan*, p.33.

⁸⁸ Translation of the agreement on the preparatory work for the constitution of SOMISA, Buenos Aires, 19 January 1946, *Review of the River Plate*, 30 May 1947, pp.14,15.

the Pentagon and Congress viewed the dispute with Argentina as divisive and the only remaining obstacle to the conclusion of a regional pact.⁸⁹ On the other hand, Perón was aware that the implementation of his Five-Year Plan would not succeed if imports and finance from the United States of America were unavailable.⁹⁰ However, indebted to his nationalist supporters, Perón could not overtly promote a close relationship with Washington. His solution was the highly opportunistic *Tercera Posición* in foreign policy, which aimed to steer a middle ground between capitalism and communism. While Perón unexpectedly resumed relations and sought trade with Moscow, he reassured the Americans that Argentina continued firmly committed to continental defence and would support the USA in the event of war with the USSR.⁹¹

The problem was that more than conciliatory gestures were required of Perón. The White House expected the settlement of outstanding problems in bilateral relations and Argentine compliance with hemispheric obligations.⁹² To achieve these goals, Washington appointed George S. Messersmith as new Ambassador to Buenos Aires, where only a Chargé d’Affaires had remained following Braden’s departure.⁹³ Nevertheless, Messersmith grew close to Perón and, appearing to accept his promises and actions at face value, concluded within months that Argentina had basically fulfilled its Chapultepec promises.⁹⁴ Hence, Messersmith wanted to concentrate on the regional pact and promoting US-Argentine relations. He aimed to steer the Five-Year Plan along lines acceptable to Washington, providing US economic advisers and championing Argentine industrialisation as an exercise in cooperation between government and business.⁹⁵

Improved US-Argentine relations enabled the PSA to make some headway. The PSA was accepted

⁸⁹ Callum A. MacDonald, 'The US, the Cold War and Perón', in Christopher Abel and Colin M. Lewis (eds.), *Latin America: Economic Imperialism and the State* (London, 1985), p.406; Trask, 'Braden', p.90.

⁹⁰ Page, *Perón*, p.184.

⁹¹ Ibid., pp.184,185.

⁹² Trask, 'Braden', pp.88,89.

⁹³ Peterson, *Argentina*, p.454.

⁹⁴ Trask, 'Braden', p.89.

⁹⁵ MacDonald, 'Perón', p.409.

by Perón and submitted to Congress in July 1946. The site of the steelworks was selected in September that year. It was to be Punta Argerich on the Paraná river, located 7 kilometres from San Nicolás and 232 kilometres from the city of Buenos Aires along national highway N°9.⁹⁶ Finally, the project was approved with *media sanción* by the Senate in November 1946 (see Chapter 3). However, the PSA had yet to be debated in the Chamber of Deputies, and there remained severe stumbling blocks that would affect its outcome. The pragmatic approach of Perón and Messersmith was unacceptable to Braden, still Assistant Secretary of State, and to two bitter nationalist actors on the domestic political stage: the Radical opposition party in Congress and the 'extremist' wing within *Peronismo*. On the one hand, Braden remained determined as ever to undermine Perón, alienating the military by maintaining the arms embargo imposed in 1942.⁹⁷ On the other hand, the nationalists were anti-American and represented a major threat to the enactment of the PSA. The greatest danger was posed by *Peronista* 'extremists' (see below), who were supported by two powerful people within the Government: Evita, the First Lady, and Miguel Miranda, head of the Instituto Argentino para la Promoción del Intercambio (IAPI). Evita was more powerful, and her xenophobia and redistribution policies she championed were the source of many a defect of the régime.⁹⁸ The First Lady promoted policies which would not result in economic diversification and the deepening of industrialisation (see Chapter 2 for details on policy under Perón). Furthermore, she was against obtaining the American capital and technology necessary for development projects such as the PSA. Nationalistic anti-Yankee opposition could not be pacified by the shift in US policy towards Argentina. One major implication of this has been largely ignored in the secondary literature: the nationalist backlash against the Plan Siderúrgico in the Chamber of Deputies.

The debate of the PSA was the final item at the Congress session of 8-9 May 1947 and was severely disrupted by one notorious incident, the speech by *Peronista* 'extremist' Cipriano Reyes.⁹⁹ The speech was xenophobic rhetoric based on the reading of a letter to Perón by the *ciudadano* Alejandro Olmos,

⁹⁶ Gentile, 'Desarrollo', p.193.

⁹⁷ MacDonald, 'Perón', p.406.

⁹⁸ *Ibid.*, p.408.

⁹⁹ *La Nación*, Buenos Aires, 10 May 1947, p.1.

a communist activist with a 'terrorist' record.¹⁰⁰ Reyes argued that heavy industry should belong exclusively to the Nation, therefore rejecting its subjection to a foreign organisation, and claimed that the PSA responded to the interests of ARMCO Argentina, the powerful tentacle of a foreign organisation. He also asserted that within one year after SOMISA became operational, private capital could acquire the DGFM shares in the mixed company and turn the State into a junior partner, thereby enabling international consortiums such as ARMCO to bid for the entire package.¹⁰¹ These accusations were unsubstantiated, as strict restrictions had already been imposed on both foreign participation and private shareholdings in SOMISA during the first reading of the PSA Bill in the Senate and by the Congressional Committees which studied the proposal (see Chapter 3). In fact, a decision to restrict the ARMCO shareholding to a maximum 4% of the equity capital had already been approved during the first reading of the PSA Bill in the Senate in 1946.¹⁰²

The views expressed by Reyes reflected the xenophobia and nationalism of the 'extremists', who were a minority among *Peronista* deputies. The latter grasped the significance of the proposal that ARMCO be both shareholder and contractor. The financial stake was awarded as a guarantee for efficiency in the work to be undertaken, and therefore there was concern that if the American firm only acted as technical adviser it could withdraw.¹⁰³ Apprehensions over the fate of the PSA increased as Reyes went on explicitly to attack the ARMCO group. He charged ARMCO Argentina with being an international financial bandit and the real author of the PSA, and the ARMCO International Corporation with being a powerful organisation without frontiers that 'had stuck its claws in all the American countries'. Finally, Reyes conflated ARMCO business practices (ie, unspecified methods of being awarded contracts) with crime being

¹⁰⁰ Accusation by Manuel Álvarez Pereyra, *Peronista* deputy for Buenos Aires, during the debate on the PSA, *Diputados*, Año 1947, Tomo I, p.304.

¹⁰¹ Speech by Cipriano Reyes, *Peronista* deputy for Buenos Aires, during the debate on the PSA, *Diputados*, Año 1947, Tomo I, pp.299, 300,301.

¹⁰² Summation speech by Sosa Molina, *Diputados*, Año 1947, Tomo I, pp.343,345.

¹⁰³ Speech by Rodolfo A. Decker, *Peronista* deputy for the Federal Capital, during the debate on the PSA, *Diputados*, Año 1947, Tomo I, p.330.

committed under the shield of generous legislation.¹⁰⁴ The result was uproar in the Chamber, but this did not lead to a vote by the government block to disallow Reyes continuing his speech.¹⁰⁵ *Peronista* deputies were interested in the PSA proposals and not in ARMCO business methods, which were not necessarily illegal.¹⁰⁶ However, with the support of the predominantly nationalist Radical deputies, Reyes recommended and secured the creation of an investigation committee which would examine the activities of the US firm.¹⁰⁷ Since the latter was the only foreign enterprise offering technical assistance for SOMISA, the investigations threatened to derail the PSA. If ARMCO was found guilty of breaking the law before the PSA was approved by the Senate, the agreements awarding technical direction of the steelworks to ARMCO would have to be revoked.¹⁰⁸

Peronista 'extremism' was not the only nationalist element in the Chamber of Deputies which opposed ARMCO involvement in the PSA. The UCR, the leading opposition party, also had three reservations. (a) Monopolisation of the technical direction by ARMCO was regarded as the key problem, with the American firm being able to charge what it wished for technical management once the plant became operational. (b) As Reyes had claimed, the ARMCO shareholding was considered objectionable on the grounds that this would lead to economic and financial subjection of SOMISA by ARMCO. (c) Since it relied on a non-national corporation, the steelworks project would be 'stuck' with foreign technology and assistance at a time when the objective was '*liberación*'.¹⁰⁹ However, these objections were unfounded. First, ARMCO was required to submit its technical direction proposal within three months of the constitution of the *sociedad mixta* (see Chapter 3). If unsatisfied, the DGFM could reject the project and allow the US firm to resubmit a more adequate proposal. Second, as seen above, the financial participation of ARMCO

¹⁰⁴ Speech by Reyes, *Diputados*, Año 1947, Tomo I, p.302.

¹⁰⁵ *La Nación*, 10 May 1947, p.1.

¹⁰⁶ Statement by deputy José Emilio Visca during the debate on the PSA, *Diputados*, Año 1947, Tomo I, p.306.

¹⁰⁷ Speech by Reyes, *Diputados*, Año 1947, Tomo I, p.309.

¹⁰⁸ Summation speech by Sosa Molina, *Diputados*, Año 1947, Tomo I, p.346.

¹⁰⁹ Speech by Arturo Frondizi, Radical deputy for the Federal Capital, during the debate on the PSA, *Diputados*, Año 1947, Tomo I, pp.322-325.

in SOMISA was severely restricted. Finally, the steelworks project could not go ahead without imported technology and licenses for specific product lines that only the American firm could provide.

Despite the various criticisms, the PSA Bill was approved by the Chamber of Deputies. However, the investigation into ARMCO Argentina was held amid a climate of mistrust. Given the continued efforts of both nationalists and Braden to sabotage attempts at improving Argentine-American relations, a publicity campaign developed against ARMCO. Media attention centred on the controversy over the relationship between SOMISA and the US firm and, combined with the campaign against ARMCO in Congress, was damaging. Therefore, the Ministry of War was forced to release a communiqué stressing that ARMCO could not hold over 4% of the equity capital and was only to provide technical direction and the personnel essential for the success of the project.¹¹⁰ Notwithstanding the anti-ARMCO campaign, the investigation into the accusations made in the Olmos letter resulted in the charges against ARMCO Argentina being dropped on 7 June 1947. Similar charges against the subsidiary of the American firm had already been pressed by Olmos in January 1947, and had been rejected on the grounds that ARMCO business practices did not constitute any crime.¹¹¹ Although the PSA was sanctioned by the Senate in June 1947, insecurity in US-Argentine relations and nationalist objections in Congress to the agreement between the DGFM and ARMCO led ARMCO Argentina to relinquish its right to subscribe shares in SOMISA. The decision was accepted by the DGFM.¹¹²

While the DGFM and ARMCO were still reeling from the nationalist onslaught in Congress and the media, there were substantial improvements in bilateral relations between Washington and Buenos Aires. Concern with communism led the Truman administration to break the deadlock with Argentina and pursue reconciliation. Perón himself, in spite of periodic outbursts of xenophobic rhetoric and denunciations of

¹¹⁰ Despatch no. 141'E' from Sir Reginald Leeper, British Ambassador to Argentina, to the Rt.Hon. Ernest Bevin, FO, 23 May 1947. FO 371 61172 AS 3204/3204/2.

¹¹¹ Speech by Sosa Molina during the consideration of the despatch of the Comisión de Defensa Nacional on the PSA Bill under revision, 13 June 1947, Congreso Nacional, *Diario de Sesiones de la Cámara de Senadores*, Año 1947, Tomo I, p.227.

¹¹² Gentile, 'Desarrollo', p.193.

dollar imperialism for domestic consumption, was careful not to oppose American projects for the hemisphere.¹¹³ He pressed for early ratification of the Act of Chapultepec and the United Nations Charter by Congress, which clarified his intentions for Washington, and he manifestly desired to secure a place within the Inter-American system and the United Nations.¹¹⁴ At the Inter-American conference held in Rio, Argentine delegates were invited to join the new hemispheric treaty. They fully cooperated with Washington, and the Inter-American Treaty of Reciprocal Assistance was signed in August 1947.¹¹⁵

Although this 'normalisation' in US-Argentine relations came too late to prevent the onslaught on ARMCO, it enabled the American firm to remain involved as technical contractor. While the final preparatory work for SOMISA progressed, the DGFM was forced to tackle the excesses of government officials attempting to benefit from the steelworks project. The episode, which is one of the few documented cases of corruption, was first identified by Robert A. Potash from sketchy and sometimes inaccurate information in diplomatic correspondence from the American Embassy in Buenos Aires.¹¹⁶ More recently released documents from the Confidential US State Department Central Files reveal the full story, at the centre of which was Miguel Miranda. As head of the IAPI, the State agency controlling foreign trade, Miranda was authorised to purchase supplies for State companies and the Army. He was also corrupt and his position in the IAPI, which was the exclusive purchasing agent abroad for Government entities, enabled him to arrange for kickbacks. IAPI purchasing contracts in North America were intentionally placed with little known suppliers rather than established sources, which facilitated payoffs.¹¹⁷ Miranda wanted to profit from contracts for SOMISA and, owing to existing agreements between the DGFM and ARMCO, had to go behind the backs of Perón and the DGFM. He signed three contracts with the obscure New York based firm Amer-Ind. The first was for preliminary work at a cost of US\$ 100,000 and signed in June 1946. The second contract, costing US\$ 46,000,000 plus 10% profit share and signed in March 1947, was

¹¹³ Page, *Perón*, p.186.

¹¹⁴ Peterson, *Argentina*, p.456.

¹¹⁵ MacDonald, 'Perón', p.406; Page, *Perón*, p.186.

¹¹⁶ See Robert A. Potash, *The Army and Politics in Argentina, 1945-1962* (London, 1980), p.62, fn.p.62.

¹¹⁷ Ibid., p.62.

for the construction of an open-hearth steel plant, strip mill and tinplate mill. A final contract concluded in June 1947 was for building railways, docks, and complementary facilities. The contracts provided for three revolving funds to be established. Two of them, totalling US\$ 5,500,000, would be set up in the United States of America to cover material and equipment costs and other expenses. The third, to be set up in Argentina, totalled m\$n 500,000 to cover expenses and the payment of engineering.¹¹⁸ However, Amer-Ind lacked the financial and technical capability to implement the project. Before engaging in the venture, it had promised to pay Miranda and his IAPI associates an undisclosed portion of the anticipated profits. The Army became aware of the situation and took the matter straight to Perón, who promptly ordered the cancellation of the contracts.¹¹⁹

While stopping Miranda's unsuccessful bid to profit from contracts for SOMISA, the military had simultaneously continued apace with final groundwork for the steelworks project. In October 1947, SOMISA received the proposed Definitive Plan of ARMCO.¹²⁰ It comprised two proposals. One was for a plant which could produce annually 315,000 tons of semifinished steel products, and the other for a plant with an annual capacity of 500,000 tons. The SOMISA board opted for the latter suggestion, since it allowed for output expansion to 1,000,000 tons in the future. The main installations of the steelworks were to be: a port for raw materials; a plant for coke production that could handle both national and imported coal; a blast furnace with a daily capacity to produce 1,300 tons of pig iron; a plant with six Siemens-Martin furnaces for steelmaking; a rolling mill; a thermal power plant; and auxiliary services.¹²¹ The latter included equipment to unload ships and handle raw materials, docks, internal roads and railways, workshops, laboratories, and sewers and drainage.¹²² ARMCO would provide technical assistance for all installations

¹¹⁸ Department of State, Memorandum of conversation, Subject: Impending cancellation by IAPI of contracts with Amer-Ind Inc., 22 December 1947. 835.602/12-2247 BLPES, microfilm M(336): Confidential US State Department Central Files: Argentina, Internal Affairs, 1945-1949, Part II. Reel 10/19.

