Social Interactions, Election Goals and Poverty Reduction: Evidence from an Anti-Poverty Program in Sri Lanka

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I hereby declare that this thesis has not been submitted, either in the same or in a different form, to this or any other University for a degree.

Signature: 

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To my parents

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Abstract

This thesis evaluates the targeting strategy and impact on household welfare of two of the largest components of the Samurdhi welfare program in Sri Lanka – the food stamp and microfinance programs.

Combining national level household data with data on the voting patterns of the 1994 parliamentary elections, the thesis shows that households who are more likely to vote for the ruling party are also more likely to receive food stamps. This "political effect" also leads to a significant percentage of the benefits from Samurdhi being allocated to non-poor households, even though the allocations to districts are broadly pro-poor.

In terms of the microfinance program, the thesis shows that households form credit groups on their own if they reside in villages that are religiously homogeneous, and therefore more likely to be socially cohesive. Loan officers can play an important role in forming credit groups in villages that are religiously diverse and among migrant households who live in government settlements, thereby increasing program coverage in these areas.

The analysis in this thesis shows that both the individual and joint impact of the food stamp and microfinance interventions are significantly positive for the per capita food consumption of the "average" household. However, the increase in per capita total expenditure is only significant for participants of the microfinance program. The results also show that the Samurdhi microfinance program leads to a large and highly significant impact on food consumption for the poorest households, whereas the food stamp program has a positive impact on the total expenditure and not on food consumption. Both interventions have a larger and a more significant impact on the total expenditure of the poorest compared to better off households.

The policy suggestions relate to improving the pro-poor targeting of Samurdhi food stamp and micro-finance interventions in order to maximize their poverty impact.

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List of Abbreviations

DCS –	Department of Census and Statistics
DS –	Divisional Secretariat
GOSL –	Government of Sri Lanka
HIES –	Household Income and Expenditure Survey
JVP –	*Janatha Vimukthi Peramuna* (Peoples' Liberation Front)
LTTE –	Liberation Tigers of Tamil Eelam
PA –	Peoples' Alliance
PRSP –	Poverty Reduction Strategy Paper
PSM –	Propensity Score Matching
SFSP –	Samurdhi food stamp program
SLIS –	Sri Lanka Integrated Survey, 1999/2000
SLFP –	Sri Lanka Freedom Party
SMP –	Samurdhi microfinance program
UNP –	United Nationalist Party

Chapter One

Introduction

1.1 Main Objectives and Structure of the Thesis

Using national level household and election data, this thesis evaluates the targeting strategy and impact on household welfare of two of the largest components of the Samurdhi welfare program in Sri Lanka – the food stamp and microfinance programs. The thesis is structured around five chapters. This first introductory chapter sets out the main objectives of each chapter; it provides a detailed description of the Sri Lankan context and the Samurdhi program; and it discusses the data that is used to conduct the analysis, the contribution the thesis makes to the literature, and the limitations of the thesis.

Chapter two evaluates the targeting of the Samurdhi food stamp program to address the following research question: do elected officials manipulate the distribution of welfare benefits to maximize the likelihood of remaining in office? More specifically, the chapter explores the extent to which the allocation of Samurdhi food stamps were politically motivated during the first term that the Peoples' Alliance (PA) was in power. The rationale for this analysis stems from the widespread public perception that Samurdhi food stamps are allocated based on political considerations and not on the poverty status of households, which leads to substantial levels of "leakage" of scarce resources.

In addressing the above research question, the chapter uses the analytical framework developed by the literature on pork barrel politics to argue that being a core supporter of the PA is likely to increase the probability that a household receives Samurdhi food stamps. To test its hypothesis, this chapter combines the Sri Lanka Integrated Household Survey (SLIS) data on household participation in the Samurdhi food stamp program over the period 1999/2000 with the divisional level voting patterns in the 1994 national elections. Two empirical models are tested to explore whether the probability of being a supporter of the ruling Peoples' Alliance party significantly

affects (i) the probability of participating in the food stamp program, and (ii) the probability that a non-poor household participates in the food stamp program.

Chapter three assesses the determinants of credit group formation in the Samurdhi microfinance program. Participants of the microfinance program join two types of credit groups that have different cost implications for the Samurdhi microfinance program: some households form groups with friends and neighbours voluntarily ("spontaneous groups") while some households join credit groups formed by Samurdhi loan officers ("officer-formed groups"). Clearly using spontaneous credit groups to deliver credit is a cheaper targeting strategy for Samurdhi than using officer-formed credit groups. Using the theory of group lending with joint liability, chapter three explores the following hypothesis: households that live in homogeneous – and, therefore socially cohesive – villages are likely to join spontaneous groups while households that live in heterogeneous villages are likely to join credit groups if they have access to Samurdhi loan officers. The chapter uses a multinomial logit model to test its hypothesis using the SLIS data on household participation in the Samurdhi microfinance program.

Chapters two and three are linked in that they provide us with a thorough understanding of the factors that determine participation in the food stamp and microfinance programs. For those households who do participate, it is important to assess the impact participation in these programs has on welfare. Accordingly, chapter four answers the following research question: what can we infer about the impact of the Samurdhi food stamp and microfinance programs on the welfare of the participants, especially of the poorest segment of the population? There are methodological challenges in modelling the impact of a targeted anti-poverty program such as Samurdhi. The chapter uses the propensity score matching method to overcome some of these problems and assesses the impact of the Samurdhi food stamp and microfinance programs separately, as well as the joint impact of these interventions.

Chapter five starts by summing up the main findings of the thesis. It then discusses the implications of the thesis for the reform of Samurdhi that appears to be a priority

in the Government of Sri Lanka's latest anti-poverty strategy (Government of Sri Lanka, 2002). Finally, this chapter lists issues that merit further research.

1.2 The Political Context

Ceylon was a British colony from 1815 to 1948, when the island gained independence and was renamed Sri Lanka on becoming a republic in 1972. The country is a well-known outlier among developing countries given its remarkable progress in many social indicators. It was one of the first developing countries to emphasize the importance of human development, and to liberalize its economy in the late 1970s. The country at that time was projected to join the league of the so-called "Asian Tigers." In the 1960s, Sri Lanka had the same per capita income as South Korea, Malaysia and Singapore. However, 30 years later these countries have per capita income levels that are several times higher than that of Sri Lanka. One reason that is often given to explain this divergence in economic performance is the 22-year long ethnic conflict in North-eastern part of the country that has not yet been resolved (World Bank, 2000). This has taken a heavy social and economic toll on the country's economic performance. The other reason that is also cited is weak public institutions and governance. One of the consequences of such weakness in public institutions is the politicization of state-sponsored welfare programs such as the program under review in this thesis, Samurdhi.

Thus, any economic research on Sri Lanka has to be situated within the context of the political landscape of the country. This section presents a description of the political and socio-economic context of Sri Lanka to help with the interpretation of the analysis presented in the rest of the thesis.

1.2.1 The Electoral Process and Political History

Sri Lanka consists of 9 provinces divided into 25 districts, which in turn are divided into smaller *Grama Sevaka* Divisions (GS Divisions). Sri Lanka has a presidential and a parliamentary system with proportional representation. The Sri Lankan Parliament consists of 225 members out of whom 196 members are elected from the 23 electoral

districts[1] that are drawn from the 25 administrative districts. The remaining 29 are allocated among the political parties that contest the election, in proportion to the number of votes polled by each party nation-wide.

Voters face a two-stage voting system where they first indicate their choice of party on the ballot and then indicate their preference for a candidate from a list of three candidates belonging to the party chosen in the first stage. Once polling is closed, party votes are counted first, which determines the seat allocation for each of the parties competing in the electorate. The votes of each candidate representing the party chosen by the voter are then counted, and the candidate with the most votes is allocated that electorate seat for a six-year term. The president is also elected for six years by way of another general vote that occurs a year after the parliamentary election. Under the current electoral system, the president yields tremendous power. The President of the Republic is chief of state, head of government, and commander in chief of the armed forces. The president also appoints and heads a cabinet of ministers responsible to Parliament. The president's deputy is the prime minister, who leads the ruling party in Parliament. A parliamentary no-confidence vote requires the dissolution of the cabinet and the appointment of a new one by the president.

Two main parties – the United National Party (UNP) and Sri Lanka Freedom Party (SLFP) have dominated much of Sri Lankan politics since the country's independence in 1948. The UNP is viewed as a centrist party while the SLFP takes on a left-wing stance, often allying itself with the Marxist parties to form coalition governments. Political parties align themselves along ethnic lines as well. Both the UNP and SLFP represent the majority Sinhalese population. Several smaller parties represent the minority Tamil and Muslim population in the North-Eastern Province. However, the Liberation Tigers of Tamil Eelam (LTTE) otherwise more widely known as the Tamil Tigers, control much of the Northern part of the country and operate as the *de facto* government in these areas. Political violence has been characteristic of Sri Lankan modern history. The Tamil Tigers played a significant role behind the volatile political landscape composed of assassinations and resignations since the early 1980s.

[1] Out of the total of 196 seats, 160 are allocated across the electoral districts on an annual basis in proportion to the registered number of voters in each electoral district. The other 36 seats are allocated four per each of the nine provinces of Sri Lanka based on a given criteria by a Delimitation Committee. The Delimitation Committee comprises of three persons appointed by the President.

The Marxist *Janatha Vimukthi Peramuna* (JVP) or People's Liberation Front was also responsible for some of the political unrest in the late 1980s. Election violence and political assassinations are also alleged to be common practice among mainstream political parties.

In 1994, the People's Alliance (PA) party - a coalition of the SLFP and other smaller parties - unseated the UNP government, which had been in power for 17 consecutive years. The PA party gained 113 seats, thereby just managing a majority of the seats in the parliament. Three months later, Chandrika Kumaratunga, the leader of SLFP, was elected president with 62 percent of the general vote. Sives (2002) argues that the change in government came about for a number of reasons. On the one hand, the UNP had suffered a setback from the assassination of President Premadasa in May 1993 and faced subsequent intra-party splits. Mrs. Kumaratunga, on the other hand, played a strategic role by forming the PA coalition with her SLFP party as the leading force within it, and by offering the public a fresh approach to dealing with the conflict with the Tamil Tigers. There was also a general sentiment towards change among the voters that contributed to the PA victory.

The PA however, lost its parliamentary majority in the general elections of 2000 but nevertheless managed to form a minority government. Mrs. Kumaratunga was re-elected as President in the presidential elections of December 2000 with 51 percent of the vote. The PA minority government however, turned out to be unstable. General elections had to be held once again in 2001 as the PA coalition government fell apart when one of the smaller parties left the coalition. The UNP managed to recapture governmental powers by winning a majority in 2001. President Kumaratunga continued to serve out her six-year term as the President of Sri Lanka but then had a falling out with the UNP Prime Minister, Ranil Wickremesinghe. Subsequently President Kumaratunga dissolved the parliament in early 2004 and general elections were held in April 2004. President Kumaratunga's SLFP this time around formed an alliance with the JVP under the name of Freedom Alliance and managed to form a minority government. Chandrika Kumaratunga continues to be the president of Sri Lanka.