¹¹⁹ Despatch from the US Embassy in Buenos Aires to the Secretary of State, Action No.3372, Subject: Status of Amer-Ind contracts, 31 December 1947, p.3. 835.602/12-3147 BLPES, microfilm M(336), reel 10/19.

¹²⁰ Gentile, 'Desarrollo', p.193.

¹²¹ Pedro F. Castiñeiras, *Esto lo hicieron los argentinos* (Buenos Aires, 1972), p.40.

¹²² Estudio técnico-económico, in DGFM, *Plan*, p.78.

except the auxiliary equipment and thermal power plant, for which no assistance was required.¹²³

Having decided the location and capacity of the plant, the DGFM had to expropriate an area covering around 3,000 hectares for the steelworks, related industries, and storage of raw materials. An area of 290 hectares was placed at the disposal of the DGFM in order to allow the initiation of work, which was formally acquired on 20 May 1948.¹²⁴ The DGFM, the ARMCO International Corporation and ARMCO Argentina had also signed the contract covering the design and technical direction for SOMISA. This contract was consultative and supervisory, and laid down that ARMCO would only draw up plans and specifications in such a way that tenders could be called for. As concessions for material purchases and the execution of work were not granted, competitive bids were to be called. Furthermore, no agents or intermediaries would act on behalf of the DGFM.¹²⁵ Nonetheless, ARMCO intended to obtain all necessary supplies in the United States of America.¹²⁶ It urged the purchase and use of some of the unused 1,000 ton blast furnaces built in North America during the Second World War, the use of standard US open-hearth furnaces of 160 tons, and heating the ingots poured with steel in soaking pits of the type built by Amsler-Morton, Salem Engineering or Surface Combustion.¹²⁷

Despite its intentions, ARMCO was not assured of securing all the purchases in the USA, for two reasons. (i) As seen above, the contract with the DGFM required the call of tenders. And (ii) the prospects of obtaining US supplies were reduced by the progressive deterioration of Argentine dollar reserves. Concerning the issue of tenders, it generated unjustified fear in ARMCO of possible competition from the United Kingdom. British involvement in the project was unrealistic owing to conditions in both Britain and

¹²³ Castiñeiras, *Esto*, p.41.

¹²⁴ Ibid., pp.45,46.

¹²⁵ Letter from J. Garnett Lomax, Minister (Commercial) at the British Embassy in Buenos Aires, to the South American Department, FO, 24 March 1948. FO 371 68090 AS 2155/1/2. Letter from Garnett Lomax to the South American Department, FO, 29 March 1948. FO 371 68091 AS 2274/1/2.

¹²⁶ Despatch Overseas Trade (B) No.707 from Garnett Lomax to the Undersecretary, Export Promotion Department, Board of Trade, London, 16 June 1948. FO 371 68094 AS 3757/1/2.

¹²⁷ Estudio técnico-económico, in DGFM, *Plan*, pp.73,77,78.

Argentina. On the one hand, deliveries from Britain could not be guaranteed in the aftermath of the war, and the British iron and steel industry was being restructured in the wake of nationalisation.¹²⁸ On the other hand, Argentina could not afford purchases in Britain as the virtual depletion of sterling reserves had been aggravated with the acquisition of the British-owned railways.¹²⁹ Regarding the effect of the dollar shortage, it led ARMCO unsuccessfully to seek financial advice on the possibility of obtaining US supplies on a 2-year payment term. The response received from American bankers was very cool.¹³⁰

ARMCO was thereby forced to consider placing part of the orders in Europe, and instructed to provide some copies of its specifications to non-American groups. In Britain, which was determined to maintain what remained of the Anglo-Argentine economic connection, this was seen as an opportunity.¹³¹ The British showed particular interest in the contract for the designs and specifications for ore-carrying steamers to transport iron to the steelworks. The contract with ARMCO apparently called for the presentation of designs within a year, and the ships had to be ready by 1951. In normal circumstances, ARMCO would have written the specifications in conjunction with a US shipbuilding firm and ensured that the final contract was placed with a shipbuilder of its choice.¹³² Since Argentina lacked the necessary dollars and US shipbuilding was notoriously expensive and rarely able to compete with British firms following the devaluation of sterling, London believed an agreement between ARMCO and a British firm might be possible.¹³³ The representative of the British Shipbuilding Conference in Buenos Aires kept in contact with three DGFM members, and was informed that 'several' 15,000 ton vessels of 12 to 15 knots

¹²⁸ Letter from W. Strath, Engineering Industries Division, Ministry of Supply, to Walter Simon, HM Treasury, London, 21 November 1946. FO 371 51770 AS 7397/2/2. Letter from C.H. Davies, Export Promotion Department, Board of Trade, to Garnett Lomax, 7 December 1946. FO 371 51770 AS 7608/2/2.

¹²⁹ Noel Fursman, *The decline of the Anglo/Argentine economic connection in the years immediately after the Second World War: a British perspective* (DPhil thesis, Oxford, 1988), p.369.

¹³⁰ Despatch Overseas Trade (B) No.707, 16 June 1948. FO 371 68094 AS 3757/1/2.

¹³¹ Ibid. See also the remarks on the cover of the folder containing this document.

¹³² Despatch Overseas Trade (B) No.449 from Garnett Lomax to the Undersecretary, Export Promotion Department, Board of Trade, 22 April 1948. FO 371 68092 AS 2873/1/2.

¹³³ Ibid.

and 23 feet draught were required. He was also instructed to await advice from the British Embassy about approaching ARMCO or until the Conference advised British shipbuilders to approach ARMCO directly.¹³⁴ However, British expectations were not realised, frustrated by difficulties in both the Republic and the United Kingdom. As indicated earlier, the Republic suffered from both dollar and sterling shortages. On the other hand, British shipbuilders were afflicted by steel shortages following the war and therefore decided not to approach the US firm.¹³⁵

The absence of foreign currency reserves to pay for equipment purchases prevented any further progress with SOMISA. The only alternative was external finance, but attempts to obtain funding for technology transfers in both Europe and the United States of America ended in failure. The most important failure occurred in Washington and, as is seen below, resulted from American policy towards Latin America generally and Argentina in particular. Regarding efforts to obtain funding in Europe, negotiations with French banking failed to deliver any results. The Banque de Paris et des Pays-Bas offered to furnish a credit equivalent to US\$ 116,000,000 to finance the acquisition of the whole equipment for SOMISA from French producers, but was in no position to award it. Even more odd was that the Banque de Paris et des Pays-Bas was prepared to provide the whole sum despite the fact that the proposition required that only 51% of the material had to be of French origin. The repayment of the loan was to be extended over 7 years and could be spread to 10 years. However, given these circumstances, there are doubts as to the seriousness of the offer. In fact, France never confirmed it.¹³⁶

While the French credit offer was ill-prepared and not entirely serious, attempts to secure external finance could have in theory succeeded. The Americans were in a position to provide credits and considered the natural source for funds. During the Second World War, the United States of America relied on its

¹³⁴ Letter from Davies to Garnett Lomax, 5 June 1948. FO 371 68093 AS 3362/1/2.

¹³⁵ Remarks on the cover of the folder containing Despatch Overseas Trade (B) No.707, 16 June 1948. FO 371 68094 AS 3757/1/2.

¹³⁶ Letter from H. Somerville-Smith, Export Credits Guarantee Department, to E.W.Playfair, HM Treasury, 3 October 1949. Copy sent by the latter to J.S.Lithiby, Bank of England, 4 October 1949. Bank of England Archive, OV 102/135. Reply from Lithiby to Playfair, 5 October 1949. Bank of England Archive, OV 102/135.

Latin American neighbours for key strategic minerals, and Allied oil imports came principally from Venezuela. In addition, Brazil had also participated in the conflict.¹³⁷ Given that Washington had furnished assistance to its regional 'allies' in return for this cooperation, Latin American countries expected the USA to expand its wartime role and provide them with long-term development capital in the postwar period.¹³⁸ However, the Americans deliberately refused to supply funds, for two reasons. (a) They were unwilling to provide assistance. (b) They used economic assistance as a lever to promote change in the increasingly nationalist Latin American republics.

Concerning US unwillingness to provide assistance, it arose from international conditions in the late Forties. Washington had other priorities in Western Europe created by the Second World War and the Cold War. Latin America, having suffered less than many other regions in the Second World War, emerged from the global conflict in relatively good economic shape. Therefore, the USA repeatedly avoided the issue of economic aid for its southern neighbours. Latin America was the only region in the world which in 1950 did not benefit from American aid, excluding the poorly funded Point Four technical assistance programme established in 1949.¹³⁹ The latter was part of the US strategy to 'contain' communism and only a commitment to provide technical assistance for economic development in Asia, Africa and Latin America. Point Four, which was of little benefit and too vague to be defined as a programme, was initially allocated a modest US\$ 35,000,000 in 1950.¹⁴⁰ The little postwar new US investment made in Latin America went mostly into Venezuelan oil, and there was only a modest increase in lending by the Export-Import Bank.¹⁴¹ Given this US refusal to provide assistance for industrial projects south of the Río Grande, it was unlikely that SOMISA would obtain external finance for equipment purchases.

¹³⁷ Stephen G. Rabe, 'The Elusive Conference: United States Economic Relations with Latin America, 1945-1952', *Diplomatic History* 2 (1978) No.3, p.280.

¹³⁸ Leslie Bethell and Ian Roxborough, 'Latin America between the Second World War and the Cold War: Some Reflections on the 1945-8 Conjunction', *Journal of Latin American Studies* 20 (1988) Part I, p.185.

¹³⁹ *Ibid.*, p.186.

¹⁴⁰ Julius W. Pratt, Vincent P. de Santis, and Joseph M. Siracusa, *A History of United States Foreign Policy* (4th ed., Englewood Cliffs, 1980), p.401.

¹⁴¹ Bethell and Roxborough, 'Reflections', p.186.

However, there was a second factor preventing Argentina from obtaining US credits. Some officials in Washington viewed economic support as a means to advance domestic reforms in the more nationalist Latin American countries. Notwithstanding the 'normalisation' of Argentine-American relations, the deterioration of the Argentine economy after 1947 provided the Americans with an opportunity to try and bring about the changes they desired. Washington was hostile to the *Tercera Posición*, strict bilateralism in trade, state trading through the IAPI, and the firm Argentine refusal to join the World Bank, the International Monetary Fund or the General Agreement on Tariffs and Trade. As Perón needed external financial assistance, the United States of America had a weapon to curb the power of 'extremists' within the régime, restrict the IAPI, erode Statist experiments, and improve conditions for foreign corporations.¹⁴² 'Normalised' relations had not led to changes in *Peronista* policy, and the Argentine President was only forced to obtain American assistance at any cost when the economic situation became totally desperate.

Despite its reinsertion into the Inter-American system, the Republic continued to pay lip service to the *Tercera Posición* and confronted the USA on every occasion at the United Nations. It used this same approach at the United Nations Conference on Trade and Employment, held in Havana from November 1947 until March 1948.¹⁴³ For the Americans, Argentine actions at Havana were a deliberate attempt to sabotage the conference. Strained relations were further aggravated by conflicts in Washington. While the State Department attempted to work through Perón for change, the European Cooperation Administration (ECA) strove to force the abandonment of the IAPI and other statist apparatus by refusing to authorise dollar purchases of Argentine products for the Marshall Plan.¹⁴⁴ The Republic had hoped to obtain the dollars necessary to cover import requirements of capital goods and other products by providing a substantial contribution of commodities for the Marshall Plan. However, the ECA indicated in June 1948 that the wheat crops of Europe, Canada and the United States of America could meet European demand. By the end

¹⁴² MacDonald, 'Perón', pp.407,408,409.

¹⁴³ Accounts of the conference proceedings can be found in Arthur P. Whitaker, *The United States and Argentina* (Cambridge, Massachusetts, 1954), pp.225-227, and Escudé, 'Boicot', pp.34,35.

¹⁴⁴ Peterson, *Argentina*, p.475; MacDonald, 'Perón', p.409.

of 1948, Argentine sales barely amounted to US\$ 3,000,000.¹⁴⁵ The sacking of Miranda, one of the main 'extremists', in January 1949 due to the failure of his economic policy did not diminish the resolve of the ECA. Its influential officials wanted to use the growing Argentine domestic difficulties to destroy Perón. Nevertheless, the strategy was counterproductive. By the time the controversy was resolved by mid-1949, Perón had used it to divert attention away from the crisis and inflamed anti-Yankee resentment with xenophobic rhetoric.¹⁴⁶

While both external and domestic factors (US unwillingness to dispense financial assistance for development projects, renewed trouble in US-Argentine relations, and the deepening Argentine economic crisis) prevented SOMISA from purchasing equipment in the late Forties, domestic conditions rather than fluctuations in American-Argentine relations frustrated the possibility of acquiring equipment for the integrated steelworks project by the early Fifties. Economic difficulties forced the Argentine President to bow to American wishes in order to get the foreign assistance he now desperately required. However, the aid obtained did not benefit SOMISA since it was utilised in more urgent matters related to the balance of payments crisis. As the régime took steps to improve conditions for foreign enterprises and to curb IAPI activities in the import trade, the State Department favoured the provision of funds. Accordingly, the Export-Import Bank granted a loan of US\$ 125,000,000 in May 1950 with the sole purpose of placing the Republic on a current paying basis and enabling business houses to refund their financial obligations to American exporters.¹⁴⁷

Even before SOMISA failed to reap any benefits from the US loan, the authorities seriously investigated the issue of whether the existing PSA proposal was too ambitious and should be suspended.¹⁴⁸ In practice, such an investigation was purely academic since the project was paralysed *de facto*. The severe

¹⁴⁵ Peterson, *Argentina*, p.476.

¹⁴⁶ MacDonald, 'Perón', pp.409,410.

¹⁴⁷ Ibid., p.409; Peterson, *Argentina*, p.480.

¹⁴⁸ Letter from Sir Frank Nixon, John Brown & Thos. Firth (Overseas) Limited, to R.W. Jackling, FO, 7 April 1948. FO 371 68091 AS 2359/1/2.

crisis prevented any equipment purchases, or any heavy foreign exchange outlays. Furthermore, the original authorised capital of SOMISA was inadequate owing to the decision to increase the annual capacity of the projected steelworks from 315,000 to 500,000 tons and, more importantly, to rising costs arising from the economic situation. SOMISA petitioned the régime to increase the capital on several occasions (see Chapter 3). Although the necessary legislation was finally enacted in September 1950, the economic crisis forced the government not to make contributions to the augmented capital and to refuse the company the right to seek foreign loans to make up for State funding deficiencies.¹⁴⁹ Therefore, SOMISA could not obtain the necessary technology or anything else. Even the purchase of land, which was modestly increased from 290 to 349 hectares, was not completed in the late Forties as planned but many years later.¹⁵⁰

There is one aspect of the September 1950 Congressional debate on the proposed increase in the authorised capital of SOMISA which merits attention. This was the unsuccessful attempt by the *Radicalismo*, which was vehemently anti-Yankee and determined to oppose *Peronista* legislative proposals, to revive the ARMCO issue. The latter had no significance and was irrelevant to the discussion given that, following the enactment of the PSA in 1947, the US firm had become the technical contractor and its Argentine subsidiary had rescinded any financial participation in SOMISA (see Chapter 3). Nevertheless, deputy Arturo Frondizi raised the question of the American firm, which was followed up by a question from deputy Luis Dellepiane on the choice of ARMCO as contractor over the local firm TAMET. Deputy Eduardo J. Rumbo rapidly addressed both queries. Frondizi was countered with the argument that ARMCO was merely the constructor and had been chosen for this task on the basis of its long experience in the steel industry. Dellepiane was retorted that TAMET and other Argentine firms lacked the experience to embark on a project of such magnitude, and that therefore there could be no presumptuousness over the ownership of the most appropriate contractor (even if it happened to be an American firm).¹⁵¹ The fact that there were no further questions on ARMCO during the debate on an increase in the capital of SOMISA, and that the issue itself did not inflame any anti-Yankee passion as in the debate on the PSA (see above), again

¹⁴⁹ Potash, *Army*, pp.107,108.