1.2.2 From Ethnic Diversity to Conflict

Sri Lanka is an ethnically heterogeneous country with a population of around nineteen million (as per the 2001 census). The largest and most consequential division in Sri Lankan society is that between the majority Sinhalese who make up about 74 percent of the population, and the minority Tamils, who account for around 18 percent of the population. The Sinhalese speak their own language, known as Sinhala, and are predominantly Buddhists; the Tamils also speak their own language and are mainly Hindus. In addition to these two main ethnic groups, there are Muslims and Malays, totalling around 7.5 percent of the population. Most Muslims speak Tamil but do not identify with the Tamils, with the result that both Sinhalese and Tamil political organizations have tried to win their support. In addition, there is about 0.5 percent of the population who are called the "Indian Tamils" or sometimes the "estate Tamils." These are Tamil immigrants from South India who do not have any claim to Sri Lankan nationality.[2] This group is mostly located in the central parts of the country, but is almost totally isolated from the rest of the society.

The Sinhalese dominate in the central, southern, and western parts of Sri Lanka, while the Sri Lankan Tamils are concentrated in the north and east, especially in the Jaffna Peninsula to the far north. Tamils however, share parts of the north and the east with the Muslims and the Sinhalese. In fact, the Muslims inhabit half of the Eastern province. A large number of people have been systematically resettled via government irrigation and settlement schemes, and village expansion schemes over the years. Under an ambitious project – the Mahaweli Development Project – a substantial area in the dry zone was irrigated for mostly paddy cultivation. These are known as irrigation settlements. Subsequent to land reforms in 1972, the Government of Sri Lanka legislated to re-distribute marginal tea, rubber and coconut estates, which it took over from private owners, as well as other undeveloped state-owned land to farmers in land settlements schemes. Similarly, village expansion schemes brought about the settlements of peasants on land near their native village through the restoration or reconstruction of water tanks. These schemes caused large-scale

[2] During the British colonial period, large numbers of Tamils from India were brought over to work on the plantations in the 19th and 20th centuries as labourers.

migration of mostly poor, landless Sinhalese people from wet zones in the south to the dry zones in the pre-dominantly Tamil North-Central and North-Eastern part of the country. According to Managaran (1987) such migration fulfilled both economic and political objectives of the Sinhalese majority as it increased Sinhalese representation in historically Tamil areas.

Sri Lanka has been in the midst of an ethnic conflict for the last 21 years. The origin of the conflict however, dates back to December 31, 1960 when a bill was passed by a Sinhalese government making Sinhala the only official language of the country. This bill was a result of a massive upsurge of Sinhalese nationalism. Representatives of the Tamil-speaking minority led mass demonstrations against the bill in early 1961. Sinhalese-Tamil relations continued to be strained until January 1966, when Tamil was made the official administrative language in the Northern and Eastern part of the country only. Although there have not been any rigorous evaluations, there is a seemingly widespread perception that public services and jobs have been systematically denied to the Tamil population since the revival of Sinhalese nationalism in the 1960s (Tambiah, 1986). Tamil grievances against both social and economic exclusion continued and eventually culminated in the civil war that broke out in 1983 between the Sinhalese-dominated government and the rebel Liberation Tigers of Tamil Eelam (LTTE).

The government hoped to resolve the insurgency through the 1987 peace accord the involved India. Indian troops were deployed in the conflict-ridden North and East, but left by March 1990 after they suffered significant casualties. Peace talks between the People's Alliance (PA) government and the Liberation Tigers of Tamil Eelam (LTTE, Tamil Tigers) were initiated after the PA came to power in October 1994 but broke down in 1995. However, a win by the United National Party (UNP) and its allies in the December 2001 election boosted the chances of peace with both sides agreeing to call a ceasefire and start peace talks. Since February 2002, the Government of Sri Lanka and the Liberation Tamil Tigers of Elam (LTTE) have held six successful rounds of peace talks, facilitated by Norwegian authorities. However, the peace process has been stalled after the UNP government lost the elections held in April 2004 to the Freedom Alliance (which is essentially a coalition between SLFP and the

JVP). There have also been reports of in-fighting within the LTTE, which still remains the *de facto* government in some areas in the North-Eastern province.

According to World Bank (2000) estimates, Sri Lanka has been experiencing around 2-3 percent lower economic growth per annum due to the ethnic conflict. The human and social costs have also been high. So far more than 64,000 lives have been lost, and an estimated 800,000 persons have been displaced. Approximately 172,000 people are living in government welfare centres in various parts of the country. According to the World Bank (op. cit.) social exclusion – driven by the ethnic conflict and by the differences in ethnicity, language and religion – has been deeply engrained in the Sri Lankan population for decades, resulting in reduced opportunities and extreme tensions among different groups. The prolonged nature of the conflict has created an ethnically divided country entrenched in ethnic stereotypes. For instance, a recent survey shows that Tamil children in the East perceived the Sinhalese as "people wearing khaki, people carrying guns," while Sinhala children surveyed in the Southern part of the country described Tamils as "tigers and enemies" (Perera, 1998).

1.3 Poverty in Sri Lanka

During the 1990s, Sri Lanka's GDP growth averaged 5.1 percent while per capita GDP growth averaged 3.9 percent. During the same period, despite a sharp increase in defence expenditure, unemployment fell from 17 percent to 8 percent, private remittances from abroad more than doubled, and expenditure on health and education remained more or less constant (as a percentage of GDP). In spite of these achievements and the enormous efforts put into poverty reduction during the 1990s (including integrated rural development projects and a range of targeted welfare programs), the incidence of poverty has not shown a marked decline. Currently between 20-25 percent of the population remains poor in Sri Lanka. According to the latest poverty assessment by the Department of Census and Statistics (DCS, 2004) based on the 2002 Household Income and Expenditure Survey (HIES), 22.7 percent of the Sri Lankan population (19.2 percent of all households) were living below the official poverty line of Rs. 1423 in 2002. This represents a fall in the incidence of poverty from 26.1 percent (21.8 percent of all households) in 1990/91. Table 1.1 shows the trends in poverty during the 1990s.

Table 1.1 Poverty Headcount Ratio and % of Poor Households

	Poverty headcount ratio			% of poor households		
	Survey period			Survey period		
	1990/91 (%)	1995/96 (%)	2002 (%)	1990/91 (%)	1995/96 (%)	2003 (%)
Sri Lanka	26.1	28.8	22.7	21.8	24.3	19.2
Urban sector	16.3	14.0	7.9	12.9	11.0	6.2
Rural sector	29.4	30.9	24.7	24.7	25.9	20.8
Estate sector	20.5	38.4	30.0	16.7	32.2	24.3

Source: Department of Census and Statistics, 2004.

Notes to Table 1.1:

a) Urban sector: areas governed by either municipal councils or urban councils.
b) Estate sector: plantation areas which are more than 20 acres of land and have more than 10 residential labourers.
c) Rural sector: Residential areas which do not belong to the urban or estate sector.

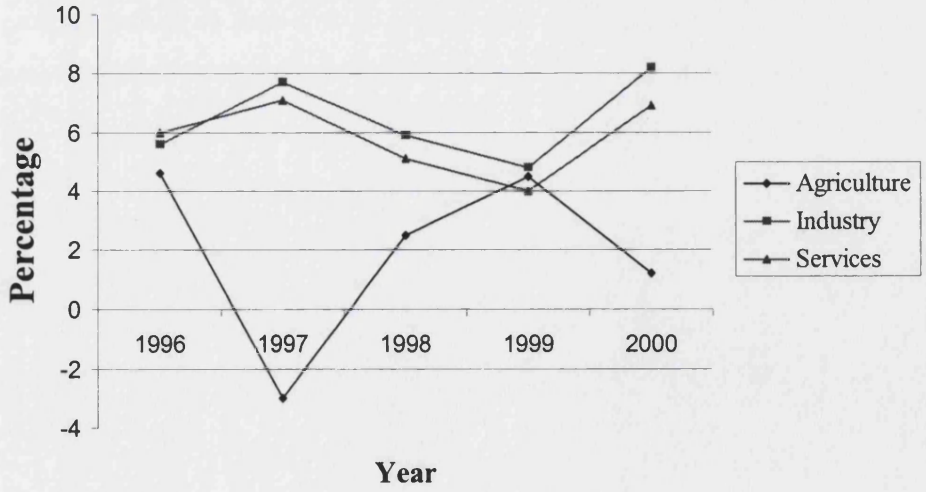
The rise in poverty between 1990 and 1995/96 can be explained partly by the escalation of the ethnic conflict during this period, which negatively affected business confidence, tourism, and foreign investment. The economy grew at only 3.8 percent in 1996. Studies have also argued that the increase in poverty found in the 1995/96 HIES survey is partly a reflection of the fact that the survey was conducted over the period of November 1995 to October 1996 during which the country suffered a severe drought (Gunawardena, 2000; Alailima, 2001; World Bank, 2002). According to Gunawardena (2000), 43 percent of principal income earners in poor households in 1995/96 were employed in agriculture and 42 percent were farmers. The impact of the drought therefore, would have been very severe on the consumption levels of this group due to the decline in agricultural income as well as in off-farm income (there was a decline in real wage rates in the paddy and coconut sectors). Consequently, conditions in 1996 may be regarded as being unusually adverse for the poor.

In 1997, the economy rebounded from the drought and grew at 6.4 percent (driven mainly by the relatively high growth in the industrial sector of 7.7 percent), and economic growth averaged 5.4 percent between 1995/6 and 1999/2000. Over this period, the gini coefficient of consumption inequality increased marginally from 0.33 to 0.35 (op. cit). Such reasonable levels of growth, coupled with relatively low income inequality, helped to bring the incidence of poverty down from the 1995/96

levels. Appendix one provides a detailed discussion of some of the other determinants of poverty during the 1990s.

Compared to other areas poverty is lower and has consistently declined in the urban sector where most of the manufacturing and services jobs are concentrated. With the opening of the economy and better infrastructure in Colombo, manufacturing and services have expanded rapidly, at over 6 percent a year on average during the latter half of the 1990s (World Bank, 2002; Charitenenko and Silva, 2002) (see Figure 1.1). Ninety percent of the poor however, live in rural and estate areas where the incidence of poverty remains high. Poverty in rural areas, where 75 percent of the population live was estimated to be around 24.7 percent in 2002, but is down from 30.9 percent in 1995/96 (see Table 1.1). Poverty is generally higher among casual labourers employed in agriculture, mining, construction and the informal sector. Those who work in paddy production are considered to be the poorest of the rural poor. The volatile performance of the agricultural sector and its slow expansion over the 1990s (2 percent per year) partly explains the smaller decline in the poverty incidence in the rural sector relative to the urban sector (see Figure 1.1).

Figure 1.1 Growth in Agriculture, Manufacturing and Services, 1996-2000



Source: Charitenenko and Silva, 2002

Poverty in the estate sector has worsened over the last decade. Estate households, who are mostly Indian Tamil plantation workers, are among the poorest people in Sri Lanka. They are often deprived of basic infrastructure and receive the lowest quantity and quality of public services. Geographic isolation, language barriers (most estate workers speak only Tamil), ethnic discrimination, and the fact that they lack citizenship cards, together prevent Indian Tamils from integrating themselves into the mainstream socially, economically and politically. It is no surprise that the incidence of poverty in the estate sector was estimated to be 30 percent in 2002, an increase of 46 percent over the 1990s.