¹⁵⁰ Castiñeiras, *Esto*, p.46.

¹⁵¹ *Diputados*, Año 1950, Tomo IV, p.3466.

reflects prevailing conditions in the early Fifties. The domestic economic crisis, rather than fluctuations in US-Argentine relations and criticisms of ARMCO, affected the little headway made in the PSA project and any possibility by SOMISA of obtaining the necessary technology.

CONCLUSION

Foreign technology transfers, which were essential to the development of modern, large-scale iron and steel production, were restricted for most of the second quarter of the century. In the Twenties and Thirties, this was owed to the deliberate policy of the leading West European steel producer-exporters (and the steel cartel they established), which aimed to retain control over their shrinking export markets by preventing the growth of the steel industry overseas. This policy was implemented by two means. First, the frustration of projects through non-cooperation by potential foreign suppliers of technology. And second, the acquisition of substantial stakes in overseas enterprises with potential to develop steel production, as exemplified by the participation of the ARBED group of Luxembourg in the rapidly expanding Talleres Metalúrgicos San Martín TAMET. These tactics prevented the emergence of domestic steel production before 1939, at least in the private sector. In the Forties, despite the collapse of the steel cartel with the outbreak of the Second World War, restrictions on foreign technology transfers remained. These arose from US policy towards Argentina during the war, and American unwillingness to promote industrialisation south of the Río Grande in the aftermath of the conflict. Argentine relations with Washington, which fluctuated sharply and even reached an all-time low, became the key obstacle in frustrating the DGFM project for an integrated steelworks, which depended on an American corporation for technical assistance. At the crucial moment when it had to be approved in Congress, the PSA was almost destroyed by a nationalist backlash triggered by Argentine-American antagonism.

Notwithstanding the controls on foreign technology transfers, this chapter has shown that on occasions the restrictions were circumvented. This was made possible by the capacity and ingenuity of local engineers, who demonstrated their ability to build industrial installations, copy foreign designs and adapt equipment. As a result, the Armed Forces were able to build the Fábrica Militar de Aceros in the Thirties

and the Altos Hornos Zapla in the Forties, and private metallurgical firms to engage in steelmaking during the Second World War in order to overcome import shortages. The difficulty was that, although the efforts of Argentine engineers allowed the emergence of domestic steel production, plants were far from being modern or efficient and equipped with machinery which was obsolete. In the aftermath of the Second World War, national steel producers needed to upgrade their facilities to remain competitive in the face of competition from imports. This could only be achieved through foreign technology transfers, which were not available owing to American policy and, by the end of the period, to domestic economic factors.

Chapter 7

ECONOMICS AND MILITARY IDEOLOGY: COSTS, PRICES AND THE GAP BETWEEN PLANNING AND POLICY OUTCOME

As seen in Chapter 4, the level of aggregate demand for steel appeared sufficient to support modern blast furnaces and steelworks. Table 7.1, which shows aggregate demand for steel in terms of crude steel equivalent for the major Latin American economies in 1947, indicates that total Argentine steel consumption

Table 7.1

CONSUMPTION, PRODUCTION AND IMPORTS OF CRUDE STEEL IN THE PRINCIPAL LATIN AMERICAN ECONOMIES IN 1947 (in tons)

COUNTRY	CONSUMPTION	PRODUCTION	IMPORTS
Argentina	1,212,000	150,000	1,062,000
Brazil	978,000	385,000	593,000
Mexico	699,000	321,000	378,000
LATIN AMERICA	4,173,000	897,000	3,276,000

Source: United Nations (UN), Department of Economic Affairs, *World Iron Ore Resources and their Utilization* (Lake Success, 1950), p.44.

was 1,000,000 tons. This accounted for almost 30% of total consumption in Latin America, and exceeded Brazilian consumption levels by almost 20%. However, the data also shows that domestic production in Brazil and Mexico was greater than in Argentina, with local producers supplying a substantial proportion of admittedly smaller markets. While domestic output only covered 12.4% of requirements in Argentina, it covered 39.4% in Brazil and 45.9% in Mexico.¹ Unlike its Brazilian and Mexican counterparts, the Republic lacked an integrated steelworks. Production had been undertaken by a number of small plants where manufacturing was inefficient given the scale of operations and equipment was not being replaced despite becoming increasingly obsolete (see Chapter 6).² These attempts to develop domestic iron and steel

¹ Calculated from the data in Table 7.1.

² United Nations (UN), Economic Commission for Latin America (ECLA), *Economic Bulletin for Latin America* IV (1959) No.2, pp.6,8.

production, and more particularly the Plan Siderúrgico Argentino (PSA) devised by the military in the Forties, failed in economic terms. Two factors are at the root of the problem: (i) the limited market for rolled products, and (ii) raw material supplies.

Regarding market size, the level of total apparent consumption concealed the fact that, in the absence of industries consuming large volumes of iron and steel, demand for many types of finished goods was inadequate to support the use of modern rolling mills for large-scale production. The substantial capital outlays needed to establish even a small-scale iron and steel sector tended to impose a minimum size on the demand necessary to support economic production of finished goods (see below). If this could not be achieved, the installation of the most modern manufacturing plants and processes was unjustified.³ The production of a broad assortment of goods in relatively small volumes, which required many types and sizes of rolled steel, resulted in the inefficient use of rolling equipment and increased costs.⁴ Concerning raw materials, they were the predominant element affecting costs - and thereby final prices - of iron and steel.

Table 7.2

**ESTIMATED BREAKDOWN OF IRON AND STEEL PRODUCTION COSTS IN 1950
(as a percentage)**

PRODUCT	RAW MATERIALS	LABOUR	OTHER
Pig Iron	85	10	5
Ingots	70	18	12
Billets/Slabs	85	7	18

Source: Pedro J. Maristany, *El problema siderúrgico argentino* (Buenos Aires, 1950), p.34.

Table 7.2, which shows the estimated cost breakdown of iron and steel production, reveals the extent to which raw materials determined the costs of key products. This had negative consequences for Argentina,

³ UN, Department of Economic Affairs, *World Iron Ore Resources and Their Utilization* (Lake Success, 1950), p.23; *Revista de la Sociedad Anónima Talleres Metalúrgicos San Martín TAMET*, July 1935, p.2.

⁴ Address delivered by Raúl Prebisch, Executive Secretary of ECLA, at the inaugural session of the Latin American meeting of experts on steel making and transforming industries, São Paulo, 15 October 1956. In UN, ECLA, *Problems of the steel making and transforming industries in Latin America*, Volume 1: Report of the São Paulo meeting (New York, 1958), p.36.

as supplies of both national and foreign inputs were deficient. Domestic resources were expensive owing to their scarcity, poor properties and location in remote areas (see Chapter 5). Inadequate supplies only acted as a disincentive to national iron and steel production before 1939.⁵ Such discouragement did not prevent the Armed Forces from pressing for the development of heavy industry. When the military prepared the PSA proposal, they were advised that domestic raw materials should only be used during extreme emergency conditions and that the use of foreign inputs would be economically and technically more advantageous.⁶ However well intentioned, this strategy did not succeed as the project was being developed amidst international instability - ie, the Second World War and its aftermath, and the Korean War. Although imported raw materials were cheaper than national ones, they remained relatively expensive as sources were limited and transport requirements high. Therefore, the use of foreign inputs did not fully achieve the economies that might have been expected from their utilisation.

Given the market and raw material constraints, this chapter examines the possibilities of establishing a viable national iron and steel industry. It comprises four sections, the first of which argues that there was little incentive to undertake domestic production until 1939 owing to local factors and control of the market by leading foreign suppliers through the International Steel Cartel (ISC). The second part analyses the considerations behind military pressure to develop iron and steel production. It assesses military thinking on the role of an iron and steel industry in national development and shows that defence rather than business requirements were paramount. The third section examines the implications of the inefficient implementation of the PSA, which were reflected in the gap between the underlying assumptions of the project and the economics of national steel production. Finally, this chapter considers feasible alternatives to the Sociedad Mixta Siderurgia Argentina (SOMISA) proposal, the centrepiece of the PSA, and the more modest military facilities at the Altos Hornos Zapla (AHZ), thereby reinforcing the argument that the Armed Forces were guided by the concept of *seguridad nacional*.

⁵ Pedro J. Maristany, *El problema siderúrgico argentino* (Buenos Aires, 1950), p.34.

⁶ Proposal presented by TAMET S.A., La Cantábrica S.A., SIAM Di Tella Ltda., and ARMCO Argentina S.A. at the contest held by the Dirección General de Fabricaciones Militares (DGFM), 3 November 1944, in DGFM, *Plan Siderúrgico Argentino* (Buenos Aires, 1946), p.150.

PROJECTED COSTS OF DOMESTIC PRODUCTION AND INTERNATIONAL PRICES BEFORE 1939

Although two small producers (the Talleres Metalúrgicos Vulcano and the Fábrica Militar de Aceros) emerged before the Second World War, there was little to induce large-scale domestic steel production at least until 1939. There were three discouraging factors: raw material supplies, the type of equipment to be used, and lack of experience in the industry. Domestic raw materials were expensive in terms of both operating and transport costs as their poor quality resulted in large volumes of raw materials being necessary in iron and steel production. Greater tonnages of ore were required if the iron content was 30%, which would not be the case if the iron content attained the minimum internationally accepted standard of 60%. In addition, enormous amounts of coke and thus coal were necessary if poorer ores were employed, and poor coal yielded less coke.⁷ Therefore, the use of national minerals was judged unrealistic, until the Armed Forces pressed for their exploitation in the drive for self-sufficiency in strategic industries (see next section).

Table 7.3

THE COST OF A ONE-TON STEEL INGOT IN ARGENTINA AND THE USA IN 1925 (in pesos)

PROPORTION OF PIG IRON TO SCRAP	COST IN ARGENTINA	COST IN THE UNITED STATES
1:1	22.00	20.90
1:2	18.60	20.15
1:9	12.00	19.15
2:1	26.05	21.65

Source: H. Foster Bain, *Las posibilidades de la manufactura de hierro y acero en la Argentina* (Buenos Aires, 1925), p.127.

Nonetheless, the possibility of undertaking local iron and steel production was considered before 1939, and early studies suggested it was feasible if the substantial domestic scrap supplies and imported pig iron were employed. The only surviving calculations of the cost of a one-ton steel ingot for the Twenties

⁷ UN, Department of Economic Affairs, *Iron*, p.25.

(see Table 7.3) are those in a report commissioned by the government in 1925. The cost of a steel ingot varied with the ratio of raw materials employed as steel production in Siemens-Martin furnaces combined both scrap and pig iron (see Chapter 1), with costs being lower when the proportion of scrap used was highest.⁸ However, there are two problems with these figures. First, the data was tailored to the requirements of the Minister of War. General Justo strongly favoured the development of arms-related industries (see Chapter 3) and had commissioned the report to boost the promotion of iron and steel production. The calculations deliberately omitted some significant elements affecting costs of production, namely the cost of transporting resources and the wages of the workforce. The report acknowledged that their inclusion would have made costs unfavourable when compared to estimated costs in the USA.⁹ Estimates were thereby calculated on an inaccurate basis, and set prices in Argentina at m\$n 9 for scrap and m\$n 31 for imported pig iron. Research undertaken subsequently by the government revealed the extent of the distortion in these calculations. Scrap was actually priced at m\$n 10 to m\$n 20 per ton, and pig iron at m\$n 60 to m\$n 70 per ton.¹⁰ The second problem with the data is that of the raw materials suggested, scrap would be the preeminent one. In order for steel production to be economic, the proportion of scrap used would have to be greater than that of imported pig iron. However, the assumption that modern steelmaking could be based on scrap supplies was unrealistic. The danger was that heavy reliance on scrap as a raw material could result in the depletion of stocks, as 'small' economies had much lower volumes of scrap available than in the industrialised countries.¹¹ As seen in Chapter 5, this danger materialised in Argentina when iron and steel production was undertaken during the Second World War.

Two technical factors also affected the viability of a domestic steel industry, namely the type of equipment utilised and lack of experience. This was aptly demonstrated by the experience of the two small steel producers that emerged before 1939. Since foreign supplies of modern technology were restricted by

⁸ H. Foster Bain, *Las posibilidades de la manufactura de hierro y acero en la Argentina* (Buenos Aires, 1925), p.127.

⁹ *Ibid.*, p.127.

¹⁰ *Ibid.*, p.129; Sven Wässman, *Sobre las posibilidades de una industria siderúrgica en la República Argentina* (Buenos Aires, 1927), p.6.

¹¹ UN, Department of Economic Affairs, *Iron*, p.25.

the leading steel producer-exporters, the operational Siemens-Martin furnaces were uneconomic. With a capacity of 7 to 8 tons rather than the more common type of 25 tons, they were inefficient and had a high fuel consumption.¹² The impact of lack of experience in steel production is illustrated by the Fábrica Militar de Aceros. Major difficulties in the initial operation of its equipment had adverse effects on output and costs. When the plant opened in 1937, output was discontinuous as the furnace required adjustment on several occasions. The Fábrica Militar de Aceros implemented three 'schedules of production' of steel ingots, each of which was ended when the military decided the Siemens-Martin furnace needed modifications and resulted in successive falls in production costs. The first 'schedule' was effected in July and terminated with an output of 14 tons priced at m\$ 2,120 per ton. A second attempt followed in September and completed with a cumulative output of 323 tons produced at m\$ 149.50 per ton. A third 'schedule' in November brought total output for 1937 to 691 tons, cumulatively priced at m\$ 55.78 per ton. Having improved performance with the adjustments to the equipment, the plant increased its steel output to 5,535 tons in 1938. However, owing to a fall in the value of the peso, production that year was priced at m\$ 82.13 per ton.¹³

The data for the Fábrica Militar de Aceros is unique, providing the only concrete evidence on costs of production in the interwar period. The critical figure is that for 1938, attained once the plant had undergone all necessary technical adjustments. It exceeded the Foster Bain estimates considerably (see Table 7.3), even though output was based on a combination of raw materials in which scrap predominated over imported pig iron. Costs at the military factory only served to reinforce the acknowledgement that the estimates by Foster Bain omitted key elements in the calculation of domestic production costs, and thereby compared unfavourably with those of major producers such as the USA. Since the Fábrica Militar de Aceros and its civilian counterpart - the Talleres Metalúrgicos Vulcano - were modest undertakings, leading Continental European exporters benefited from the absence of local competition. Determined to control both the international steel trade and the few remaining open markets, they colluded to monopolise the production and distribution of iron and steel. Their comprehensive alliance, commonly known as the International Steel

¹² Wässman, *Posibilidades*, p.7.

¹³ Eduardo A. Garimaldi, *Industria siderúrgica argentina* (Buenos Aires, December 1947), pp.30,31.

Cartel, set its own export prices and was the main source of Argentine imports.