Poverty is also regional in Sri Lanka with the highest incidence of poverty in Uva, Sabaragamuwa, North Western, and North-Central provinces (see Map 1.1). These regions are also the most deprived in terms of access to electricity, safe water and sanitation. Not surprisingly, their human development indicators are also relatively poor by Sri Lankan standards with high rates of adult literacy, premature deaths, and out of hospital births (see Table 1.2). The Western region, where the capital Colombo is located, stands out as the one with the most impressive socio-economic indicators.

Table 1.2. Income and Human Poverty by Province (% of population)

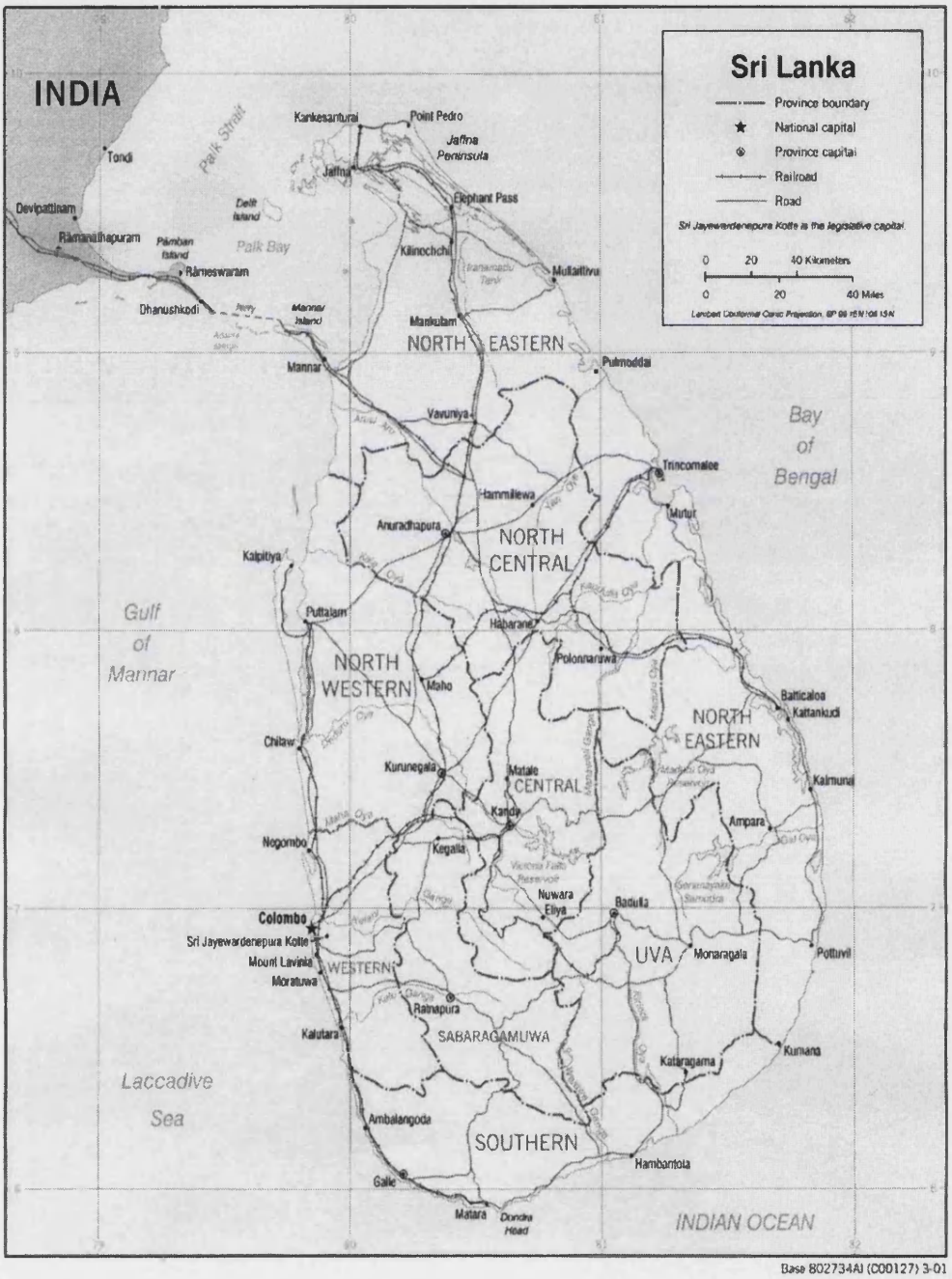
	Population, 1994 (millions)	Income Poverty Incidence	Deaths Before Age 40	Adult Illiteracy	No access to safe water	Births not in institutions	No access to electricity	No access to safe sanitation
Western	4.7	13.6	0.09	6.2	18.2	3.0	35.3	11.2
Central	3.9	27.9	0.10	15.3	26.1	21.5	65.0	24.4
Southern	2.6	26.5	0.07	11.2	35.0	8.6	59.2	20.3
N. Western	2.0	33.9	0.09	8.1	34.6	12.8	68.7	30.3
N. Central	1.3	31.2	0.15	9.6	48.0	20.0	72.2	31.7
Uva	1.0	37.0	0.10	17.1	44.6	36.1	73.5	34.1
Sabaragamuwa	1.1	31.6	0.07	11.2	32.1	16.9	74.4	22.7

Source: Gunawerdena, 2000, based on HIES 1995/96.

Although the security situation in the North-East meant that the region was omitted for all the household surveys carried out since the mid-1980s, qualitative research shows that healthcare, education and local economic conditions in this province are worse than the rest of the country (UNDP, 1998). Compared to other Sri Lankan households, households in the North-East have had to experience the impact of war through the loss of lives and assets, physical and psychological trauma, internal displacement, the breakdown of community and institutional networks, the disruption

of children's education, and deteriorating health conditions. The proportion of female-headed households in the region has increased and a large number of young widows with children remain dependent on government or on NGO assistance (Thiruchandran, 1999).

Map 1.1 Map of Sri Lanka



1.3.1 Sri Lanka's Welfare Programs: A Brief Historical Perspective

In recent times, the on-going ethnic conflict has often overshadowed Sri Lanka's achievements. Sri Lanka has long been heralded as a success story in terms of human development, especially when compared to its South Asian neighbours. For instance Table 1.3 shows Sri Lanka's impressive achievements in infant mortality, child nutrition and literacy compared to the South Asian norm. It was one of the first developing countries to recognize the multi-dimensional nature of poverty, and to emphasize policies aimed at promoting health and education as early as the 1930s. Between 1970 and 2001, Sri Lanka reduced the infant mortality rate from 48 to 16 deaths per 1,000 live births, and average life expectancy at birth climbed from 67 to 73 years. From 1980 to 1996, the maternal mortality rate dropped from 90 to 60 deaths per 100,000 live births, while fertility rates declined from 3.5 births per woman to a near replacement level of 2.1 births. Educational achievements include primary education completion rates of around 100 percent. Sri Lanka's adult and child literacy rates are on par with the more developed countries of the world. Moreover, despite the 21-year-old civil conflict, Sri Lanka's per capita income remains the highest in the region, after Maldives.

Table 1.3 Most recent Sri Lankan Socio-economic Indicators, (latest year available, 1997-2003)

	Sri Lanka	South Asia
GNI per capita (Atlas method, US$)	930	510
Real GDP growth rate (%), 1998-2002	3.4	--
Life expectancy at birth (years)	74	63
Infant mortality (per 1,000 live births)	16	68
Child malnutrition (% of children under 5)	33	48
Access to safe water (% of population)	77	84
Illiteracy (% of population age 15+)	8	41
Gross primary enrolment (% of school-age population)	110	95
- Male	111	103
- Female	110	88
Public health expenditure/GDP	1.6	0.8

Source: World Bank website: *www.worldbank.org*

Sri Lanka's achievements in human development can be attributed to visionary social policies implemented since the 1940s. These included not only massive public expenditure outlays but also sound policies such as free education, free health care, an extensive outreach capacity for the civil administration, a well defined delivery

network of schools and hospitals, and good health service practices (World Bank, 1998). Universal food subsidy programs, particularly rice subsidies, were characteristic of Sri Lankan welfare policy since the country's independence in 1948, and have been singled out as the major contributing factor for the improvement of the quality of life by Sen (1984). In the mid-1970s, public expenditure on food subsidies alone was 5 percent of GDP (World Bank, 1995).

In 1977, the right-of-centre United National Party (UNP) came to power and instituted a package of policy reforms. One of the key elements of the reform package was to drastically reduce food subsidies. In 1979, a means-tested food stamp program replaced the four-decade-old food subsidy program. The purpose of the program was to reduce the burden on the development budget as well as to increase the allocative efficiency of Sri Lanka's welfare program. The food stamp program however ended up covering approximately the same group of the population who previously received food subsidies. The only difference was that the cost to the state was lower than before due to a limited value of per capita transfers. In the face of such pervasive targeting errors in the food stamp program, the UNP government introduced a cash grant program known as the Janasaviya Program (JSP) in 1991. The purpose of this program was to replace the food stamp program in phases and instead give monthly grants of Rs. 2,500 in the form of cash and mandatory savings to be put in a fund for investment purposes by the beneficiary. The targeting of the program was based on a set of detailed, region-specific criteria which included such "observable" characteristics such as ownership of land and consumer durables, and sources of income (World Bank, 1995).

Before the JSP was fully implemented, the UNP government lost power to the People's Alliance (PA) – a coalition of political parties led by the UNP's arch rival the Sri Lanka Freedom Party – in the general elections of 1994. Upon assuming power, the PA government cancelled the Janasaviya program and re-introduced a food stamp program that used means-testing to target poor households but under a new name, The Samurdhi Poverty Alleviation Program. The program was designed to provide direct income support in the form of food coupons and to promote self-reliance and rural entrepreneurship through training, credit and savings, just as in the Janasaviya program. Unlike the Janasaviya program though, the Samurdhi program

established its own administrative structure from the village to the national level (see chart A1.1 in Appendix one).

In 2003, the government of Sri Lanka allocated an estimated 3.2 percent of GDP and 11.7 percent of total government expenditure on social welfare – distributed across the Samurdhi program and other social welfare programs such as pensions, fertilizer subsidy, payments to disabled soldiers, etc. The Samurdhi program comprises of the single largest welfare expenditure that the government of Sri Lanka incurs on an annual basis. Expenditures on Samurdhi have averaged 1.0 percent of GDP, and around 3.4 percent of total government spending between 2000-2003 (see Table 1.4). The Samurdhi budget peaked in 2001 and 2002 after which the government decided to cap the program budget by adopting certain cost-cutting measures. The following discussion provides a detailed description of the different components of the Samurdhi program, and the ways in which they are implemented.

Table 1.4. Trends in Government Welfare and Samurdhi Expenditures, 2000-2003

	2000	2001	2002 (provisional)	2003 (approximate)
Welfare as % of GDP	2.9	3.2	3.0	3.2
Welfare as % of govt. spending	10.8	11.7	11.9	12.2
Samurdhi as % of welfare	56	64	58.5	50.3
Samurdhi as % of GDP	0.85	1.00	0.97	0.75
Samurdhi as % of govt. spending	3.19	3.66	3.82	2.84

Source: Central Bank Annual Reports, 2000-2003

1.3.2 Samurdhi Poverty Alleviation Program – A Creation of the Peoples' Alliance

Although the Samurdhi Program was created by the People's Alliance when it was elected to power in 1994, the program survived three general elections that resulted in two changes in government, and continues to be a significant component of the current Sri Lankan government's anti-poverty policy. For example, over 2000-2003 Samurdhi's budget allocation has averaged around 0.9 percent of GDP, which was equivalent to half the total budget on health and one third of the education budget. The program is financed by general revenue. The Samurdhi program operates in 21

out of the 25 districts.[3] The most recent estimate shows that the program covered around 1.8 million households as of end 2002, which is around 40 percent of the total number of households in Sri Lanka[4].

The PA government created the Samurdhi Poverty Alleviation Program by an Act of Parliament. Enacted in June 1995, the "Samurdhi Authority of Sri Lanka Act" created a separate ministry for the Samurdhi Program headed by a Cabinet Minister. The law stipulates that the program seeks to "integrate youth, women and disadvantaged groups into economic and social development activities; and for promoting social stability and alleviating poverty." The Samurdhi program has three main components:

(i) The food stamp program (otherwise known as the consumption grant) which is the main component of the program.

(ii) The microfinance program which operates through the Samurdhi Bank Societies and disburses loans to Samurdhi members.

(iii) The village infrastructure program which consists of rehabilitation and development of small-scale village infrastructure through the use of labour provided by Samurdhi members.

The rationale for a three-way welfare system is to serve both a *protectional* and a *promotional* role: food stamps are expected to help reduce household short-term vulnerability, while the other two programs are expected to assist households in graduating out of poverty.

Additional features of the program include:

(iv) The social insurance scheme, which is financed by mandatory deductions from the total Samurdhi benefits package members receive (benefits include lump sum amounts given at the time of a death of a family member, birth or marriage of a child, and illness).

(v) The compulsory savings scheme which deducts 20 percent of the consumption grant and places the money in a savings account in the name

[3] As of end 2003, the program was not in full operation in Jaffna, Mannar, Killinochi and Mullaitivu districts. These districts are all located in the North-Eastern Province.

[4] At its peak, the program covered around 2.3 million households in 2001, representing over half of the households in Sri Lanka (Central Bank, 2002).

of the Samurdhi beneficiary at a Samurdhi Bank (these savings are withdrawable after four years).

(vi) The administrators program in which the Samurdhi development officers themselves are considered the beneficiaries of the program by way of being employed by the program.

(vii) The Samurdhi cooperative stores where food stamps are exchanged for goods, and which belong to the Ministry of Cooperatives and Development.

The Ministry of Samurdhi is the main custodian of the program, and it implements this multi-faceted, broad-ranging program through a complex framework of institutional collaboration and linkages, which are shown in Appendix one, chart A1.1. Three departments within the Samurdhi Ministry - the Department of Poor Relief, the Department of the Commissioner General of Samurdhi, and the Samurdhi Authority - coordinate to supervise and to implement the various components of the Samurdhi Program. The bulk of the program funds are spent on the food stamp program, which is administered by the Department of Poor Relief. Thus this department receives the bulk of the Samurdhi funds (see Table 1.5). The microfinance program consists of two main elements: (i) group savings and intra-group credit; and (ii) the Samurdhi Bank program. The Samurdhi Authority administers this component, and is also responsible for the payment of all Samurdhi staff. On average, the Samurdhi Authority receives one-fifth of the total Samurdhi budget, most of which is used to pay staff salaries. Table 1.5 shows that the second largest expense, after the allocation for consumption grants, is incurred to maintain the 25,769 strong cadre of Samurdhi Development Officers.

Table 1.5. Summary of Samurdhi Expenditures, 2000-2003

Category	2000	2001	2002 (est.)	2003 (est.)
Total Samurdhi expenditure (Rs. mil)	10,682.1	14,103.4	15,383.9	12,484.3
% share of total Samurdhi expenditure				
Dept. of Poor Relief	76.8	77.2	79.5	74.2
• Consumption grant	76.2	76.8	78.8	73.5
Samurdhi Authority	21.8	21.7	19.8	25.1
• Capital spending on Samurdhi Banks	4.7	2.5	0.35	1.3
• Salary of all Samurdhi staff	14.9	18	18.4	22.2
Dept. of Comm. Gen. of Samurdhi	1.5	1.1	0.7	0.7

Source: Ministry of Samurdhi Annual Reports

Such a large salary bill is partly explained by the administrative structure of the Samurdhi program, which maintains offices extending from the Central Government to the District and Divisional level. There are district, divisional and zonal level Samurdhi officers. Samurdhi managers, the key persons in charge of program implementation at the zonal level, are accountable to the government officials at the District and Divisional levels (see Chart A1.1 in Appendix one). These managers supervise Samurdhi development officers, known as *Niyamakas,* to implement the program at the village level. Table 1.5 also shows spending on the Samurdhi microfinance program is relatively insignificant, especially in 2002 and 2003 (the bulk of the expansion of the Samurdhi Bank program occurred in 2000 and 2001). The third component, the village infrastructure program, is administered by the Department of the Commissioner General and receives the smallest allocation of the total Samurdhi budget (on average around 2 percent).

In order to understand the implementation of the Samurdhi program, it is important to focus on the role of the development officers. One of the main goals of the Samurdhi Program, as stated in the Samurdhi Act, is to provide employment to the large numbers of educated but unemployed youth. Appointments of these officers, who are generally local residents with at least an "Ordinary Level" education (i.e. ten years of formal education), are generally made under specific recommendations of local politicians (Gunatilaka et al, 1997). Initially these development officers were hired on a temporary basis. However by end 1999, the program regularized them and doubled their salaries. Development officers generally receive a three-day training course on the general operations of the Samurdhi program, social mobilization and leadership qualities. Those involved with the microfinance program receive a more extensive training on banking. The duties of all Samurdhi officers include identifying poor households who are eligible for Samurdhi food stamps, distributing these food stamps, and mobilizing Samurdhi members to work on village level infrastructure projects. Those officers supervising the microfinance program are expected to convene savings and credit group meetings, supervise households who participate in the savings and credit groups, and encourage other food stamp recipient households to join savings and credit groups. In 2003, out of the 25,769 Samurdhi officers, 2050 were responsible for operating the Samurdhi Banks.

1.3.3 Samurdhi Food Stamp Program (SFSP)

As discussed earlier, the Department of Poor Relief within the Ministry of Samurdhi oversees the Samurdhi food stamp program. The food stamp program has been designed to act as a safety net by providing partial consumption support to eligible households. Households receive monthly coupons that can be exchanged for goods from the local co-operative store. The food items offered in exchange of the food stamps are intended to be part of a staple diet. Thus, food stamps can be used to purchase rice, lentils, flour, sugar, oil and fish. A third of the food stamps can be cashed and used to purchase other non-food items (see Table 1.6). Eligible households are those with total monthly income of below Rs. 1500 while the actual amount of the entitlement for food stamp per household depends on both the household income and its size (see Table 1.6).

Table 1.6. Samurdhi Eligibility Criteria for Receiving Food Stamps

Monthly income in rupees and household size	Monthly grant size (Rs.)	
	Amount received	Distribution of coupon
HH income < Rs. 500 & hh size >=4	1000	Rs. 400 – food stamp Rs. 375 – encashment stamp Rs. 200 – compulsory savings Rs. 25 insurance premium
HH income Rs. 500-999 & hh size >=3	500	Rs. 200 – food stamp Rs. 175 – encashment stamp Rs. 100 – compulsory savings Rs. 25 – insurance premium
HH income < 1500 & hh size =2	200	Only for food items
HH income < 1500 & hh size =1	100	Only for food items

Source: Salih, 2000.

Notes to Table 1.5:

a) The amount of benefits have been increased for the following food stamps: Rs. 500 to Rs. 600; Rs. 200 to Rs. 350; Rs. 100 to Rs. 140 in 2000. A housing lottery stamp of Rs. 10 has also been included in the total package. (Samurdhi Ministry Progress Reports, 2000-2002).

b) Deductions for savings and insurance premium are made at source. The savings are deposited in the Samurdhi Banks.

Program officials identify potential eligible households using means testing, but are also advised to use data on other characteristics of welfare such as living conditions and possessions of durable goods. Households considered eligible receive a supply of food stamps every six months but can only use up a month's quota at a time. The stamps are validated for use at multipurpose cooperative stores at the beginning of each month. Households are expected to leave the program when their monthly income exceeds Rs. 2000 for six consecutive months or at least one member in the family finds salaried employment. However, studies show that this "exit policy" has not been enforced in practice (Salih, 2000). Around 1.5 million families received Samurdhi food stamps at the start of the program, but this figure ballooned to 2.3 million families by 2001 and had gone down to 1.8 million in 2003. The value of total transfers accordingly rose from Rs. 8 billion in 1995 to a high of Rs. 12.2 billion in 2001, but came down to Rs. 9.2 billion by 2003. With the percentage of poor households in 2002 calculated at 19 percent (around 0.9 million households), the fact that the Samurdhi food stamp program covers around 1.8 million households imply significant levels of mis-targeting of the program.

1.3.4 Samurdhi Microfinance Program (SMP)

Modelled primarily after the Grameen Bank, and administered by the Samurdhi Authority, the microfinance program offers a group-based savings and credit scheme and a Samurdhi Bank program. All food stamp recipient households are eligible to join the microfinance program. The stated purpose of the program is to encourage poor households to form groups among themselves to develop a savings habit; reduce their dependence on high-interest bearing loans from informal lenders; and meet their credit needs. Thus the financial products offered by the program include a savings scheme, small loans from the group's collection of savings as well as larger loans from the Samurdhi Bank set up as part of the program. The lending modalities and products are detailed below.

Intra-group lending: Five food stamp recipients from one village are expected to organize themselves into self-selected groups. After the formation of the group, members receive training from Samurdhi loan officers on the program rules, and begin weekly meetings. From the outset each member makes small, weekly savings which are deposited at the Samurdhi Bank. While group members save regularly, they

can access small loans from the accumulated savings. These are mostly consumption and distress loans at a rate agreed upon by group members, which are generally lower than the market interest rates. Access to these loans is instantaneous and repayments are ensured via peer pressure. Intra group lending thus, is made possible by the social ties group members share with each other.