Pricing policies of the ISC

The steel cartel comprised export sales *comptoirs* for each specific commodity (see Chapters 1 and 4), which individually set prices. Full information on prices was restricted by the *comptoirs* to ISC members, with the understanding that these were minimum prices and higher prices than those stipulated could be charged, while distributors and consumers were merely informed about ISC price policies through the trade journals - they were not provided data regarding actual prices paid in business transactions of participants in the cartel.¹⁴ Merely serving as guides, these international prices were 'official' or nominal prices. Within each *comptoir*, they were identified with a designated standard or base commodity with a set chemical composition, length, thickness, gauge, etcetera, and routinely connected to the North Sea or English Channel export ports.¹⁵ Denominated in paper £ until sterling devalued in 1931, prices were subsequently determined in gold £ in an attempt to profiteer. Though prices in gold £ were fixed, a conversion rate set to calculate prices in paper £ enabled the cartel to manipulate prices inconspicuously.¹⁶ This was achieved by maintaining the conversion ratio when the value of the gold £ changed, through variations in the conversion ratio that did not correspond with changes in the value of the gold £, or by modifying the conversion rate when there was no corresponding change in the value of the gold £. The conversion factor, which was first changed on a monthly basis, was initially set at paper £ 1.463 per gold £ on 1 July 1933.¹⁷ No variations are recorded after June 1935, when the conversion factor was fixed at

¹⁴ Ervin Hexner, *The International Steel Cartel* (Chapel Hill, 1943), pp.178,179.

¹⁵ Ibid., p.180,181.

¹⁶ Daniel Barbezat, 'A Price for Every Product, Every Place: The International Steel Export Cartel, 1933-39', *Business History* 33 (1991) No.4, p.77.

¹⁷ The conversion factor from gold £ to paper £ was set as follows: 1.489 in August 1933; 1.552 in September 1933; 1.553 in October 1933; 1.519 in November 1933; 1.486 in December 1933; 1.550 in January 1934; 1.625 in March 1934; 1.650 in September 1934; 1.675 in October 1934; 1.650 in November 1934; 1.675 in January 1935; 1.700 in February 1935; 1.750 in March 1935; 1.725 in April 1935; 1.700 in May 1935; and 1.675 in June 1935. Hexner, *Cartel*, p.184.

Table 7.4

EXPORT PRICES* FOR SELECTED STEEL COMMODITIES PER LONG TON, FOB ANTWERP
 (converted from pounds into nominal pesos at the official and free market exchange rates)

MONTH/ YEAR	MERCHANT BARS		STRUCTURAL SHAPES		THICK PLATES		STANDARD RAILS	
	Official rate	Free rate	Official rate	Free rate	Official rate	Free rate	Official rate	Free rate
Jun 1926	56.97		55.52		60.35		72.42	
Dec 1926	66.19		65.83		75.29		70.92	
Jun 1927	54.18		53.61		69.15		71.44	
Dec 1927	54.86		50.29		68.01		72.81	
Jun 1928	65.89		56.15		73.22		73.00	
Dec 1928	70.56		58.23		72.87		74.94	
Jun 1929	68.78		60.68		73.76		75.27	
Dec 1929	62.58		58.29		73.90		77.48	
Jun 1930	68.49		66.52		85.54		85.28	
Dec 1930	63.04		54.97		71.10		95.29	
Jun 1931	52.73		51.47		62.96		102.31	
Dec 1931	51.33		50.41		63.77		111.66	
Jun 1932	40.36		38.50		51.05		105.81	
Dec 1932	49.86		39.83		57.31		103.44	
Jun 1933	44.26		40.66		57.98		81.31	
Dec 1933#	76.19	97.58	69.95	89.59	98.85	126.60	134.15	171.81
Jun 1934	89.56	106.60	86.78	103.29	116.34	138.48	155.47	185.06
Dec 1934	89.38	103.61	86.47	100.24	116.21	134.71	155.01	179.68
Jun 1935	90.78	99.96	87.38	96.22	117.30	129.17	156.57	172.41
Dec 1935	90.89	96.60	87.48	92.98	121.18	128.80	156.75	166.61
Jun 1936	90.99	96.97	87.58	93.34	121.32	129.30	156.94	167.25
Dec 1936	112.33	113.30	95.40	94.35	119.17	120.19	163.61	165.02
Jun 1937	160.80	163.21	130.56	132.52	164.00	166.46	154.08	156.39
Dec 1937	160.80	170.95	143.84	152.92	190.88	202.93	154.08	163.81
Jun 1938	140.64	167.27	130.56	155.28	164.00	195.06	154.08	183.26
Dec 1938	145.86	176.14	138.72	167.52	159.97	193.19	163.71	197.70
Jun 1939	145.86	173.57	131.58	156.58	159.97	190.36	163.71	194.81

* All prices quoted are as of the end of the month indicated.

Owing to the existence of multiple exchange rates starting in late 1933, prices as from December that year are based on the official selling rate and the free market rate. Although importers purchased foreign exchange at the official rate, real prices are reflected in those calculated at the free market rate.

Source: Calculated from the data in Ervin Hexner, *The International Steel Cartel* (Chapel Hill, 1943), pp.190,191,193, which was measured in paper £ until sterling devalued in 1931 and in gold £ thereafter. The conversion factor from gold £ to paper £ was obtained from two sources. For the period December 1931 - June 1933, it was calculated by using information on the exchange rate between £ and the US\$ in *The Economist*, 2 January 1932, p.45; 2 July 1932, p.45; 31 December 1932, p.1258; 1 July 1933, p.46. The data in Hexner, *Cartel*, p.184, is the source of the conversion factor for the period from December 1933 onwards, when it was manipulated by the ISC in its attempt to profiteer. The data on exchange rates from paper £ to m\$ for the period June 1926 - June 1939 was obtained from Vicente Vázquez-Presedo, *Estadísticas Históricas Argentinas (comparadas)*, Segunda parte: 1914-1939 (Buenos Aires, 1976), pp.282-283.

paper £ 1.675 per gold £.¹⁸

The only existing data on nominal prices for selected commodities is that in *The International Steel Cartel* by Ervin Hexner. In order to undertake a speculative comparison between the costs of domestic production at the Fábrica Militar de Aceros (for which there is only data for 1937 and 1938) and those of imports from the steel cartel, Table 7.4 shows Hexner's figures converted into nominal pesos. While £ prices in the original figures appear stable for most of the period except at the trough of the world crisis, this is not entirely the case when turned into pesos. The cost of importing commodities (and by implication crude steel) in the late Twenties and early Thirties was below the two existing figures for production costs at the military plant. However, import costs compared unfavourably subsequently as they increased steeply once economic recovery from the Depression was under way. Argentine importers faced both the manipulated conversion rate from gold £ to paper £ and a devalued local currency, which meant that they required larger amounts of pesos to purchase the paper £ necessary to pay for imports from the cartel. Moreover, prices of some ISC products in Argentina were part of a specialised geographic price structure. The latter was implemented by some *comptoirs* which were induced by business strategy, and aimed to eliminate competitors from outside the ISC in specific markets.¹⁹ Geographic pricing was effectively a method of price discrimination in which prices were higher in markets with fewer alternate suppliers - the United Kingdom in the Argentine case.²⁰ At least on paper, these circumstances should have induced the development of local steelmaking. Nevertheless, this was not possible as the ISC sustained its position by controlling the market through a range of oligopolistic practices (see Chapters 1 and 6).

Cartel members implementing the pricing policies described above were the leading Argentine source of iron and steel. However, the situation was altered dramatically by the outbreak of the Second World War. The ISC collapsed, and wartime import shortages resulted in price increases and hoarding and speculation through the systematic retention of stocks. Round iron shapes were placed openly in the market

¹⁸ Barbezat, 'Price', p.77.

¹⁹ Hexner, *Cartel*, p.182.

²⁰ Barbezat, 'Price', p.77.

at m\$n 2,000 per ton, even though the import cost had only increased to a price band ranging from m\$n 200 to m\$n 300. The Argentine authorities attempted to prevent pricing distortions, but failed. Sheets sold at between m\$n 1,500 to m\$n 2,000 per ton, notwithstanding that the price band was set officially at between m\$n 850 and m\$n 1,000.²¹

As seen in Chapter 3, these conditions provided the impetus for the advent of steel production in private metallurgical firms and for a sustained military effort to develop heavy industry. The most important of these attempts was that of the Armed Forces, which resulted in the initiation of national pig iron production, and the preparation of a detailed framework plan for the creation of a modern, large-scale steelworks. Though there had been major disincentives to undertake local iron and steel production before 1939, economic nationalists within the Army Engineering Corps had been pressing for its creation. Their case was strengthened by the hardship generated by two world wars and the Depression, and the strong military influence on governments after 1930. Military pressures bore fruit in June 1947 with the sanction by Congress of the PSA devised by the Fabricaciones Militares (DGFM). However, since the PSA was guided by national defence rather than economic requirements, the ideology behind the project must be considered before assessing the feasibility of the Plan Siderúrgico.

HEAVY INDUSTRY, THE ECONOMY AND NATIONAL DEFENCE

Nationalist officers had two linked perceptions regarding the role of heavy industry: it was crucial to economic development, and production could meet both civilian and military needs. Such ideas were not peculiar to the Argentine military, as demonstrated by the Brazilian Armed Forces. Brazil had already developed charcoal-based iron and steel production (see Chapters 3 and 5), but this was regarded as insufficient by the Brazilian Army. The latter, guided by similar considerations to those of its Argentine counterparts, was determined to establish a modern, large-scale steelworks. This determination, which

²¹ Banco Central de la República Argentina (BCRA), *Informe sobre el mercado local e industria nacional en laminados de hierro y acero* (Buenos Aires, May 1945), pp.56,57,58.

became one of the primary goals of the *Estado Nôvo* régime, culminated in the Volta Redonda project.²²

Iron and steel production was considered the engine that propelled the rest of the economy, and its possession was regarded as an indicator of the level of national development.²³ A country which did not exploit its mineral wealth and was not industrialised was judged as weak. In Argentina, heavy industry was promoted as a means to convert the country into a great power, in the same way as the advent of this sector had transformed the Northern Hemisphere's major powers in the past.²⁴ The economic hardship generated by the Depression and two world wars encouraged the belief that the creation of an steel industry would contribute to attain economic 'independence' based on industrial self-sufficiency.²⁵ This 'emancipation' was desirable on both economic and military grounds. From the economic perspective, domestic steel production would enable the manufacture of many iron and steel goods required by the major economic sectors.²⁶ From the military viewpoint, nationally produced supplies of iron and steel would enable domestic manufacturing of war matériel. The latter, according to nationalists within the Armed Forces, would reduce dependence on overseas weapon suppliers - particularly in times of emergency.²⁷

These assumptions about the relevance of industrialisation and heavy industry guided Argentine military thinking throughout this period. Although only fully developed during the Second World War, the project to create defence-related industries dates back to the Twenties and was gradually advanced by the Dirección General de Arsenales de Guerra - which was renamed Dirección General de Material del Ejército

²² John D. Wirth, *The Politics of Brazilian Development 1930-1954* (Stanford, 1970), p.89.

²³ Luis García Mata and Juan Eugenio Maggi, *Posibilidades para el desarrollo de la gran siderurgia en la Argentina* (Buenos Aires, 1942), p.3; Altos Hornos Zapla, *Revista de adhesión al 25º aniversario de la primera colada del arrabio argentino* (Argentine Republic, 1970), p.10.

²⁴ Congreso Nacional, *Diario de Sesiones de la Cámara de Diputados*, Año 1923, Tomo III, p.593.

²⁵ Consideration of the report from the Comisión de Defensa Nacional on the Draft Bill of the PSA under revision, 13 June 1947, *Senadores*, Año 1947, Tomo I, p.226; General Humberto Sosa Molina, *Inauguración del segundo alto horno Zapla* (Argentine Republic, April 1951), unpaginated.

²⁶ Consideration of the report from the Comisión de Defensa Nacional on the PSA, 27 November 1946, Congreso Nacional, *Diario de Sesiones de la Cámara de Senadores*, Año 1946, Tomo III, p.489.

²⁷ Dirección General de Fabricaciones Militares (DGFM), *Fabricaciones Militares. Visión de una gran empresa* (Buenos Aires, 1973), p.6.

in 1936.²⁸ Among the facilities established was the modest Fábrica Militar de Aceros, whose aim was steel production for military purposes. The outbreak of the global conflict in 1939 and fear over the possibility of war with Brazil, where the development of iron and steel production progressed steadily, heightened concerns about national defence. This resulted in a new project for a vast military-industrial empire (the DGFM), which was prepared and approved subsequently by Congress in 1941.²⁹ As seen in Chapter 3, the DGFM was empowered to produce war matériel and basic inputs, and to extract the minerals required in their manufacture. It prepared numerous industrial projects, including the PSA for the creation of a large-scale iron and steel industry.

Although DGFM projects were designed to satisfy military requirements, official propaganda stressed that they also aimed to contribute to progress and were founded on realistic economic criteria.³⁰ On the surface, this appeared to be the case with the PSA. The general tenets defined in the Plan appeared economically sound. First, steel would be produced using the most economically advantageous mix of both domestic and imported raw materials, and the exploitation of national minerals would be promoted. Second, high quality steel was to be supplied to the processing and finishing industries at prices comparable to those prevailing internationally. Finally, these criteria would foster an efficient industry.³¹ Yet there was a major problem: the PSA did not constitute a national development plan. The PSA merely prescribed a set of principles which its supporters argued were clear, simple and easily applicable.³² However, it failed to explain how or when they would be attained. To constitute a national steel plan, this complex project would have required political vision and imagination in its inception as well as exhaustive studies on all the aspects of iron and steel production rather than the feasibility of an individual plant. The studies upon which the PSA and the SOMISA proposal were based had been undertaken by an interested party, and accusations have

²⁸ See Chapter 3.

²⁹ DGFM, *Fabricaciones*, p.6.

³⁰ Alain Rouquié, *Pouvoir Militaire et Société Politique en République Argentine* (Paris, 1978), p.392.

³¹ *Review of the River Plate*, 18 April 1947, p.11.

³² Consideration of the report from the Comisión de Defensa Nacional on the PSA, *Senadores*, Año 1946, Tomo III, p.490.

arisen that they were tailored to satisfy military objectives.³³ Whatever the technical merits of the SOMISA proposal, the fact remained that the PSA was primarily the result of anxieties over 'strategic' supplies. The DGFM was so determined to establish the industry that it insisted on developing a minimum production capacity at any cost, and the result was the economic failure of the PSA.

THE MILITARY PROGRAMME: THE PLAN SIDERÚRGICO ARGENTINO

The military-industrial empire wasted a valuable opportunity to develop an economically viable steel industry. Its two projects, particularly the SOMISA steelworks, were marred by inefficient implementation and tailored to *seguridad nacional* requirements rather than business considerations. Four major difficulties ensued, and these are assessed below. (i) The development of an integrated steelworks required capital outlays which neither the DGFM nor private firms could afford individually. (ii) The projections of costs, prices and expenses were sloppy and aimed to satisfy the political objectives of the military. (iii) Both domestic and imported raw materials were expensive. (iv) The range of goods to be produced at SOMISA and the AHZ was inappropriate.

Investment requirements of the SOMISA steelworks

As with heavy industry projects in other 'small' economies, the SOMISA project required substantial capital outlays. Although the necessary investments did not exceed the level of foreign exchange reserves held in 1945, they were very high in relation to the total capital stock invested in the domestic economy. Measured in 1950 pesos, the capital stock invested in the domestic economy averaged m\$n 173,130,000 (US\$ 26,351,598 at the official exchange rate) in 1940-1944 and m\$n 187,963,000 (US\$ 28,609,285 at the official exchange rate) in 1945-1949.³⁴ The two propositions for an integrated steelworks submitted in 1945 by the US contractor for plants with an output capacity of respectively 315,000 tons and

³³ Ricardo C. Noseda, *La cuestión siderúrgica* (Buenos Aires, 1968), p.43.

³⁴ Aldo Ferrer, *The Argentine Economy* (Berkeley, 1967), p.230; the conversion from 1950 m\$n to US\$ at the official exchange rate is based on the data in Vicente Vázquez-Presedo (ed.), *Estadísticas Históricas Argentinas: Compendio 1873-1973* (Buenos Aires, 1988), p.244.

Table 7.5

PROPOSALS FOR INVESTMENT OF CAPITAL IN SOMISA
 (in US dollars)

CAPITAL GOODS	FOR 315,000 TONS	FOR 500,000 TONS
Blast furnaces	6,000,000	6,500,000
Coke ovens	3,900,000	5,200,000
Docks, equipment to unload and handle materials	1,200,000	1,500,000
Siemens-Martin furnaces	2,500,000	3,200,000
Soaking pits	1,000,000	1,300,000
Blooming mill	3,650,000	3,800,000
Services of water, roads	900,000	1,000,000
TOTAL	19,150,000	22,500,000
Plans, designs, supervision and getting the plant in working order (10%)	1,915,000	2,165,000

Source: Estudio técnico-económico de la producción de acero semiterminado en la República Argentina presentado por ARMCO Argentina S.A., in DGFM, *Plan Siderúrgico Argentino* (Buenos Aires, 1946), p.79.

500,000 tons required outlays in the region of US\$ 20,000,000 (see Table 7.5). In local currency, the costs were m\$n 100,000,000 for a plant with an output of 315,000 tons, and m\$n 140,000,000 for 500,000 tons.³⁵ The DGFM initially accepted the proposal for a plant with a capacity of 315,000 tons, and therefore the authorised capital of SOMISA was set at m\$n 100,000,000.³⁶ However, there were two major problems. On one hand, raising the necessary capital proved extremely difficult owing to the investment levels required and, on the other, the authorised capital turned out to be insufficient given domestic economic conditions in the late Forties.

³⁵ Debate on the PSA, 8-9 May 1947, *Diputados*, Año 1947, Tomo I, p.291.

³⁶ Proposal presented by TAMET S.A., La Cantábrica S.A., SIAM Di Tella, and ARMCO Argentina S.A. at the contest held on 3 November 1944, in DGFM, *Plan Siderúrgico Argentino* (Buenos Aires, 1946), p.152.

As for raising the capital required for the development of the integrated steelworks, neither the DGFM nor private interests could raise the necessary amount individually. Although the necessary capital could have, at least on paper, been financed from foreign exchange reserves, it had to be furnished from the DGFM budget. This was not possible as the military-industrial empire had other financial commitments. The military expected to overcome this obstacle, and their lack of real commercial experience, by creating a *sociedad mixta* to run the steelworks (see Chapter 3). Consequently, although it was developing the economic capacity, the DGFM believed that the private sector should be encouraged and allowed to participate in the project. However, military hopes in the mixed enterprise did not materialise owing to two factors: (a) the squeezing out of the private sector from the project, and (b) domestic economic conditions in the late Forties. Regarding the role of private interests in SOMISA, it had been unrealistic to expect that the sector could afford to contribute large amounts of capital to the *sociedad mixta*. Of the capital of m\$n 100,000,000, the State would subscribe m\$n 90,000,000 and the private sector m\$n 10,000,000; the proportion was subsequently modified by Congress to m\$n 80,000,000 and m\$n 20,000,000 respectively.³⁷ The private sector could not furnish such amounts, as demonstrated by ACINDAR - one of the large private steelmakers. In 1944, ACINDAR had a capital of only m\$n 6,049,115 and had to resort to substantial external financing to fund its own projected plant at Villa Constitución (see Chapter 3). Funding of the latter was covered by a m\$n 5,000,000 loan from the Banco de Crédito Industrial, the placing of shares in the Bolsa (m\$n 10,000,000 of preferential ones and m\$n 18,000,000 of ordinary ones), and a suscription to m\$n 1,600,000 of ordinary shares by the Republic Steel Corporation - the technical contractor for the project.³⁸

Furthermore, the DGFM had expected the private sector would acquire control of SOMISA in the long run. This was not only financially unfeasible, but also politically opposed - particularly in Congress (see Chapter 3). The private shareholders, who were initially entitled to acquire a controlling stake of up to 90% in the mixed company, had their shareholding limited to an absolute limit of 49% and the State was

³⁷ Ibid.; Recommendations of the Comisiones de Defensa Nacional, de Legislación General and de Presupuesto y Hacienda reviewing the Draft Bill of the PSA, 26 March 1947, *Diputados*, Año 1947, Tomo I, p.258.

³⁸ ACINDAR, *Historia de una Voluntad de Acero* (Buenos Aires, 1986), pp.85,86,87.

awarded control of the steelworks.³⁹ Concerning local economic conditions, capital raising was adversely affected by government policy. Although Perón had supported the development of heavy industry during the military régime of 1943-1945, it was no longer a priority once he was elected President in 1946 and the Second World War was over. The State had become leading investor in the economy and, given *Peronista* policies, new investments of capital were made in sectors which were not directly productive (see Chapter 2).⁴⁰ Economic failure by the late Forties prevented any large expenditure or foreign exchange outlays by the government. State contributions to the mixed company came in 'droplets', and under prevailing regulations there was no permission to obtain foreign exchange nor to negotiate foreign loans.⁴¹

Not only were there difficulties in raising the necessary capital but, as indicated above, the authorised capital of SOMISA proved insufficient - for two reasons. (a) Final capacity would be greater than initially planned and there would be additional installations, as the military decided to increase the capacity of the basic plant from 315,000 to 500,000 tons per annum. (b) Economic conditions had adverse effects by the late Forties. Prices were higher than the ones calculated by ARMCO, which were based on those prevailing in 1944, and the cost of the steelworks bore no relation to the authorised capital owing to rising costs. When the Definitive Plan and Budget presented by ARMCO was approved in 1948, the cost of the steelworks budget exceeded the authorised capital of SOMISA by an undisclosed amount.⁴²

The military pressed the régime for an increase in the authorised capital of the mixed enterprise to overcome the insufficiency. The necessary legislation was sanctioned by Congress in September 1950, but lacked detail as economic difficulties and a shortage of funds prevented the government from making any specific commitments on its contribution to the capital increase. The amount up to which the capital

³⁹ Consideration of the report from the Comisión de Defensa Nacional on the Draft Bill of the PSA under revision, *Senadores*, Año 1947, Tomo I, p.226.

⁴⁰ UN, ECLA, Serie Análisis y proyecciones del desarrollo económico, V: *El desarrollo económico de la Argentina*, Primera parte - Los problemas y perspectivas del crecimiento económico argentino (Mexico, 1959), p.12.

⁴¹ Pedro F. Castiñeiras, *Esto lo hicieron los argentinos* (Buenos Aires, 1972), p.42.

⁴² Robert A. Potash, *The Army and Politics in Argentina, 1945-1962* (London, 1980), pp.107,108; Castiñeiras, *Esto*, pp.41, 65.

would be increased was not determined, the government pledged to provide guarantees for financial operations related to the increase, and sources of finance were not identified.⁴³ Economic difficulties prevented the State from making any contribution to the capital increase throughout 1951 or any purchases of equipment, and available funds were insufficient for local works due to substantial rises in internal prices. The only operations undertaken were those that did not incur major costs or require foreign exchange and could be implemented by using available means -ie, the levelling of terrain for the mill and workers' housing.⁴⁴

Hard currency shortages in the late Forties prevented the State from obtaining a loan from the Banco Central and external financing had to be arranged in either Europe or the USA, where equipment for SOMISA had to be purchased. To obtain the US\$ 80,000,000 required, negotiations were started with the US Export-Import Bank and with French bankers.⁴⁵ Since these negotiations failed (see Chapter 6), the PSA merely remained on paper. The difficulties in raising capital for the *sociedad mixta* combined with substantial problems, foremost of which was sloppiness in preparing the calculations for costs of production and delivery prices of SOMISA.

Projected costs and prices of the PSA

The SOMISA proposal, which encompassed calculations of expenses of operation and development as well as projected costs and prices, was prepared by the US firm ARMCO. However, despite the credentials of this company, the validity of the feasibility studies is questionable. As ARMCO was both technical contractor and shareholder, the studies were not executed by an independent source. It has therefore been suggested that the findings of ARMCO were tailored to meet military objectives.⁴⁶ This

⁴³ Consideration of the report from the Comisiones on the proposed capital increase for SOMISA, 28 September 1950, *Diputados*, Año 1950, Tomo IV, pp.3460,3467.

⁴⁴ Castiñeiras, *Esto*, p.66.

⁴⁵ *Diputados*, Año 1950, Tomo IV, pp.3460,3467.

⁴⁶ Noseda, *Cuestión*, p.43.

Table 7.6
PROPOSED EXPENSES OF SOMISA
(in pesos)

EXPENSES	FOR 315,000 TONS	FOR 500,000 TONS
NORMAL OPERATION EXPENSES:		
Blast furnace	1,540,000	1,680,000
Coke ovens	1,843,000	2,836,000
Siemens-Martin furnaces	4,377,000	5,784,000
Slabs	873,000	1,142,000
Billets	1,567,000	2,770,000
Other *	8,542,000	10,310,000
Financial expenses over 5 years	200,000	200,000
EXPENSES OF DEVELOPMENT:		
Maintenance 10 years		
Siemens-Martin furnaces	100,000	100,000
Depreciation 10 years		
Siemens-Martin furnaces	300,000	300,000
Promotion and Exploration of Mines (m\$ 2 per ton)	560,000	900,000
TOTAL EXPENSES	20,002,000	26,022,000
Total Cost Purchase Raw Materials	26,649,000	42,403,000
TOTAL COST	46,651,000	68,425,000
Sales of Products	34,287,000	54,736,000
DIFFERENCE	12,364,000	13,689,000

* Includes m\$ 600,000 of permanent technical direction and m\$ 2,287,000 of 30-year depreciation (3%).

Source: Aspectos primales del estudio técnico-económico de la producción de acero semiterminado en la República Argentina presentado by ARMCO Argentina S.A., in the Análisis de los aspectos técnicos, económicos y financieros de la propuesta SOMISA, in DGFM, *Plan*, p.60.

suggestion could be borne out by the contrived nature of the calculations of the proposed expenses, costs of production and sales of SOMISA, which are shown in Table 7.6. The estimates were prepared towards

the end of the Second World War, took no account of any peacetime change, lacked any details as to their basis, and omitted some important details relating to operating costs (which were calculated separately and are shown in Table 7.8 below). This could have been deliberate to make the PSA politically viable for the DGFM by masking the real extent of the losses to be incurred by the steelworks, as the level of expenses and costs could not be offset by the sales of products.

Table 7.7

PROPOSED SALES OF SOMISA
(in pesos)

PRODUCTS	FOR 315,000 TONS	FOR 500,000 TONS
Billets	14,983,000	26,969,000
Slabs	12,549,000	17,375,000
Gas	3,390,000	5,216,000
Other byproducts	2,325,000	3,576,000
Coke tar	1,040,000	1,600,000
TOTAL	34,287,000	54,736,000

Source: *Aspectos primales del estudio técnico-económico*, in DGFM, *Plan*, p.59.

In the case of a plant with an output capacity of 315,000 tons, expenses and costs amounted to m\$n 46,651,000 while the sales of products totalled m\$n 34,287,000 - the former exceeded the latter by m\$n 12,364,000.⁴⁷ A similar situation arose for a plant with a capacity of 500,000 tons, where expenses and costs exceeded sales of products by m\$n 13,689,000 (see Table 7.6). The value of sales of SOMISA products is disaggregated in Table 7.7. Apart from billets and slabs, SOMISA would engage in the sale of byproducts derived from metallurgical coke. It was argued that sales of byproducts such as distilled gas, benzol for engines, and coke tar would cover the cost of metallurgical coke. Therefore, coke was to be produced in special ovens which enabled the recovery of byproducts either for sale or use in the proposed steelworks.⁴⁸ The private sector adherents to SOMISA argued that the sales of byproducts from the coke

⁴⁷ Comments on the first draft of the PSA Bill from the Ministerio de Agricultura to General Sosa Molina, the Minister of War, Buenos Aires, 26 February 1946, in DGFM, *Plan*, p.38.

⁴⁸ Estudio técnico-económico, in DGFM, *Plan*, pp.73,77.

ovens should permit production at the cost of imported coal (or slightly less).⁴⁹ However, byproducts did not constitute the bulk of SOMISA sales and thereby would not cover the cost of coke or allow production at the cost of imported coal.

Table 7.8

**PROPOSED COSTS OF PRODUCTION PER TON AT SOMISA
(in US dollars)**

PRODUCTS	FOR 300,000 TONS	FOR 500,000 TONS
Pig Iron	16.16	15.17
Steel Ingots	22.89	21.37
Slabs	27.10	25.27
Billets	28.10	26.32

Source: Estudio técnico-económico, in DGFM, *Plan*, pp.86,87.

Table 7.9

**REVISED CALCULATIONS OF THE COSTS OF PRODUCTION AT SOMISA
(in US dollars)**

PRODUCTS	PER NET TON	PER METRIC TON
Coke	16.00	19.42
Pig Iron	25.55	44.51
Steel Ingots	36.70	30.99
Slabs/Billets	43.51	52.81
Tinplate	n/a	156.57

Source: Pedro F. Castiñeiras, *El Plan Siderúrgico Argentino* (Buenos Aires, 1953), pp.35,36,37.

As indicated above, one major element related to operating costs were omitted - whether deliberately or not is a matter of conjecture - from the calculations shown in Table 7.6. These were the costs of production at the integrated steelworks, and were calculated separately. The findings on costs for each stage of production submitted by ARMCO are shown in Table 7.8. They lack specific details as to how the figures were obtained, and thereby serious doubts have been raised over their validity. Changed

⁴⁹ Proposal presented by TAMET, La Cantábrica, SIAM Di Tella and ARMCO Argentina at the contest held on 3 November 1944, in DGFM, *Plan*, p.151.

economic circumstances in the late Forties forced a revision of the projections. Domestic costs and prices rose sharply, the foreign exchange necessary for purchases of imported raw materials was scarce, and sources of scrap (which as seen in Chapter 1 was used together with pig iron in steel production) were depleted. Projections were revised during the early Fifties, in which the costs for the various products were increased (see Table 7.9). As with the figures presented by ARMCO, there is no quantitative detail as to how the data was obtained, except a brief mention that it was related to costs effective in February 1951.⁵⁰

Notwithstanding the questionableness of the various calculations, the SOMISA proposal aimed at least on paper at competitiveness in all three integrated stages of iron and steel production. It contemplated domestic manufacturing of pig iron at prices which competed with those of imports, and envisaged the production of steel ingots at low costs through the use of modern, large-scale techniques and rigorous control of the production process. Finally, the proposal argued that production of low cost steel ingots, which were to be subsequently reduced to adequate sizes for rolling, would enable domestic steel producers to compete with imports.⁵¹ Such expectations, however, did not materialise. The SOMISA steelworks when finally completed, and also the more modest military plant at Zapla, were hindered by high costs of production and delivery prices as a result of inefficient implementation by the DGFM. Emphasis on self-sufficiency by the military-industrial empire resulted in two key difficulties. First, an increase in costs consequent of using expensive raw materials (particularly domestic ones). And second, the range of production was inappropriate.

The impact of raw materials on costs and prices

During the early Forties, in the initial stages of preparing the integrated steelworks project, the DGFM envisaged the use of domestic raw materials. Since the price of iron and steel products was largely determined by raw material costs (see Table 7.2) and national resources were expensive, the military were

⁵⁰ Pedro F. Castiñeiras, *El Plan Siderúrgico Argentino* (Buenos Aires, 1953), pp.35,36,37.