Samurdhi Bank: As the group savings and credit culture is established, group members have the option of buying shares worth Rs. 500 each and joining a Samurdhi Bank Society. Membership of a Bank Society makes group members eligible to borrow from the Samurdhi Bank.[5] Around 99 percent of the loans are made for self-employment and cultivation. The interest rate charged on these loans is 3 percent per month. Calculated on a reducing balance basis, the effective rate becomes around 17.5 percent per annum (well below the market rate).[6] The loan repayment period varies from 3 months to two years. The conditions to access a Bank loan are the following: (i) the loan amount should not exceed 10 times the share capital of the group; (ii) the loan amount should not exceed 25 percent of the group savings; (iii) group guarantee (via group members signature on the loan application) and the recommendation of the group leader and the Samurdhi officer should be provided; and (iv) the borrower should have a reasonable balance in his/her own savings account with the Samurdhi Bank. The Bank also offers deposit services should a member choose to save more than her weekly requirements. Deposits receive a return that is in line with market rates.[7]

Generally, one Samurdhi Bank is established for ten *Grama Niladari* Divisions (or the lowest administrative unit). This more or less translates to having one Samurdhi Bank for around 10 to 15 villages. The design of the Samurdhi Bank operations makes the role of the wider village members just as important a determinant of getting a Bank loan as the role of the group. The "board" of the bank is selected from the presidents of Samurdhi groups who meet every two weeks to approve loan applications and

[5] Although for all purposes Samurdhi Banks function like ordinary banks, the Central Bank of Sri Lanka does not officially regulate them. Samurdhi Banks are registered under the Cooperative Act and not the Banking Act, and therefore they are officially referred to as Samurdhi Bank Societies.
[6] The commercial bank average weighted prime market lending rate as of end 2000 was 21.46.
[7] The commercial bank average weighted prime market deposit rate as of end 2000 was 9.90.

coordinate the activities of the banks.[8] Further, since loans are granted against the shares and deposits of the Bank shareholders, peer pressure to repay loans stems from the wider village as well as from group members.

The Samurdhi Bank program was introduced in 1997 and by June 1999, following a rapid expansion, a total of 686 Samurdhi Banks was established across the country. By end 2000, the total number of Banks opened was 940, an increase of 37 percent in little over a year. Such growth is consistent with the goal of the Samurdhi Authority to set up one Bank in each zone. However, over the same period, the number of credit groups went from 207,890 to 219,130, a rise of only 5 percent (Monitoring and Evaluation Division, Samurdhi Authority of Sri Lanka, 2000). This data confirms the observation made by Gunatilaka and Salih (1999) that it does not seem to be necessary for groups to have been formed in a village for a Samurdhi Bank to be established. Rather, given its goal to ensure total national coverage, the Samurdhi Authority appeared to be more focused on establishing its physical presence throughout the country. By the end of 2003, the total number of Samurdhi Banks increased to 1,027. The Samurdhi Authority employed 2,050 field officers to oversee the administration of these Banks and to supervise the vast network of Samurdhi savings groups. In 2001, out of the 2.3 million households who were eligible to join SMP (by virtue of being Samurdhi food stamp recipients), 1.57 million, or two-thirds of them belonged to Samurdhi savings groups and were Samurdhi Bank shareholders.

The rapid expansion of the Samurdhi microfinance program has resulted in substantial deposit mobilization. By end 2000, member and non-member savings (including the compulsory savings of Samurdhi food stamp recipients) amounted to Rs. 3,011 million (US$ 33.3 million[9]). Outstanding loans as of June 2001 totalled Rs. 2,070 million (US$ 23.0 million) with 326,236 active loans (average loan amounts being Rs. 6345). The loan recovery rate was an impressive 104 percent, as members in some

[8] The *Samurdhi Maha Sangamaya* (SMS), consisting of 21 members selected from presidents of Samurdhi groups, meets once a month to supervise the investment of funds mobilized by Samurdhi Banks and approves loan applications forwarded by the Samurdhi Bank board for loans that exceed Rs. 10,000 which cannot be approved at the Samurdhi Bank level. SMS is also responsible for the auditing, investigation and progress review of Samurdhi Banks. The Managing Director and Finance Director of the Samurdhi Bank is the secretary of SMS by statute.

[9] Sri Lanka moved from a managed float exchange rate system to a freely floating exchange rate system, effective 23 January 2001. For the purposes of calculation in this thesis, a rate of $1.00 = Rs. 90.00 is used. This was the exchange rate that generally prevailed during 2001.

districts paid in advance of their repayment schedules. However, the recovery rate appears to vary substantially across districts, especially in areas that are affected by the ethnic conflict. For example, in Ampara district, the recovery rate was 50% at the end of 1999 (UNDP, 2000).

The Samurdhi Microfinance Program is an important part of the Sri Lankan credit market, especially for poorer households. Table 1.7 shows that 10 percent of the credit borrowed by the poorest quintile was from Samurdhi. The access to Government funds enjoyed by Samurdhi and the two state-owned banks, People's Bank and Bank of Ceylon, however runs the risk of crowding out the more market-oriented semi-formal institutions, mainly small NGOs and other semi-formal institutions that operate using borrowed funds from the local capital markets. For example the Arthacharya Foundation, a NGO that primarily engages in microcredit services with a client size of 3000, borrows from various private commercial banks and other sources at an average cost of approximately 14 percent. It is no surprise that NGOs like the Arthacharya Foundation remain miniscule in terms of their coverage when compared to the state banks and Samurdhi, and are forced to target both poor and non-poor households to diversify risks and to minimize costs (World Bank, 2002).

Table 1.7 Distribution of Sources of Loans Across the Population (%)

Per capita Expenditure Quintile	1 (lowest)	2	3	4	5 (highest)	Total
N	282	284	360	406	456	1788
Relatives	9.93	6.34	6.39	6.16	6.36	6.88
Friends	8.51	14.44	15.00	13.55	9.43	12.14
Landlord	0.71	0.70	0.28	0.00	0.22	0.34
Employer	2.13	0.70	3.06	4.19	0.14	3.58
Shopkeeper	6.38	3.52	3.89	1.97	1.32	3.13
Money lender	6.74	7.75	5.56	6.90	2.85	5.70
Pawn-broker	0.71	0.35	0.28	1.23	0.44	0.62
NGOs	1.77	1.76	3.89	2.46	1.75	2.35
Samurdhi Bank	10.28	9.15	6.39	5.42	1.97	6.10
SANASA	7.09	7.75	7.78	7.78	5.26	7.05
Community Bank	4.26	5.28	7.22	7.22	5.26	4.98
Commercial Bank*	26.95	26.76	25.83	25.83	38.60	30.31
Other institutions**	11.35	14.08	8.00	8.06	9.65	7.78

Source: Sri Lanka Integrated Survey, 1999-2000.

Notes to Table 1.7:

(a)*Includes both private and state-owned banks.

(b) ** Other institutions include non-bank financial institutions and development banks.

The larger semi-formal microfinance institutions, Cooperative Rural Banks (CRBs), SANASA and Sarvodaya Economic Enterprises Development Service (SEEDS), are all based on a federated three tier cooperative structure. These institutions largely rely on member savings and donor grants for their operations. None of these institutions exclusively lend to the poor. For instance, Table 1.7 shows that SANASA is more of an institution for the "middle class", an assessment also endorsed by officials interviewed for this thesis.[10] All of these semi-formal institutions mobilize substantial amounts of savings from their members. For example, the cooperative rural banks showed the highest deposit to credit ratio of 20.7, followed by SEEDS at 4.6 (see Table 1.8). Samurdhi banks are also fairly liquid with a deposit to credit ratio of 1.2. However, as at end 2002, around 69 percent of these deposits constituted the "compulsory savings" that are held back from Samurdhi food stamp recipients (Central Bank, 2003), and thus Samurdhi Banks' deposit figures do not reflect the deposit mobilization capacity of the Banks *per se*.

Table 1.8. Deposits and Advances as at end 1999 – Selected Semi-formal Financial Institutions

	Deposits (Rs. Mn)	Loans outstanding (Rs. Mn)	Deposit to credit ratio
Co-operative Rural Banks	12915	623	20.7
SEEDS*	573	124	4.62
Thrift and Credit Cooperative Societies (SASANA)	4238	2033	2.08
Samurdhi Banking Societies**	1957	1685	1.16
Total	43831	4465	9.82

Source: Annual Reports of respective institutions. * As at end Sept. 2000. ** As at end Jun. 2000

1.3.5 Village Infrastructure Program

The third component of the Samurdhi Program aims to develop the stock of rural infrastructure and basic amenities. The Department of the Commissioner General of Samurdhi allocates 80 percent of the funds for small-scale projects (such as building gravel roads, ditches, schools). The remaining 20 percent are provided in the form of labour from the local Samurdhi food stamp recipients. According to World Bank (2002), the amount of labour required for these Samurdhi village projects depends on the amount of the food stamp grants. For example, a household receiving Rs. 500 in food stamps is required to put in 4-5 man days of labour for village development

[10] Interviews were conducted with Mr. P. E. Dias, Senior Manager-Microfinance, SANASA Development Bank, and Mr. L. B. Dasanayake, General Manager, SANASA Federation

projects. The program relies on the Samurdhi development officers who work for the food stamp program to identify these projects and mobilize labour from village members.

Larger scale projects are fully financed by the Samurdhi Commissioner department. These projects are implemented as part of an employment program for lean seasons offering wage labour to Samurdhi beneficiaries. The Samurdhi wage rate however, is lower than the prevailing market rate, and thus is expected to help target the poor. Projects implemented under this program include repairing irrigation canals, dams, public wells, small-scale water supplies, roadways and bridges. This thesis does not conduct an evaluation of this component of Samurdhi as we do not have detailed data on household participation in this program.

1.4 The Sri Lanka Integrated Survey 1999/2000 and 1994 Election Results

The data used in this thesis are from a nationally representative household survey – Sri Lanka Integrated Survey 1999/2000 (SLIS) – that was undertaken by the External Resources Division (ERD) in the Ministry of Finance and Planning of the Government of Sri Lanka with technical and financial assistance from the World Bank. The questionnaire is based on the Living Standard Measurement Surveys (LSMS) model that has been the basis for many household surveys worldwide.

A multistage stratified random sample design was used for conducting the SLIS between October 1999 and July 2000. First the master sample frame prepared for the Demographic and Health Survey of 1994 by the Department of Census and Statistics was updated. Out of 4000 Primary Sampling Units (PSUs), 375 PSUs were then randomly drawn for this survey. From each sampled PSU, 20 households were randomly drawn to obtain a sample of 7,500 households from all regions of Sri Lanka, including the war-torn North-eastern province. However, the analysis in this thesis does not include this region because data collection was disrupted by the prevailing conflict conditions, and we expect sampling problems associated with the data on the North-East. This is not a specific weakness of SLIS since no other survey in Sri Lanka

has been able to collect data on this region.[11] Given that there is no other quantitative study that has been done on the North-east over the last ten years that can serve as a sound basis for comparison, there is no way of determining the quality of the data. Moreover, another reason for not including the North-east in this thesis is the lack of Samurdhi presence in much of the province during the period over which the survey was conducted.[12] Taking into account the sample weights, the North-east sample amounted to about 12 percent of the total sample, which is consistent with this region's estimated share in the country's population. Using the sampling weights the residual sample by design is representative for the entire country excluding the North-East. After excluding the North-eastern province, a total of 5530 households remain in the total sample, out of which 2215 households received Samurdhi food stamps and 1248 food stamp recipients joined the Samurdhi microfinance program.

As in LSMS, SLIS includes modules on consumption, income, employment, health, nutrition, fertility, education, and living conditions. It also includes information on benefits received from existing welfare programs, including Samurdhi, and a detailed community module. The household questionnaire is divided into eleven sections. Section 1 provides basic household data including information on household migration/displacement and ethnic origin (household roster). Section 2 provides monthly data on household employment and income. Sections 3, 4 and 5 contain data on housing, education and health status of households respectively. Detailed expenditure data are available for the construction of household consumption variables in section 6. Data on household participation in Samurdhi food stamp and in Samurdhi credit groups can be found in section 7. Monthly data on farm income are provided in section 8. Section 9 contains information on additional sources of household income. Household borrowing and savings information are provided in section 10 while section 11 includes anthropometric data.

The total sample of households was drawn from 500 villages in 25 districts in 9 provinces. The community module covers all of these 500 villages. The community

[11] Other analysis based on SLIS, such as the World Bank Poverty Assessment of Sri Lanka-2000, also omitted this region.

[12] As of end 2000, the Samurdhi program was not functional in 4 out of the 8 districts of the Northeast Province. These districts include Jaffna, Mannar, Killinochi and Mullaitivu.

questionnaire is divided into 7 sections. The first section collects data on the village size, ethnic and religious composition, and the social infrastructure. Information on the quality of access to education facilities, health services and sanitary waste disposal services is included in section 2. Data on land quality can be found in section 3. Section 4 provides data on past migration to and out of the village. The level and type of village's participation in various programs, including Samurdhi can be found in sections 5 and 7. Section 6 tries to capture the changes to the village over time. A price questionnaire covers 42 basic household food and non-food items.

To estimate the effects of political competition on participation in the food stamp program in chapter two, the thesis also uses the results of the general elections held in October 1994. The author gathered voting data at the divisional level by each party for the 1994 elections from the Department of Elections, the Elections Secretariat. Sri Lanka is divided into 23 electoral districts, which are in turn divided into 160 polling divisions. After excluding the North-east, we end up with voting data from 17 electoral districts comprising 136 polling divisions. The voting data was merged with SLIS by matching the polling stations with the GS (*Grama Sevaka*) Divisions in each polling division.[13] The SLIS survey contained 220 randomly selected GS Divisions, and therefore offers a reasonable level of within district variation in the voting patterns. For example, the percentage of votes received by the PA across polling divisions in the Colombo district ranged from 33.4 percent to 59.2 percent.

In addition to the election data, the author gathered most of the background materials on the Samurdhi program and on Sri Lanka during fieldwork conducted in November-December 2000. Focused group discussions were carried out with five Samurdhi credit groups in the Kalpitiya division of the Puttalam district located in the North-western Province. The author also met with the relevant officials of the Samurdhi food stamp and microfinance programs.

[13] Polling stations (located within a polling division) generally encompass one complete GS (*Grama Sevaka*) Division (located within a Divisional Secretariat). There are approximately 9,946 polling stations, of which around ten are located across two Divisional Secretariat boundaries. In these 10 cases, the GS Divisions in a Polling Division have been in two Divisional Secretariats. Since there is such a small number of cross boundary situations its effect on our data is negligible.

1.5 Contribution of the Thesis

A detailed literature review is presented within each of the three core empirical chapters. This section presents a short overview of the main arguments found in the literature in an effort to clarify how this thesis contributes to the existing knowledge on targeting mechanisms and impact issues relating to Samurdhi food stamp and microfinance programs, and to a lesser degree, relating to food stamp and microfinance interventions in general.

The literature on political competition argues that politicians are inclined to allocate welfare funds to promote political patronage and not on the basis of need or entitlement (Cox and McCubbins, 1986; Lindbeck and Weibull, 1987; Dixit and Londregan, 1996). Electoral areas that are likely to vote for the party in power are also likely to get higher state transfers during this party's term in office. The few empirical studies in this area however, have looked at how the allocation of funds has been affected by political competition at the province or district level (Schady, 1999; Case, 2000). An issue that remains unexplored, but nevertheless important is how politically motivated allocations of welfare funds affect the targeting outcomes of anti-poverty programs at the household level.

Another strand of work deals with targeting outcomes of means-tested welfare programs but point to very different reasons for targeting errors. Besley and Kanbur (1990) and Besley (1997) argue that some target households will not participate while some non-target households will be included due to identification problems resulting from the inability of program staff to verify household income. Most of the studies on targeting are generally concerned about the need to minimize targeting errors and to find the best targeting instruments to identify the poor. By showing that political competition may also determine targeting errors at the household level, this thesis suggests that in practice household political affiliation can be another explanation for targeting errors. This thesis therefore attempts to fill a void in the literature by assessing whether the main party in power in Sri Lanka allocated Samurdhi food stamps among certain groups of voters in order to maximize its chances of winning national elections.

Microfinance programs worldwide have also been grappling with targeting issues. The literature on participation in microfinance programs has focused on the use of appropriate targeting methods to increase program outreach among poorer borrowers (Wood and Sharif, 1998). The literature points to trade-offs between reaching the poorest of the poor and program sustainability. Thus identifying cost-effective targeting strategies is crucial to the expansion of microfinance programs such as Samurdhi. This thesis is able to contribute to the debate by identifying the factors that lead to "spontaneous credit group" formation in the Samurdhi microfinance program (which is less costly) and those that require loan officers to form credit groups (which is more costly). Specifically, this analysis provides pointers on which areas or types of households require intensive staff involvement to establish microfinance programs in Sri Lanka. Thus, in addition to identifying the determinants of credit group formation, the findings of the chapter offer insights on the conditions for using an "interventionist" strategy to expand outreach.

While the literature on group lending contracts has a rich set of theoretical results that explain group formation (Stiglitz, 1990; Varian, 1990; Besley and Coate, 1995; Ghatak, 1999) very little empirical work has been done on the topic. One of the main reasons has to do with the lack of appropriate data. It is the nascent literature on social capital that has looked at the determinants of participation in groups, including credit groups (Alesina and La Ferrara, 2000; La Ferrara, 2002). This thesis analyses how social cohesion - proxied by religious diversity at the village level - affect credit group formation. Such analysis contributes to this growing literature on social capital and fills a gap in the literature on microfinance programs.

There are relatively few impact assessments of food stamp and microfinance programs in the literature. One of the main reasons for this is the lack of appropriate data to conduct sound impact evaluation exercises. The few studies on the impact of food stamps on welfare show that on average households tend to benefit from these programs though the extent of the positive impact varies considerably with factors such as administrative efficiency (Bishop et al, 1995; Ezemeneri and Subbarao, 1998; Castaneda, 2000; Breunig et al, 2001). The literature on the impact of microfinance programs on the other hand is less clear-cut. Khandker (1998) finds significantly greater per capita consumption for households who used microfinance services

compared to a control group, while Morduch (1998) finds no significant impact using the same data. Coleman (2002) finds wealthier members are more likely to benefit from participation in microfinance programs, a result also supported by Zaman (1999). In a more recent study using panel data, Khandker (2003) suggests microcredit has significantly contributed to reducing poverty. In contrast to other authors, Khandker finds a greater impact on poverty for households who started off extremely poor compared to moderately poor households. These studies show that the methodological problems associated with impact assessment are complex. By generating mixed evidence, they also show that the results are sensitive to the different methodological assumptions made. To contribute to the literature this thesis uses the propensity score matching methodology to assess the impact of participation in the Samurdhi food stamp and microfinance programs – a methodology that has not been previously used by either the literature on food stamps or on microfinance.

Finally, it is important to note that only a handful of evaluations of the Samurdhi program exist (Gunatilaka et al, 1997; Salih, 2000). The studies that are available however, are not rigorous in their empirical analysis. The Government of Sri Lanka has recently embarked upon reforming Samurdhi with a view to improve its targeting performance and to expand the outreach of microfinance in the economy (Government of Sri Lanka, 2002). Given the large scale of Samurdhi operations, it is important that any reform agenda is substantiated by sound empirical analysis, such as those presented in this thesis.

1.6 Limitations of the Thesis

It is important to clearly state the areas that the thesis will not cover or will not be able to comment on. First, as mentioned earlier, the analysis in the thesis does not include the North-eastern Province of Sri Lanka. This ethnic conflict has engulfed Sri Lanka for more than twenty years and is yet to be resolved. It is therefore likely that there are spillover effects of the conflict in the areas bordering the North-eastern Province but the thesis cannot disentangle this effect in the overall results. As discussed earlier, the problem of excluding the North-east is not unique to this thesis. Other quantitative studies on Sri Lanka have also consistently excluded the North-east.

Second, this piece of work is not intended to be a theoretical exercise in economic modelling. The purpose is to make a contribution to the existing empirical knowledge on the targeting and the impact of food stamp and microfinance programs.

Finally, the national household survey used by the thesis is not customized to meet the exact data requirements for the afore-mentioned research questions. As a result chapters two and three try to proxy for the key variables – household political affiliation and social interactions – as best as possible. Ideally we would want data on voting patterns at the household level to study the effects of political competition on targeting outcomes of the food stamp program in chapter two. Instead we have divisional level voting outcomes. Similarly, for chapter three we would have ideally required a set of questions detailing the level of household participation in social activities, the frequency of household visits to its neighbours, and so forth to put together an index of social interactions. Finally, the ideal scenario for impact assessment is to have panel data, which allows for 'before-after' comparisons. The data used in chapter four to infer the impact of Samurdhi is cross-sectional.

Appendix One

A1.1. Determinants of Poverty in Sri Lanka

There are five broad factors that are important in influencing poverty patterns in Sri Lanka. These are: (i) macro-economic and structural constraints, (ii) slow growth in agriculture, (iii) armed conflict, (iv) geographical, economic and social isolation, (v) limited access to high quality education, (vi) limited access to basic social services, and (vii) lack of clear land tenure.

(i) Macro-economic and Structural Constraints

GDP growth averaged 5.1 percent while per capita GDP growth averaged 3.9 percent during the 1990s. During the same period unemployment fell from 17 percent to 8 percent, private remittances from abroad more than doubled, and expenditure on health and education remained more or less constant (as a percentage of GDP), despite a sharp increase in defence expenditure. In spite of these achievements and the enormous efforts put into poverty reduction during the 1990s (including integrated rural development projects and a range of targeted welfare programs), poverty incidence did not show a marked decline (poverty incidence fell from around 26.1 percent in 1990 to around 22.7 percent in 2002) . It is clear, therefore, that neither the GDP growth rate nor its distributive effects were sufficient to bring about a significant reduction in the poverty level.

Macro-economic and structural policy issues are partially responsible for constraining growth. The main constraints include: a) limits to pro-poor expenditure due to the escalation of defence expenditures[14]; b) high fiscal deficits maintained at prohibitively high levels (8-11 percent before grants in recent years), which have exerted upward pressure on interest rates and inflation and choked off private investment; c) inconsistent trade and tariff policies (especially with regard to agricultural raw materials); d) use of ad-hoc tax incentives and multiple tax instruments, which has driven the revenue to GDP ratio down from 20 percent in the 1980s to around 17

[14] The Government's military expenditures increased from 1.3 percent of GDP in 1982, before the outbreak of the war, to about 5 percent of GDP in 2000 (Central Bank, 2001).

percent in the late-1990s; and e) a heavy burden of legal provisions, administrative controls and regulations that are distorting land, labour, product and financial markets.