⁵¹ Proposal presented by TAMET, La Cantábrica, SIAM Di Tella and ARMCO Argentina at the contest held on 3 November 1944, in DGFM, *Plan*, p.151.

forced to shift their position towards a combination of both local and foreign inputs. This decision acknowledged that imported raw materials would be both of better quality and cheaper. However, there were two problems. (i) The use of a proportion of national raw materials based on 'strategic' grounds (see Chapter 5) also had negative cost implications. (ii) Although cheaper than domestic inputs, imported ores and coal were still expensive.

As indicated above, owing to wartime considerations, the original military proposal for an integrated steelworks recommended the use of domestic raw materials. Had this advice been incorporated in the PSA and the project been completed on schedule by the early Fifties, the utilisation of expensive national inputs would have resulted in soaring costs. Indications that this would have been the case are provided by pig iron production at Zapla, a relatively modest DGFM undertaking which was based entirely on local resources (see Chapter 5). Zapla pig iron, produced in a remote site in northwestern Argentina, had a major competitive disadvantage.⁵² Any locational advantage created by the proximity of sources of minerals and labour was offset by the poor quality of the raw materials and distance to the market, which respectively increased costs of production and final delivery prices. Since low-grade ores with an iron content of only 40% were employed, greater tonnages of ore and charcoal were necessary and therefore already expensive inputs were required in higher volumes.⁵³ Additionally, employment of charcoal increased costs, even though the use of this domestically produced fuel enabled the production of pig iron of better quality than that obtained with coke.⁵⁴ Charcoal was expensive to obtain since vast tracts of forest had to be felled, an abundant labour supply was needed for felling in the absence of mechanisation, and transport of large volumes of wood was problematic. The relatively low thermal value of charcoal also precluded the installation of high-capacity blast furnaces.⁵⁵

⁵² DGFM, *Diagnóstico de viabilidad y alternativas del Establecimiento Altos Hornos Zapla* (Buenos Aires, December 1989), p.I-6.

⁵³ UN, Department of Economic and Social Affairs, *Survey of World Iron Ore Resources* (New York, 1955), p.221; UN, Department of Economic Affairs, *Iron*, p.25.

⁵⁴ Juan Manuel Checa de Codes, *La industria siderúrgica en Hispanoamérica* (Madrid, 1953), p.21; DGFM, *El hierro de Zapla* (Buenos Aires, 1954), p.5.

⁵⁵ Debate on the PSA, *Diputados*, Año 1947, Tomo I, p.298.

Although plant location and the quality of raw materials adversely affected costs of production and delivery prices of Zapla pig iron, as is seen below, the DGFM showed little concern with such matters since its prime consideration was the satisfaction of requirements by the military-industrial empire. The AHZ project was undertaken regardless of the fact, accepted by both the head of the DGFM and the government, that production would be uneconomic. General Savio acknowledged that costs would initially be very high.⁵⁶ The government itself, in Decree No.6,670 of 8 March 1946 which declared pig iron production to be of *interés nacional*, recognised that the price would be high in relation to that of imported pig iron.⁵⁷ Savio hoped that Zapla pig iron ingots could be produced for m\$n 75, m\$n 100 or m\$n 150 and marketed in Buenos Aires at a maximum of m\$n 80.⁵⁸ He did not explain the basis of his calculations, how these levels would be attained, nor did he justify the fact that pig iron would be marketed at one given price even if higher production costs were incurred. In the event, the expectations did not materialise. Although the initial cost of production and delivery price of Zapla pig iron is unknown, the *Revista de Economía Argentina* has estimated the production cost at m\$n 110 or m\$n 120 per ton and the delivery price in Buenos Aires at between m\$n 160 and m\$n 170.⁵⁹ This level was higher than that suggested by Savio and prewar import prices. Nevertheless, due to the world shortage in late 1945 and early 1946, the price of Argentine pig iron was briefly lower than that of imports, which stood at m\$n 370.⁶⁰ With the restoration of iron and steel production and exports in the Northern Hemisphere, the uneconomic nature of domestic production became obvious. By 1948, pig iron cost between m\$n 235 and m\$n 340 per ton at Zapla, and was priced at between m\$n 300 and m\$n 375 in Buenos Aires.⁶¹ As raw materials and labour became dearer, costs rose further. In 1949, Zapla pig iron cost m\$n 484 to produce and even more to market in Buenos Aires. This compared unfavourably both with other producers and imports. Measured in Argentine currency, the

⁵⁶ General Manuel N. Savio, 'Bases para la industria del acero en la República Argentina', in SOMISA, *Obras del General Manuel N. Savio* (Buenos Aires, 1973), p.391.

⁵⁷ Secretaría de Industria y Comercio de la Nación, *Arrabio* (Buenos Aires, October 1948), p.25.

⁵⁸ Savio, 'Bases', pp.390,391.

⁵⁹ *Revista de Economía Argentina* XLV (1946) No.333, p.90.

⁶⁰ *Ibid.*

⁶¹ Secretaría de Industria, *Arrabio*, p.23.

cost of producing pig iron was m\$n 282 in Brazil, m\$n 209 in Belgium and Luxembourg, m\$n 174 in the United States of America, m\$n 168.7 in the United Kingdom, and m\$n 150.5 in France.⁶² The high costs of local production encouraged protectionism, and tariffs raised the prices of the foreign product. However, the effect was simply to raise prices rather than promote domestic manufacturing. Local production was far below market requirements, and the increased prices of imported pig iron remained below those of the domestic product. In 1949, imported pig iron could be purchased at m\$n 427 from Brazil, m\$n 381 from the Netherlands, and m\$n 340 from France.⁶³

Table 7.10

AVERAGE NOMINAL PRICES OF SCRAP PER TON IN BUENOS AIRES
(in pesos)

YEAR	PRICE	INCREASE (%)
1948	196.11	n/a
1949	201.44	2.7
1950	226.68	12.3
1951	271.56	20.0
1952*	409.85	50.9

* First six months

Source: UN, Economic Commission for Latin America (ECLA), *Study of the prospects of inter-Latin American trade (Southern zone of the region)* (New York, 1954), p.109.

Given the case of Zapla pig iron, the DGFM proposal that national sources of scrap, iron ore and coal should be used in the integrated steelworks was detrimental to the project. Although no exact figures are available for costs of iron and steel production based on domestic raw materials, existing information on scrap and coal suggests that the use of national inputs had enormous economic disadvantages. Nominal prices of scrap rose steadily in the late Forties and early Fifties (see Table 7.10) as demand by private sector steel manufacturers outstripped supplies, stocks were depleted as railway materials - the leading source of scrap - were not renewed, and domestic costs increased. Prices of Río Turbio coal were increased considerably by distance from the market, as demonstrated by data available for 1952. Although the cost

⁶² *Monthly Journal of the British Chamber of Commerce in the Argentine Republic*, April 1950, p.39.

⁶³ Ibid.

per ton at the pit head was m\$n 54, additional charges were incurred with rail transport to the Patagonian coast, loading and maritime transport to Buenos Aires on special coal transport ships. As a result, the delivery price at the dockside in Buenos Aires totalled m\$n 144.⁶⁴

Notwithstanding the disadvantages of employing domestic ores and coal, military thinking was primarily concerned with self-sufficiency. The DGFM called for tenders for a *sociedad mixta* to develop its steelworks project based on the use of national inputs.⁶⁵ Nevertheless, the proposal submitted in 1944 recommended that the projected plant employ a combination of both foreign and domestic minerals on two accounts: (a) national raw materials required mixture with foreign inputs for their improvement owing to their poor quality, and (b) economic grounds. The DGFM shifted its policy and accepted the recommendation.⁶⁶ It recognised that the employment of foreign resources would contribute to reduce transport costs, which represented a substantial proportion of raw material costs and thereby costs of production at the mill. Since water transport was far cheaper than conveyance by rail, widely separated raw materials could often be shipped more economically between countries than within countries. Therefore, preference would be given to imported minerals on technical and economic grounds.⁶⁷ Nevertheless, Argentina would remain at a disadvantage in terms of transport costs. This was reflected in three problems. (i) The SOMISA proposal had been formulated when available foreign sources of iron and coal were limited and not always the cheapest. (ii) With already high transport costs, the steelworks would employ a proportion of expensive domestic minerals for 'strategic' reasons (see Chapter 5) and further increase costs. (iii) There were unforeseen specific locational factors which also affected the cost of transporting raw materials to the mill.

Regarding the restricted access to imported minerals, this mirrored conditions at the time when the

⁶⁴ Luis Calliari, *El yacimiento 'Presidente Perón' en la cuenca carbonífera de Río Turbio* (Buenos Aires, 1952), p.59.

⁶⁵ Bases for the Mixed Company contest for the constitution of the Second Iron and Steel Unit of the DGFM plan, in DGFM, *Plan*, p.144.

⁶⁶ Maristany, *Problema*, p.35.

⁶⁷ UN, Department of Economic Affairs, *Iron*, pp.24,25,30.

PSA was devised. The availability of foreign raw material suppliers was limited by the Second World War and the harsh circumstances of the early postwar period. Prices in the SOMISA proposal were based on the cost of Chilean ore and American coal, and included transportation charges that were likely to decline after the war.⁶⁸ As with other PSA estimates, the basis of calculation is unclear owing to the lack of quantitative detail. However, there are three other flaws. (a) The suggested sources were not the cheapest as the lowest raw material assembly costs in Argentina would be attained by using Brazilian iron from Itabira and Chilean coal.⁶⁹ (b) The possible renewal of inflows from traditional pre-1939 suppliers in peacetime was ignored. Imports of European raw materials and pig iron would not be prohibited, and would be cheaper than those of American origin.⁷⁰ As ARMCO was a US firm and aimed to get companies contracting its services to place orders in the USA, the feasibility study barely mentioned the possibility of obtaining good quality coking coal in Europe or Africa at a lower cost than in the United States of America. It merely indicated that if this was the case, the use of these sources might be considered in order to achieve some economy.⁷¹ (c) The possibility of importing Chilean minerals was unrealistic as Chile had undertaken its own steelworks project and was unlikely to have export surpluses available. This was particularly important in relation to coal, given that the unavailability of the cheapest source would thereby force the Republic to turn to non-Latin American sources and increase transportation and assembly costs.⁷²

As for the military decision on 'strategic' grounds to utilise a proportion of national inputs, this was to be in the most economically viable combination with imported raw materials (see Chapter 5). This was not realistic given the cost and quality of national ores and coal, and that imported minerals - although cheaper than domestic ones - were still expensive. In fact, it has been estimated that if low-grade Zapla ores were used together with coal from South Africa (the nearest non-Latin American source), Argentine

⁶⁸ Estudio técnico-económico, in DGFM, *Plan*, p.86.

⁶⁹ UN, Department of Economic Affairs, *Iron*, p.30.

⁷⁰ Comments on the first draft of the PSA Bill from the Secretaría de Industria y Comercio to General Sosa Molina, Buenos Aires, 25 February 1946, in DGFM, *Plan*, p.36.

⁷¹ Estudio técnico-económico, in DGFM, *Plan*, p.86.

⁷² UN, Department of Economic Affairs, *Iron*, p.30.

transport costs would be among the highest in the world.⁷³ Finally, specific location conditions relating to SOMISA also increased transport costs to the steelworks and ultimately affected the final delivery prices of finished goods. On the surface, the chosen market-oriented location for the plant was ideal. San Nicolás was a greenfield site in the centre of the industrial belt that runs from La Plata to Santa Fe, and enjoyed good links with the rest of the country. Situated on the Paraná river, it was close to major road and railway networks (see Map 3.2).⁷⁴ The problem with this inland, upriver location was that by the time the mill became operational in the Sixties, there had been innovations that could not have been foreseen when the PSA was first devised. Because of technical changes in ore-carrying vessels, the river depth was too small for the most common types used.

The most common type of ore-carrying vessel developed in the Fifties were bulk-carriers. The latter, whose development was related to the growth of traffic in commodities and above all oil, were initially converted redundant oil tankers. Tankers were not restricted in size as other ships, as they could readily berth offshore in deeper water and rapidly load and discharge. Therefore, tankers could easily make use of the economies of large size and their size was increased rapidly, thereby making the smaller existing tankers uneconomic. Many of these redundant tankers, which were not small for other trades, were converted to bulk-carriers of between 10,000 and 25,000 dwt. They could engage in several bulk cargo trades and round voyages, carrying different cargoes for different stages of their trip. By the Sixties, tanker conversions had practically ceased and bulk-carriers were following the trend set by oil tankers. Vessel size increased, with the most favoured types being 35,000 to 40,000 tons and upto 75,000 dwt.⁷⁵ As the size of carriers continued to expand, the riverside location of the steelworks was increasingly disadvantaged as regards river depth.⁷⁶ Transport costs to the mill increased as smaller carriers rather than the more

⁷³ Ibid.

⁷⁴ Maristany, *Problema*, p.36.

⁷⁵ UN, Economic Commission for Europe (ECE), *The world market for iron ore* (New York, 1968), pp.100,101.

⁷⁶ Kenneth Warren, *World Steel* (Newton Abbot, 1975), p.281.

common types had to be used to carry ore to SOMISA.⁷⁷ Locational disadvantages related to the riverside site combined with bottlenecks in the land transport system to have an adverse effect on final delivery prices of SOMISA products. Although 85% of the home steel market was located within 240 kilometres from the plant, distribution costs rose as road congestion in the Buenos Aires industrial region increased in the Sixties.⁷⁸ Despite the disadvantages faced by SOMISA, the adverse consequences of location and raw material supplies on costs and prices were far more severe for Zapla. However, both SOMISA and Zapla had viability problems in terms of the market. SOMISA attempted to satisfy DGFN objectives of self-sufficiency in iron and steel products and therefore produced many goods which were uneconomic to manufacture nationally, and the AHZ had been specifically designed to meet military requirements.

The market and the range of domestically manufactured products

In terms of market size, the country appeared to have a large enough aggregate demand which could sustain modern blast furnaces and steelworks (see Table 7.1). Given the level of aggregate demand, the study presented by ARMCO on the feasibility of SOMISA asserted that production could be undertaken on a scale that justified the use of modern, high performance equipment.⁷⁹ However, actual consumption of steel was spread over a wide range of finished steel products, demand for some of which was inadequate to support the use of modern rolling mills. The structure of Argentine consumption of rolled steel goods broadly reflects the structure of total Latin American consumption of these products, which is shown in Table 7.11. The largest single category comprised flat products (sheets, plates and tinplate) and accounted for over 30% of the total use of steel.⁸⁰ However, flats could not be produced efficiently. Since the combined consumption of Argentina, Bolivia, Brazil, Chile, Paraguay, Peru and Uruguay totalled 500,000 tons in the case of sheets and 200,000 tons in the case of tinplate, only the sum of several markets could

⁷⁷ Ministerio de Defensa, *Developing a Strategy for the Turnaround, Restructuring and Privatization of Sociedad Mixta Siderurgia Argentina (SOMISA)* (Buenos Aires, 16 January 1992), p.14.

⁷⁸ Warren, *Steel*, p.281.

⁷⁹ Estudio técnico-económico, in DGFN, *Plan*, p.71.

⁸⁰ UN, Department of Economic Affairs, *Iron*, p.44.