(ii) Slow Growth in Agriculture

Agriculture accounts for roughly 40 percent of the work force and 18 percent of GDP. Low labour productivity in agriculture is a major contributor to persistent rural poverty. Crop yields have either stagnated or declined during the 1990s. Official statistics show that between 1990 and 1999, the agricultural sector grew on an annual average rate of about 2 percent (World Bank, 2002). The poverty situation in rural areas would have been further aggravated if not for income transfers to the rural areas, including: (i) transfer of remittances from Middle East migrants, (ii) income transfers from armed forces engaged in the North and East of Sri Lanka, and (iii) income transfers from rural young females employed in the garment factories located mainly in the Western Province.

The single most important impediment to agricultural prosperity is an overly restrictive policy regime. State ownership of some 80 percent of the lands, restrictions on technology imports and land use, pervasive input and credit subsidies and frequent changes in agricultural trade policies together result in the inefficient use of resources and restrict access to improved technologies.

(iii) Armed Conflict

The Northeast conflict has resulted in at least 60,000 deaths and many more people have been killed, injured, incapacitated, or internally displaced. The human and economic costs of the war are felt most directly by populations in the North and East. According to Government estimates, the size of the overall economy of the Northern Province shrank from US$ 350 to US$ 250 million between 1990 and 1995, corresponding to a negative annual average GDP growth of 6.2 percent per annum. The Institute of Policy Studies (1999) has estimated the economic cost of the conflict (for the period 1984-1996) at nearly 170 percent of total GDP for 1996. The Central Bank has stated that the conflict is likely to have reduced Sri Lanka's GDP growth by about 2-3 percent per year (Central Bank, 1999).

The indirect costs of the war are at least as high. These costs represent the income lost as a result of foregone domestic investment, reduced tourism, the decline in foreign direct investment, and the human capital loss associated with death, injury and displacement. Security considerations have also limited Sri Lanka's ability to develop as a regional service sector hub. The conflict has prompted the out-migration of large numbers of skilled and semi-skilled persons, depriving the country of trained professionals, entrepreneurs, and highly skilled civil servants.

(iv) Geographic, Economic and Social Isolation

Geographic isolation and a lack of economic integration are reflected in the sharp regional variation in poverty levels. The Western Province and the greater Colombo municipal region exhibit much lower levels of income and human poverty than does Uva, Sabaragamuwa, North-western and North-central Provinces. In districts such as Moneragala, Matale, Kurunegala, Anuradhapura and Ratnapura, the poverty incidence is close to four times that reported in Colombo. Even in areas in which heavy investment has been made to enhance agricultural productivity (e.g. Mahaweli), the links between production centres and the major urban and international markets are very weak. Considerable investment has been made in transport over the past four decades, but the vast majority of this has been concentrated on small, rural access roads rather than roadways that provide efficient links to major urban markets.

People living in remote areas are subject to economic isolation due to the lack of access to markets, information and basic infrastructure facilities, such as good roads, rail and port systems, and well-functioning bus networks, telecommunications and information technology. Isolation adds to vulnerability, since remote communities are both more susceptible to and likely to be impoverished by shocks, such as drought, floods, and famine. Given limited integration into the more dynamic national and international markets, semi-subsistence agriculture is the livelihood of the majority of these people. Due to their geographic and economic isolation, many poor communities are relatively untouched by the general rise in living standards.

Economic isolation contributes to social marginalization. The socially excluded groups include: (a) the victims of the armed conflict, who are undergoing extreme deprivation and degradation; (b) the urban ultra-poor, the majority of whom live in

slums and shanties and are driven by extreme poverty into crime and prostitution; (c) poor rural families settled under village expansion schemes, many of which are located in areas that do not have water, electricity, access roads, schools, shops, and health clinics; (d) social outcasts, who invariably come from a low-caste background and are drawn into the underworld by virtue of being deprived of their rights; (e) squatter settlers and poor fishing communities living in isolated areas, who are poorly integrated into society and have limited access to basic social amenities; and (f) estate workers of Indian Tamil origin, who are viewed as "aliens" and housed in "lines" that are cramped, over-crowded, dimly lit and poorly ventilated.

(v) Limited Access to High Quality Education

Every village in the country has at least one primary school and net enrolment rates in Sri Lanka are the highest in the region. The government makes a special effort to attract poor children to schools by offering subsidized public transport and free school textbooks and uniforms (each child is entitled to one set of uniforms a year). The basic education enjoyed by the poor is likely to have resulted in several social benefits, including low fertility, low population growth, low infant, child and maternal mortality, and high literacy. The long-term impact of investment in education on poverty reduction depends on its effectiveness on enhancing human capital formation and labour productivity. Here however, the low quality of education has offset the efficiency impact of educational investment. Rates of return at the primary-end of education are low. At the secondary and higher level, only 25 percent of students pass the secondary school learning exam. The low quality of education affects all the Provinces, especially the Northern, North-central and Central Provinces, and impairs the potential benefits of education.

(vi) Limited Access to Basic Social Services

Inadequate drinking water, sewage and sanitation infrastructure in the urban and peri-urban areas is one of the leading causes of public health problems in poor communities. Piped water service is available to only 29 percent of the population and large-scale sewerage services are available only in the Colombo municipality. Solid waste disposal facilities are unable to cope with the rapid increase in municipal waste, and local authorities have neither the finance nor technology to manage this burden efficiently. Indeed, poor households in depressed areas consider the lack of potable

and irrigation water, and the long (and sometimes expensive) journeys made (mainly, by women) to fulfil their water needs, as a major factor contributing to their poverty.

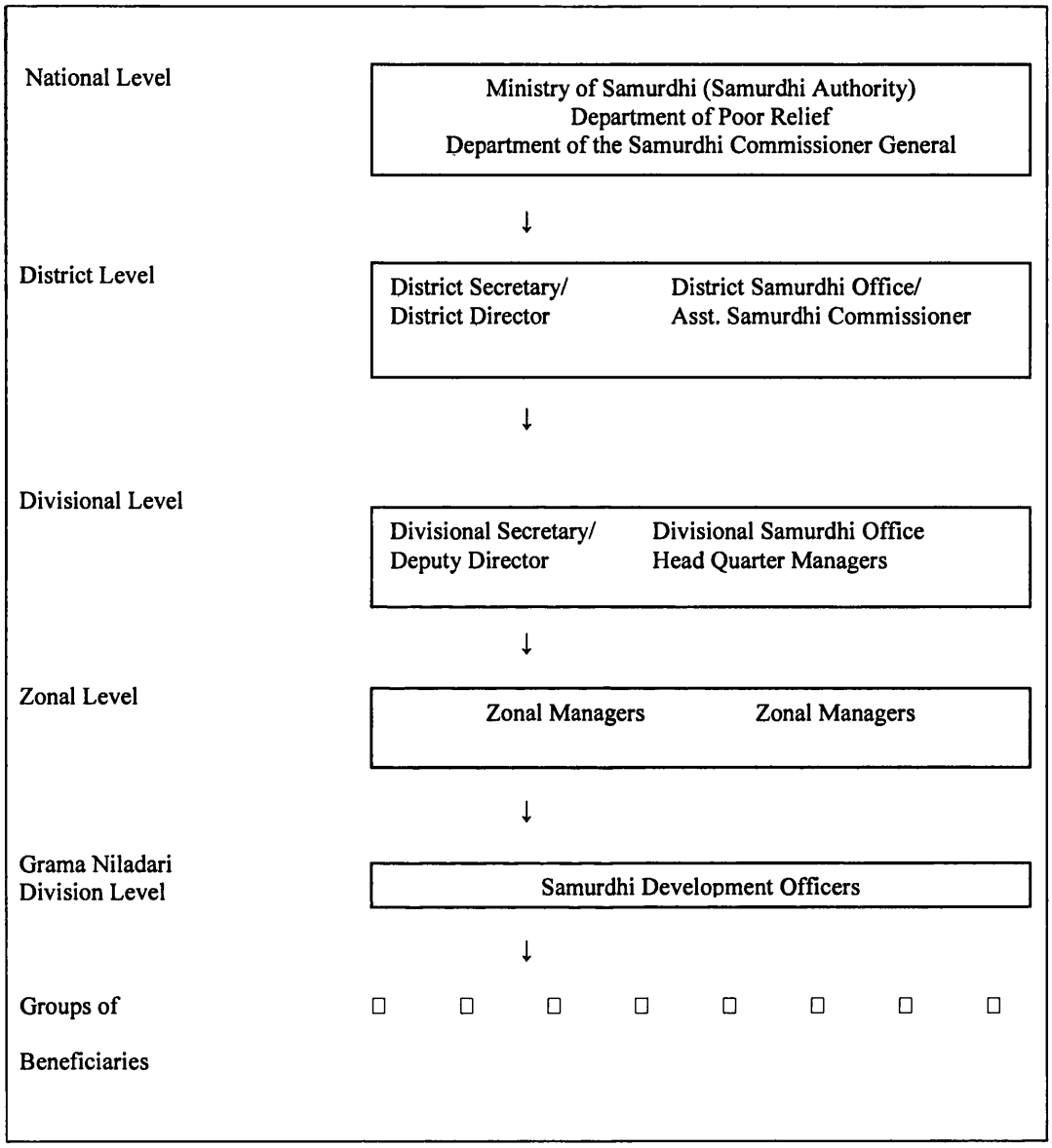
Sickness, disability, old age and death of an income earner are precipitating causes of extreme destitution. The subsidized state health service is considered inadequate by many of the poor who use a large share of their income to buy medicine privately. Monthly payments from the state to the disabled, widows and the aged are considered to be insufficient to meet minimum needs. While Sri Lanka has a long legacy of welfare programs aimed at assisting the poor, these tend to be badly targeted, contribute to dependency and patronage, and exhibit high administrative costs.

(vii) Lack of Clear Land Tenure

One of the factors inhibiting rural development and rural to urban migration is the lack of clear private property rights. Most poor farmers operate land for which they do not have clear title. As a result, land cannot be used as collateral for loans. Insecure land tenure affects the poor disproportionately because although they depend heavily on land, they can not afford to access the high court and other costs involved in resolving ownership or boundary disputes. As a result of this insecurity and of government restrictions on land use, the poor are not empowered to make choices in land use and land allocation, and hence cannot use their lands to their most productive potential. Furthermore, under the Land Development Ordinance, women are not ensured the right to land in settlement areas. Another aspect of land tenure and administration that affects the poor is the fact that land records are incomplete, not fully transparent or readily accessible, and as a result, vested interests use their favoured access to take advantage of the most vulnerable groups. The institutional apparatus that manage land issues in Sri Lanka is highly fragmented. The twelve major pieces of legislation governing land management are implemented by 10 separate government agencies.