Table 7.11

CONSUMPTION OF FINISHED STEEL PRODUCTS IN LATIN AMERICA IN 1947

PRODUCTS	VOLUME (tons)	SHARE (%)
TOTAL	3,000,000	100.0
Sheets and plates	627,000	20.9
Tinplate	330,000	11.0
Bars and small sections	450,000	15.0
Wire products	445,000	14.8
Rails	251,000	8.4
Pipes	368,000	12.3
Structural shapes	266,000	8.9
Miscellaneous	263,000	8.7

Source: UN, Department of Economic Affairs, *Iron*, p.45.

justify the installation of a continuous strip mill and the necessary auxiliary plant for production under optimum conditions.⁸¹ The second largest category consisted of bars and wire products, which again represented approximately 30% of steel consumption, and the remaining tonnage was spread over a wide range of goods - including rails, pipes and structural shapes.⁸² As with sheets and tinplate, demand for some of these goods was insufficient to warrant their domestic production. One of the most notorious cases was that of steel rails (see Chapter 4). While the minimum annual consumption of rails necessary for efficient national production was 100,000 tons, the combined consumption of rails in the above mentioned seven countries only amounted to some 160,000 tons.⁸³

The SOMISA plant was designed to manufacture the broadest possible assortment of iron and steel goods, even though many of these were required in small volumes (rails, sheets and tinplate) and thereby uneconomic to produce. The use of modern equipment for large-scale production required heavy investment

⁸¹ UN, ECLA, *Study of the prospects of inter-Latin American trade (Southern zone of the region)* (New York, 1954), p.104.

⁸² UN, Department of Economic Affairs, *Iron*, p.44.

⁸³ UN, ECLA, *Prospects*, p.104.

Table 7.12
PRODUCTION PROGRAMME FOR SOMISA
(in tons)

PRODUCTS	FIRST STAGE	SECOND STAGE
Rails & accessories	100,000	140,000
Shapes	110,000	125,000
Plate	135,000	254,000
Hot rolled sheet	135,000	150,000
Cold rolled sheet	130,000	220,000
Tinplate	140,000	180,000
TOTAL ROLLED GOODS	750,000	1,069,000
Billet for private industry	132,000	318,000
TOTAL	882,000	1,387,000

Source: UN, ECLA, *Economic Bulletin for Latin America IV* (1959) No.2, p.10.

which adversely affected costs if capacity was only partially used, and thereby wide diversification in output could only be achieved at a considerable sacrifice in terms of costs.⁸⁴ The initial production programme envisaged for when SOMISA was completed in the Sixties is shown in Table 7.12. It was to be implemented in two stages: the first starting in 1961, and the second from around 1965. As production was based on aggregate demand and the military bid for national self-sufficiency, operations were volume driven.⁸⁵ Emphasis was on the achievement of specific targets, such as the 'Plan 1,100,000 toneladas' of 1966.⁸⁶ The priority awarded to DGFM objectives was also evident in the more modest Zapla undertaking. The quality of the goods produced at the AHZ was regarded as the basis of competitiveness of the plant. More critically, when Zapla underwent expansion and became an integrated operation after the Fifties, stress was laid on the production of steel for military purposes and special types of steel. Although a share of output was aimed at meeting local civilian needs, the leading market of AHZ production was the DGFM.⁸⁷

⁸⁴ Ibid.

⁸⁵ Ministerio de Defensa, *Strategy*, p.13.

⁸⁶ José García Vizcaíno, *Tratado de política económica argentina*, Volume II (Buenos Aires, 1975), p.257.

⁸⁷ DGFM, *Diagnóstico*, p.III-3.

FAILURE OF THE PSA AND ALTERNATIVES TO THE MILITARY PROGRAMME

As seen above, the heavy industry project devised in the Plan Siderúrgico was marred by inefficient implementation arising from four major problems. First was that enormous capital outlays were required for SOMISA, which neither the DGFM nor private sector industrialists could afford since the necessary investments. Second, the calculations of projected costs, prices and development expenses for the integrated steelworks were sloppy, with an unclear basis as essential quantitative detail was omitted. Third, the decision to use a mix of domestic and foreign raw materials in SOMISA had been guided by military considerations and adversely affected costs, as the utilisation of expensive national minerals had demonstrated in the case of the AHZ. In addition, the limited availability of foreign sources of raw materials and unforeseen locational factors increased the cost of imported minerals. Fourth and finally, the range of products manufactured was far from appropriate. Dictated by self-sufficiency ambitions, it resulted in the production of many iron and steel goods which were uneconomic to manufacture nationally.

Only one of these four problems, that concerning funding for the project, was resolved after Perón belatedly reversed his economic policies and openly strove to improve Argentine-American relations during his short-lived second presidency of 1952-1955. The Government made funds available for a contract signed with a French firm in 1952 for the construction of the deep-water port required for raw material deliveries. It also approved the purchase of a steel plate finishing mill manufactured in the United States for the Czech company Investa, which had been embargoed by the Americans following the Communist takeover in Prague.⁸⁸ The impounded installations were auctioned in May 1954 by the US Treasury, which accepted an offer of US\$ 9,000,000 by the DGFM.⁸⁹ The title of the mill was turned over to SOMISA and the equipment, already crated at the Port of New York, was soon on its way.⁹⁰

⁸⁸ Potash, *Army*, p.163.

⁸⁹ Report on the purchase of the Czech equipment from Coronel Pedro F. Castiñeiras, representative director of SOMISA, to General Humberto D. Magallanes, president of SOMISA, Buenos Aires, 25 September 1954, in Castiñeiras, *Esto*, p.149.

⁹⁰ Potash, *Army*, pp.163,164.

The most important *Peronista* policy reversal concerned the possibility of securing external financing for the acquisition of equipment. In March 1954, SOMISA agreed in principle to award the US firm Arthur G. McKee and Company the contract for the supply, assembly and installation of the blast furnace. This being the most expensive component of the plant, the critical problem was financing the deal. In sharp contrast to the government attitudes during the first Perón presidency, SOMISA was authorised to approach the Export-Import Bank directly. In March 1955, the *sociedad mixta* was notified that the Bank was prepared to provide US\$ 60,000,000 towards the cost of purchases of equipment and services in North America.⁹¹ Although the military coup of September 1955 resulted in further delays to the project, the progress made with SOMISA during the three preceding years enabled the completion of the steelworks almost a decade beyond the period under study. However, the other difficulties affecting the implementation of the PSA were not resolved.

The DGFM project for large-scale, modern iron and steel production was uneconomic and flawed from its inception. Solely concerned with 'having' the industry, the military-industrial empire undertook the PSA with little regard for the economic aspects of their enterprise - even though on occasions adjustments to some points of detail were forced upon them by circumstances. Tailored to *seguridad nacional* needs rather than business requirements, the PSA was not feasible economically. However, there is evidence that greater care in planning and consideration of the economic requisites of steel production could have resulted in a more viable industry. Confirmation that iron and steel production was economically feasible is provided in the recommendations of the early Nineties for the now implemented privatisations of the *sociedad mixta* and the AHZ. The viability of both military-inspired corporations could have been increased in two ways. (i) Both had to shift away from any use of expensive domestic raw materials. (ii) Production had to be reoriented.

By utilising foreign raw materials, costs of production could be reduced. In the case of SOMISA, this had already been done, but insufficient economy had been achieved owing to transport rates and, more critically, the use of a proportion of national ores and coal. As regards Zapla, uneconomic production had

⁹¹ Ibid., p.164.

been the norm due to total reliance on expensive local iron supplies. The feasible alternative suggested in the privatisation proposals was to stop employing Argentine inputs. This had far reaching implications for the AHZ, which would have to shift to the use of imported iron ore. Despite high transportation rates, ore could be obtained more cheaply in Brazil. To reach Zapla, it could be transported to the Argentine riverside port of Resistencia and subsequently along one of the three railway branches linking the Paraná river with Jujuy (see Map 5.1). Such recommendation was accepted by the DGFM and resulted in the closure of the '9 de Octubre' and 'Puesto Viejo' iron deposits, whose exploitation was uneconomic.⁹²

Concerning the reorientation of production, output had to satisfy market requirements rather than expensive military self-sufficiency ambitions in order to reduce high costs. As seen earlier, the market was limited and costs were increased by the inefficient use of rolling equipment. A broad assortment of goods was produced in relatively small volumes, which required many types and sizes of rolled steel. Costs could be reduced through standardisation and specialisation. Standardisation would have reduced the variety in types and sizes of rolled steel, thereby enlarging the market for the smaller number of types established with quality standards and specifications.⁹³ Specialisation would have eliminated domestic production of goods which was uneconomic by restricting output from a given rolling mill to either sections, flats or tubes.⁹⁴ The specialisation proposal, which had already been mooted by ECLA in the Fifties, was critical for the viability of SOMISA and Zapla and thereby the feasible alternative suggested in the privatisation recommendations for both plants. SOMISA would have to downscale operations and rationalise or eliminate unprofitable production lines, restricting output to rolled flats, and ceasing production of billets, structural products and rails.⁹⁵ These lines had to be abandoned as production resulted in cash losses and high cash operating costs which ensued from the inefficient use of finishing mills and the high costs of ingots employed in the manufacture of these products. The blooming mill supplying the billets, structural products

⁹² DGFM, *Diagnóstico*, pp.II-14,II-16.

⁹³ Address by Prebisch in UN, ECLA, *Problems*, p.36.

⁹⁴ UN, ECLA, *A study of the iron and steel industry in Latin America*, Volume I (New York, 1954), p.54.

⁹⁵ Ministerio de Defensa, *Strategy*, p.13.

and rails should also have been closed.⁹⁶ SOMISA might then have focused its operations on lower cost goods and concentrate on rolled flats, which were produced relatively efficiently. However, within the category of rolled flats, unimportant product ranges also needed to be eliminated to achieve economies.⁹⁷ In the case of the AHZ, objectives could have been reappraised and production reoriented. Since the satisfaction of strictly military goals was uneconomic, Zapla should have satisfied regional and national market requirements. To achieve these ends, the types of steel produced at the plant had to be those maximising productivity and profitability, and the basis of competitiveness had to be both costs and quality of production.⁹⁸

CONCLUSION

As seen above, the establishment of modern, large-scale iron and steel production in Argentina had not been economically successful. Although there had been admittedly little opportunity to develop the industry before 1939, not least because of the practices of the ISC and the refusal by major steel producer-exporters to supply strategic 'lumps' of technology, the 'window of opportunity' created by the Second World War was wasted by the military-industrial empire. The DGFM was determined to 'have' a steel industry and its project was primarily guided by defence rather than economic considerations, even though it was not exclusively for defence purposes. The successful implementation of the PSA was frustrated by political and economic factors. First, to meet the required investment levels, the military aimed to involve private interests through a *sociedad mixta*. This was not feasible for two reasons: (a) private Argentine steel producers were in no position to make vast financial contributions, and (b) Congress was opposed to substantial participation by the private sector. Second, the economic study supporting the establishment of SOMISA, prepared by ARMCO Argentina, was contrived in order to make the project politically viable for the DGFM. Third, the raw materials available at the time increased costs. This resulted from: (i) the decision to use a proportion of domestic minerals, and (ii) the fact that foreign raw materials remained

⁹⁶ Ibid., pp.14,27.

⁹⁷ Ibid., pp.21,25.

⁹⁸ DGFM, *Diagnóstico*, p.III-3.

relatively expensive, despite being cheaper than national ones, as sources were limited in the aftermath of the Second World War and during the Korean War. Finally, the range of goods to be manufactured was inappropriate.

The tragedy was that the PSA might have been more successful had the DGFM given priority to economic considerations, even if the project was only implemented in the Sixties. The PSA was ill-conceived and inefficiently implemented. Many subsequent problems relating to costs, raw materials and the market could have been avoided. The recommendations for the privatisation of both SOMISA and the AHZ are evidence that a more viable steel industry was feasible. With the two formerly military-controlled plants under private sector control since 1992 and the strategies recommended for the turn around of both enterprises now in place, there yet remains hope for success and that the costly lessons of the military experience with industry have been learnt.

CONCLUSIONS

This thesis has for the first time taken a detailed look at the early history of Argentine attempts to establish an iron and steel industry. It is an extension to the standard works on sectorial developments in industry by Adolfo Dorfman and Ricardo M. Ortiz, whose closing point is before the Second World War. The latter, as seen in the dissertation, provided the impetus for the development of iron and steel production and not the Depression of the early Thirties - unlike other import substituting industries in Argentina. However, development of the industry was far from smooth as a result of international and domestic factors, several of which were common to the period under study as a whole.

External constraints, by means of restricting sales of technology and of controlling production and distribution of iron and steel in increasingly limited overseas markets, were imposed by major iron and steel producer-exporters fearful of competition from growth of heavy industry in 'small, open' economies as the Argentine. Before 1939, opposition arose from leading Continental producer-exporters suffering excess production problems resultant from changes in the international frontiers in the West European coal and iron basin after the First World War. As their response was increasing exports to ever shrinking overseas markets, they developed the most comprehensive attempt to control worldwide production and distribution of iron and steel: the International Steel Cartel (ISC). The latter, as the existing literature has pointed out, regulated the volume of crude steel exports and controlled all steel commodity exports through subordinate international sales *comptoirs* for specific products and licensed distributors in the importing countries. In addition, cartel members acquired substantial participation in firms in importing countries that had potential to develop steel production. As most of the secondary literature on the ISC has concentrated on these arrangement in the broadest of terms, this thesis has advanced knowledge on the subject by assessing the effects of ISC practices in an individual country which happened to be one of the few remaining 'open' markets. The key findings are three. (i) The substantial shareholding of the ARBED-Terres Rouges group in TAMET, a dynamic firm that had been rapidly expanding by acquiring other metallurgical businesses, prevented this Argentine enterprise from achieving its potential to integrate operations and consider developing steelmaking capacity. (ii) Control of the market enabled the cartel to charge prices that when converted into nominal pesos were extortionate. (iii) The ISC had a negative effect on private sector

enterprise, but was unable to prevent the establishment of the Fábrica Militar de Aceros. This venture skirted restrictions on technology transfers by purchasing equipment in the USA, which was then outside the cartel and whose relationship with Argentina had not yet broken down. Moreover, as this project had little support beyond military circles, the Armed Forces did not accept the assistance which usually was a part of contracts purchasing technology overseas and demonstrated that they could erect the plant themselves. They were guided by competent and ingenious local engineers, whose skills became all important during the Second World War when private metallurgical companies were forced to develop steel production for 'in house' consumption. As seen in Chapter 6, the firms La Cantábrica and TAMET adapted second-hand equipment, and ACINDAR copied old foreign designs. The problem was that growth of iron and steel production was buffered by wartime conditions, and therefore plant would have to be updated for the industry to subsist in peacetime. Since the country lacked the capital and technology, it tried to obtain US assistance which was not readily forthcoming. Consequently, the emergent sector struggled to survive at the critical juncture of the Forties.

The United States of America gained prominence in the international iron and steel trade after September 1939, as the ISC collapsed and Western Europe did not subsequently regain its prewar position, and it also became the leading source of capital and technology. Yet American goals did not differ from cartel objectives. Although the USA had supported wartime industrial development in some Latin American republics owing to strategic considerations, it was opposed to promoting industries in commodity exporting countries that could compete with North American manufacturing and thereby refused to provide any form of financial and technical assistance. In the Argentine case, it had an additional incentive as relations between Buenos Aires and Washington had severely deteriorated owing to Argentine wartime neutrality and the American conflation of post-1943 Argentine régimes with fascism. Nevertheless, the official American government attitude towards Latin America generally and Argentina in particular did not deter US big business from trying to make inroads in the region. These moves were not always successful, as Chapters 3 and 6 have demonstrated in the case of the Argentine subsidiary of ARMCO and its involvement in a major steelworks project.

External constraints combined with domestic factors to conspire against the successful development of iron and steel production. The most critical domestic constraint was the configuration of the national economy, which did not undergo a thorough structural transformation. This occurred regardless of the fact that Argentina had a concentrated market for manufactures and attained various thresholds (ie, a minimum per capita income, shifts in production away from the primary sector towards manufacturing, and the contribution of industry to growth) which structural analysts such as Hollis Chenery defined as benchmarks differentiating primary-oriented countries from semi-industrial countries. Furthermore, these criteria had been satisfied by the Twenties and therefore industrialisation could have apparently been deepened. Instead, rural commodity production and exports remained the key economic sector. The Argentinianist literature on industrialisation, which mostly starts from the correct assumption that a reappraisal of the development model was necessary after the weaknesses of export-led growth were exposed by the First World War, fails to clearly appraise what should have occurred. As seen in Chapter 1, the debate seems to have been misdirected and thereby achieved little in real terms. All the various writings have produced is a divergence in interpretation. The key controversy arose between those who believed that the industrialisation process was weakened from the outset by the obstacles it faced during the period of export-led growth, and those who affirmed that there was no contradiction between agrarian expansion and industrial growth. Both these propositions contain elements of truth, as observed when discussing the domestic historical context in Chapter 2 and market conditions in Chapter 4. Yet the debates blatantly ignored one of the most potent factors frustrating a thorough structural transformation of the economy: institutional failure. This dissertation overcomes this shortcoming in the discussion on Argentine industrialisation, demonstrating that the notion developed by Simon Kuznets that a country had to meet minimum political requirements for sustaining economic growth is reinforced by events in Argentina. Political instability characterised the period and, as seen in Chapter 2, a succession of different political groupings in government represented specific interest groups and lacked the will or ability to reform the economic structure. Given their nature, governments in office before the Second World War had no reason to seek change. The Radicals merely strove for accommodation within the existing system, and the Concordancia was restricted by the world crisis to introducing measures that dealt effectively with the grave economic situation. When the Second World War finally forced the Concordancia to acknowledge that the economic framework was no longer functioning,

it was too late as the régime lacked legitimacy and was eventually overthrown. What was possibly the best opportunity to introduce economic change and deepen industrialisation arose at the start of the first *Peronista* presidency, which missed the chance by mismanaging economic policy and embarking on grandiose follies.

Although the governments of the day did little to promote industrialisation, there was one quarter which pressed for the development of sectors such as heavy industry. This was the Armed Forces, which acquired a powerful role as a result of political instability. Leading members of the Army, increasingly discontented over the precariousness of the traditional economic framework and the Argentine international economic position, became interested in the possibilities of economic change and industrialisation as a result of import shortages during the First World War, the restricted nature of industry existent in the Twenties and an increase in the labour supply resultant from rapid urbanisation. Technocrats from the Army Engineering Corps, convinced that they possessed the necessary technical skills to attain this goal, began to champion industrialisation and self-sufficiency as essential foundations for *seguridad nacional* and economic security. Military views were only reinforced by the economic difficulties created by the Great Depression, the deteriorating international situation during the Thirties, and the perception that the national security situation was worsening *vis-à-vis* Brazil (the leading Argentine rival in South America). The vehicle to achieve Army goals was the Dirección General de Fabricaciones Militares (DGFM), the military-industrial emnpire created in 1941. The latter was responsible for the development of a whole range of key basic and weapons industries - not least iron and steel production. Since the DGFM was in no position to finance the scheme entirely from its budget and lacked commercial and technological experience, it hoped to establish several basic sectors with the cooperation from private and even foreign interests through a form of joint venture known as *sociedades mixtas*. More importantly, the latter were perceived by the military as transitory arrangements. As the State had no obvious commercial interest, it would provide the necessary assistance to develop output capacity and then withdraw once private enterprises were in a position to be left to their own devices.

As seen in Chapter 1, existing literature has made some references to *sociedades mixtas* in relation to the DGFM integrated steelworks project which was the centrepiece of the Plan Siderúrgico Argentino

(PSA) devised by General Savio. But these references are merely pointers, and therefore this thesis makes a major contribution to the historiography by detailing fully the negotiations to establish the Sociedad Mixta Siderurgia Argentina (SOMISA) and their ultimate political failure. It demonstrates that this scheme was no illustration of deliberate State intervention in the economy, as it was to be developed as a mixed enterprise. When the DGFM held the contest for tenders to the project, three leading local metallurgical firms (La Cantábrica, TAMET and SIAM Di Tella) and the subsidiary of the major US steelmaker ARMCO presented the only detailed and successful proposal. Although the participation of the private sector and American interests was crucial to the success of the project, the thesis has shown that this was politically unacceptable. As so many authoritarian leaders, Perón initially did not control Congress despite the scale of his election victory in February 1946. During the Congressional debate on the PSA in early May 1947, the Radicals (the leading opposition party) and the 'extremist' minority within the *Peronista* block objected to the extent of private sector participation and more particularly the involvement of a US firm in SOMISA on two accounts. (a) They regarded the integrated steelworks as a 'strategic' industry and opposed the entitlement given in the Plan for private enterprise to acquire almost full control of the plant in the long-term. (b) Their nationalist tendencies influenced their opinions on ARMCO Argentina, not least because Argentine-American relations were volatile. The assumption that private firms participating in the project could take control of the steelworks were groundless, as these companies were in no real financial position to make large-scale investments - let alone increase their shareholdings in the mixed enterprise. Nevertheless, the PSA came under heavy fire. The most serious challenge to its approval was that by Cipriano Reyes, whose spectacular outburst against ARMCO during the Congressional debate became notorious. In order to salvage its project, the DGFM was forced to accept the decision by Congress to seriously restrict private and foreign involvement in SOMISA.

This dissertation also reveals the extent to which the Plan Siderúrgico also failed economically, a crucial fact that the existing historiography has largely ignored. The project cannot be defined as a plan or realistically be regarded as a sound proposal for an efficient iron and steel industry. On the surface the PSA appeared economically sound. It proposed creating a competitive, modern industry and comprised a number of facilities (the DGFM-owned Altos Hornos Zapla and private sector manufacturers). However, it had two

severe drawbacks. First, the PSA was merely a vehicle to achieve DGFM objectives and laid emphasis entirely on the integrated SOMISA steelworks project, a single plant whose design was tailored to military needs. And second, it lacked the political vision necessary in the formulation of a genuine national steel plan. The consequences were that the economic failure of the Plan was more severe than the political one, owing to three factors. (i) The military erroneously assumed that the creation of an iron and steel industry would automatically result in the development of other sectors requiring its products. (ii) Given the nature of the domestic market, the production of every conceivable iron and steel good required by the national economy in the name of self-sufficiency made little economic sense. (iii) The DGFM project required the use of a considerable volume of inadequate domestic raw materials discovered during the Second World War as part of the self-sufficiency drive.

Notwithstanding that the Argentine economy was the most advanced in Latin America, the thesis has shown that existing industry was limited. Its initial expansion stemmed from growth in domestic demand, as rises in per capita income led to a fall in the share of food consumption and an expansion as well as change in the composition of non-food demand. Since initially there was no market for intermediate goods, the need for iron and steel products arose mostly from sectors that required goods for final demand and could not sustain an efficient national iron and steel industry. The transportation sector, which had been the largest source of demand for iron and steel before 1914, declined as a consumer. This resulted from the altered economic circumstances after the First World War and financial difficulties of the railway companies, particularly the British-owned ones which controlled most of the network until 1948. In the absence of major steel-transforming industries, construction accounted for virtually $\frac{1}{2}$ of consumption. Although it remained the principal user and a variety of building items had increasingly been manufactured locally and replaced imports in the Thirties, construction requirements for iron and steel changed over time. The metal content in construction gradually decreased owing to the substitution of cement for steel and a shift to low-cost housing projects. Local manufacturing of metallurgical products (other than building materials) could not provide the foundation for heavy industry either, as finished goods were produced in relatively small volumes.

The military justified the establishment of an integrated steelworks as the essential pre-requisite for industrial growth, under the false assumption that merely implanting a steel mill would automatically lead to deeper industrialisation. Although this notion is similar to the concept of a 'lead sector' bringing in new production functions and backward, lateral and forward linkages which was later developed by Rostow, the reality was far more complex. The PSA was tailored to military needs and failed to satisfy market needs. The few existing private sector iron and steel manufacturers specialised in a small number of items. The Altos Hornos Zapla, the only domestic source of pig iron, was specifically designed to meet DGFM needs. The SOMISA steelworks aimed to produce all the iron and steel items that could possibly be required by the national economy in the name of self-sufficiency. However, as industrial development was limited, this entailed the production of a wide range of goods in relatively small volumes. This did not justify the use of large-scale equipment, which was thereby uneconomic.

This dissertation has argued that there were two alternatives to the establishment of an uneconomic iron and steel industry. One would have been extending planning to the development of other associated sectors. As seen in Chapter 4, this was done by the South Koreans in their heavy industry project, for two reasons: (1) they were aware that the development of light industries was insufficient to sustain long-term growth, and (2) the level of investments required in a steelworks tended to impose a minimum capacity. The second alternative for the military project, which was discussed in Chapter 7, would have been to specialise in those products that could be produced efficiently. This was the option recommended in the privatisation proposals for SOMISA and the Altos Hornos Zapla in the Nineties, and was critical for the viability of both those DGFM facilities. In the case of SOMISA, operations would have to be downscaled, restricting output to rolled flats, and certain unprofitable production lines eliminated (ie, billets, structural products and rails). These lines had to be abandoned as production resulted in cash losses and high cash operating costs which ensued from the inefficient use of finishing mills and the high cost of ingots employed in the manufacture of these products. In the case of Zapla, objectives would have to be reappraised and production reoriented. Rather than strictly satisfy uneconomic military goals, the plant should have met regional and national market requirements. To achieve these ends, the types of steel produced at Zapla had to be those maximising productivity and profitability, and the basis of competitiveness had to be both costs

and quality of production. That these recommendations made sense is evident in the fact that they were adopted when both military-controlled iron and steel plants were privatised in 1992, and resulted in SOMISA becoming a profitable enterprise over half a century after its original inception.

The military drive towards self-sufficiency in iron and steel was not only entailed in the range of production, but also in the utilisation of domestic raw materials. It has always been known that Argentina was not favourably endowed with iron ore and coal, but the actual extent of the problem has not been discussed in detail previously. This thesis has shown that the sources made available during the Second World War (Zapla iron and Río Turbio coal) were inadequate. Location of the deposits was remote. Zapla was situated in the northwestern corner of Argentina and Río Turbio in the extreme southwest of Patagonia. Zapla ores became part of a resource-oriented processing operation undertaken at nearby Palpalá, which was facilitated by local factors -ie, the supply of labour and other services in the neighbouring city of Jujuy, the existence of railway links with the main market in Buenos Aires, and the availability of charcoal as fuel. A second iron ore deposit was pinpointed at Sierra Grande near the Patagonian coast at the end of the Second World War, but the lack of infrastructure and services in the area prevented their exploitation even though the quality and volume of its reserves was somewhat better than those already obtainable at Zapla. As regards Río Turbio, exploitation pressed ahead as this was the largest domestic source of coal - even though (as in Sierra Grande and elsewhere in Patagonia) there were important deficiencies in terms of infrastructure and other essentials. Problems were aggravated by the fact that the quality of both ores and coal was poor. The iron content in the ores was well below internationally accepted standards, and the coal was unsuitable for use in steelmaking. Moreover, the level of reserves was insufficient. Argentine iron ore and coal deposits were substantial by national standards, but very modest when compared to those available in major producing countries. Given all these inadequacies, both the resource-oriented Altos Hornos Zapla plant at Palpalá (despite any locational advantages created by the proximity of sources of minerals and labour) and Río Turbio were costly operations. Costs at the Altos Hornos Zapla were also affected by the use of charcoal as fuel, as large tracts of woodland had to be felled and charcoal was produced inefficiently by suppliers scattered over northern Argentina. Although SOMISA was originally intended to be based on local inputs, their quality and costs resulted in a modified project largely based on foreign raw materials.

This was not necessarily unfeasible, at least on paper, but the dissertation has demonstrated that there were two problems. (a) Because of the timing of the project, sources of imported inputs remained limited and thereby foreign resources, although cheaper than national ones, were still expensive and would not achieve the full economies expected from their utilisation. The severely restricted availability of imported raw materials was especially critical in the case of coal. The country was coal-fired and depended entirely on the United Kingdom for its supplies, at a particular juncture when the British could not provide the necessary volumes and when the value of the Anglo-Argentine 'special relationship' had withered away. Had the integrated steelworks been completed on schedule by the early Fifties, they would have not obtained the coal they required. (b) The integrated steelworks had to employ a proportion of domestic inputs that enabled uneconomic mines to remain under exploitation. Given military requirements, this share would be increased in times of emergency and import shortages in order to continue steel production. DGFN concerns with production in times of war resulted in the decision to both maintain large stocks of raw materials at the steelworks and gradually build up a 'strategic' reserve of essential inputs. This was purely based on *seguridad nacional* needs and economically unjustified given the cost of holding enormous stockpiles of minerals.

As a result of the many flaws in the PSA, costs of production and delivery prices turned out to be higher than anticipated. In the case of the Altos Hornos Zapla, this was the result of major competitive disadvantages arising from the poor quality of the raw materials and distance to the market. Calculations of costs of production and delivery prices of Zapla pig iron did not specify the quantitative detail for their basis, and were so far above original estimates that high tariffs had to be imposed on imported pig iron to maintain a semblance of competitiveness. In the case of the integrated steelworks project, the financial and technical studies again lacked specific quantitative details in their calculation. For reasons which can only be the subject of conjecture, the estimates appeared to be of a somewhat contrived nature - particularly in the case of the proposed expenses, costs of production and sales of SOMISA, which omitted crucial details. There were also two additional problems. (i) The calculations supporting the PSA were based on costs and prices prevailing in 1944, and these had changed considerably in the early postwar period. This led to a revision of estimated costs of specific products in the early Fifties, but whether these were accurate is

doubtful since their basis was not justified. (ii) The upriver location of the plant also had a negative impact. By the time the SOMISA steelworks became operational, there were technological changes in ore-carrying ships that could not have been foreseen. The Paraná river was not deep enough to take the increasingly large ore-carriers. Thereby, as smaller vessels than those more commonly in use carried imported raw materials to the plant, transportation costs increased.

Guided by military rather than business considerations, both DGFM projects were an economic failure. The development of the SOMISA proposal beyond political objections to participation other than that of the State in the mixed enterprise and also the private metallurgical firms that had undertaken steelmaking during the Second World War faced further problems. This was owed to two particular constraints of the late Forties. Foremost were the priorities of *Peronista* economic policy. Instead of deepening industrialisation, mass consumption and the development of light industries, most of which existed and matured before 1943, were overemphasised. Given the heavy bias in favour of labour, private sector steelmakers faced increased costs - particularly in terms of wages. The second constraint in the late Forties was the effect of government policy on foreign exchange reserves. By effectively squandering foreign exchange, the régime did not maintain adequate reserves to cover unforeseen problems. SOMISA was deprived of the necessary foreign exchange allocation it required for equipment purchases overseas, and private metallurgical firms could not import raw materials or the necessary capital goods to modernise plant.

With the private sector producers struggling to survive in the face of renewed overseas competition after the Second World War and the military projects being tailored to defence rather than market considerations, the late Forties would appear to have been the end of the 'window of opportunity' to develop domestic iron and steel production. Nonetheless, the thesis has shown that better management of the DGFM projects could have resulted in successful projects. Success would have been possible with the implementation of economic policies different to those adopted by Perón, or by reorienting the DGFM projects. The lesson of the Argentine experience at attempting to develop iron and steel production with adverse external and domestic factors was that the military way of establishing the industry showed how not to embark on such an undertaking.

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