(Summarized from "Regaining Sri Lanka: Vision and Strategy for Accelerated Development," Government of Sri Lanka, December 2002)

Chart A1.1: Samurdhi Administrative Structure



Chapter Two

Alleviating Poverty or Buying Votes?
The Politics of the Samurdhi Food Stamp Program

2.1 Introduction

Studies on public expenditure patterns have shown that politics influences the allocation of discretionary funds (Wright, 1974; Cox and McCubbins, 1986; Lindbeck and Weibull, 1987; Rogoff, 1990; Case, 2000). Increases in public expenditure are often timed to coincide with upcoming elections; budgetary trade-offs are made to satisfy important constituencies; and expenditures are made to those areas considered to be critical for an incumbent's re-election bid. At the same time, policymakers are faced with the need to deliver a certain level of welfare transfers to the poor within existing fiscal and administrative constraints. It is clear that political and anti-poverty objectives are unlikely to lead to the same targeting outcomes.

Using election and household survey data on the Samurdhi Food Stamp Program (SFSP), this chapter explores whether elected officials manipulate the distribution of welfare benefits of the Samurdhi Food Stamp Program to maximize the likelihood of remaining in office. Specifically, the chapter examines the impact of the election results of 1994 on Samurdhi food stamp allocations made during the People's Alliance's first term in office (1994-2000). Thus, we test a model in which *past* electoral outcomes are used to predict *present* allocations of welfare programs.

The rationale for the analysis in this chapter arises from the widespread allegations in Sri Lankan newspapers (The Sunday Times, July 9, 2000) as well as in some qualitative studies (Parker and De Silva, 2000; Salih, 2000) that in the run up to the general elections of October 2000 the targeting of SFSP benefits was politically motivated, and that SFSP officials were given instructions to allocate food stamp benefits in return for promises of political support for the PA party. Indeed there are a number of studies that show that there are pervasive targeting errors in the SFSP (Gunatilaka et al, 1997; Salih, 2000; World Bank, 2000; World Bank, 2002). There

are no analytical studies however, that try to explore whether these targeting errors are a result of political patronage, or merely due to targeting inefficiencies associated with means-tested welfare programs.

There are important policy implications should the effect of electoral outcomes on program targeting turn out to be significant. Insulating state-run welfare programs from direct or indirect manipulation by politicians becomes important. Often, it may be best to seek alternative delivery mechanisms that are based on self-targeting to keep poverty alleviation objectives above politics. The analysis provided by this chapter sheds light on the possible limitations of state-run welfare programs, not just in the case of the SFSP in Sri Lanka but also in other developing countries with similar institutional frameworks.

The chapter is organized as follows. Section 2.2 discusses the literature on the principles of targeting and "pork barrel"[15] politics in an effort to illustrate how political competition may affect targeting outcomes of social assistance programs. A discussion of the analytical framework used to assess the impact of political competition on targeting outcomes of the SFSP is given in section 2.3. Section 2.4 discusses some *prima facie* evidence of political influences on the targeting outcomes of the Samurdhi food stamp program while section 2.5 presents the empirical strategy used to test the main hypothesis of the chapter. Section 2.6 presents some descriptive statistics based on both the SLIS and the election results of 1994. The econometric results are discussed in section 2.7, and section 2.8 concludes the chapter.

2.2 Targeting Outcomes and Pork Barrel Politics: Is There a Link?

When assessing targeting outcomes of welfare programs, it is essential to take into consideration the literature on pork barrel politics. This strand of literature suggests that politicians will be inclined to allocate government funds to promote political patronage rather than on the basis of need, merit or entitlement. When evaluating government-run welfare programs, gains in poverty reduction achieved by targeting

[15] A "pork-barrel" project is a publicly funded project promoted by a legislator to bring money and jobs to his or her own district. The "pork" is allocated not on the basis of need, merit or entitlement; it is solely the result of political patronage, the desire of legislators to promote the interests of their own district, and thereby build up their local support.

benefits to the poor must therefore be weighed against the losses caused by politicians who use their discretion to influence the allocation of welfare grants away from the intended beneficiaries.

The effects of political competition on targeting outcomes have not received much attention in the literature on targeting. The problem of targeting is generally formalised as one of minimizing some explicit index of poverty subject to a budget constraint (Kanbur, 1987; Besley and Kanbur, 1990; Ravallion and Chao, 1989; Besley, 1990; Besley, 1997). In theory targeting outcomes are expected to be the result of the optimal allocation of resources across heterogeneous groups of people, or across different regions subject to minimizing costs associated with the program's administration and its political economy (Grosh, 1994).

Higher administrative costs are justified if there is greater targeting accuracy. An individual's political support for a program is expected to depend on the extent to which he or she benefits from it (Besley and Kanbur, 1990; Alderman, 1991; Ravallion, 1992). Thus, if a program is well targeted it is unlikely to generate political support as the poor are generally more disenfranchised relative to the non-poor. Alternatively, if a program allocates a sizeable portion of its benefits to the middle class it is likely to have wider political support, which in turn may result in a larger budget. In such a situation even after allocating a share of the benefits to the non-poor, the budget left for the poor may still be more than it might be if only the poor was targeted. Using a simple model Besley (1997) accommodates these political economy considerations by arguing, "... *the theory of incentives demonstrates that transfers to the non-poor can be an essential part of a well-designed cost-minimizing program – one that attaches no weight to the well-being of the undeserving group. By making such transfers, the program prevents the undeserving from trying to participate more fully in the program*" (p.112).

The literature on pork barrel politics suggests a different set of reasons for targeting errors in state-run welfare programs. According to this literature both targeting errors of inclusion and exclusion may occur due to: (i) the political affiliation of households; and (ii) a government's politically motivated influence on the distribution of transfers. According to the basic theory of voting behaviour the two main factors that determine

how people vote include a certain affinity for a candidate governed by voters' ideology and changes in welfare that voters expect to see after an election (Lindbeck and Weibull, 1987; Markus, 1988; Dixit and Londregan, 1996). It is therefore possible that voters base their decisions on the promises of transfers made by an incumbent and his/her challengers before an election. The assumption in these models is that incumbents actually deliver the social assistance they promise because they will run for re-election and will face the same voters repeatedly. Also, the underlying assumption is that everybody in the society, including the poor, is able to vote. The resulting optimisation problem for an incumbent seeking re-election is thus how to distribute transfers across the electorate in order to prevail in the next election.

To understand the implications of the various models developed in the literature, it is helpful to divide the electorate into three groups: (i) core support groups – those who have consistently supported the incumbent in the past; (ii) opposition groups – those who have consistently opposed the incumbent[16]; and (iii) swing groups – those who have neither been consistently supportive nor hostile. In such a set up, Cox and McCubbins (1986) point out that the incumbents will determine the optimal allocation of benefits across the electorate based on the following two factors. First, incumbents recognize that the electorate is segmented and that an investment in each group will pay off differently in expected number of future votes. The main decision facing election candidates is whether to woo core supporters or swing groups. Opposition groups are not considered since they are not expected to provide any electoral support regardless of any transfer. Second, the authors argue that the incumbent's attitude towards risk will determine which group is allocated the transfers. Incumbents who are risk-averse will invest in their core supporters, whereas more risk-accepting incumbents will more aggressively invest in swing voters. This result is derived from the fact that incumbents are less certain about the responses of the swing voters in the next election than they are about the responses of their core supporters. Cox and McCubbins also note that incumbents may be more familiar with the preferences and needs of their core supporters, and as a result, the fraction of transfers net of administrative costs and inefficiencies will be higher when this core group is targeted.

[16] We recognize that it is possible for core supporters and opposition groups to switch allegiance after a long period of consistent support or opposition, and we discuss this issue later in the section. The above distinction is only made to simplify the interpretation of the complex models found in the literature.

Lindbeck and Weibull (1987) take a slightly different approach in analyzing the outcomes of political competition between parties on transfer allocations. They find outcomes depend on the political objective of the politicians. If the objective of the political party is to maximize the number of votes – as in some parliamentary elections – more funds will be allocated to swing voter groups. If the objective is to maximize the probability of winning a majority of seats in the legislature – as is needed to form an executive in some systems – then funds are likely to be diverted to core supporters.

One limitation of both the Cox and McCubbins and Lindbeck and Weibull models is that they do not allow voters to play a more explicit decision-making role in the political game. To that effect Dixit and Londregan (1996) develop a more complete model of political competition in that they allow for voters to compromise their party loyalties in response to offers of private benefits. This is a more realistic approach especially in a developing country context. According to the Dixit and Londregan model candidates maximize the number of votes received (as in the Cox and McCubbins model) which depends on the distribution of political affiliations across different voters (unlike the Cox and McCubbins model). The model predicts that the willingness of voters to compromise their party affinities in response to offers of transfers implies that candidates of both parties will favour swing voters. This is because voters who are less attached to the candidate's political ideology and are more ready to switch votes in response to promises of economic benefits will be pursued by both candidates. The Dixit and Londregan model also predicts that both parties will favour the poor. The model shows that the poor will receive politically motivated benefits due to the fact that they have a high marginal utility from transfers, and thus, like swing voters, they will also be willing to switch party affinity upon promises of transfers.

The key assumption required for the above predictions is that political parties are approximately equal in their abilities to redistribute benefits once in office, as might be the case if an impersonal civil service bureaucracy administers the welfare program. If on the other hand the parties differ in their abilities to allocate transfers to different types of voters and each party has core constituents that it understands well,

then core supporters will receive benefits. Thus, unlike the other models, core supporters in the Dixit and Londregan model receives benefits not because of their strong association with the party's ideology but because the party knows these voters well and as a result are able to sway them more effectively compared to the rest of the electorate into voting for it. A third implication of the Dixit and Londregan model depends on whether incumbents can collect taxes and distribute benefits more effectively among its supporters. If so, then rational incumbents would favour core supporters. The Cox and McCubbins model also derives this result.

There is some empirical evidence that supports the above theoretical predictions. For instance, Levitt and Snyder (1995) find that the percentage of Democratic votes in a congressional district in the United States is a significant determinant of overall federal assistance to that congressional district when Democrats control the U.S. Congress and the Presidency. Case (2000) finds evidence of political objectives affecting the allocation of social assistance in Albania during the Berisha administration in the 1990s. She finds that not only was more assistance allocated to swing areas, but also to areas that had core support for President Berisha. Schady (1999) also finds that the distribution of the Peruvian social fund, FONCODES, was politically motivated. Expenditures were boosted just before the 1995 national elections, and were channelled to those provinces that had high political returns for President Fujimori. The results show that both core and marginal provinces received a disproportionate amount of FONCODES funds. Schady explains that these expenditures were discretionary, and thus well suited for achieving electoral goals of the Fujimori government. In fact, the population at large associated the FONCODES program with President Fujimori.

Overall, according to the models on pork barrel politics an incumbent can fulfil a vote maximization objective (subject to some underlying budget constraint) by making transfers to core supporters and/or swing groups. An important question to ask that has significant policy implications is what happens to the targeting outcomes of welfare programs at the household level in the presence of pork barrel politics? The answer depends on whether we believe poor people are less likely to vote than the non-poor or not. According to Cox and McCubbins (1986), poor people do not vote and thus will not be part of the incumbent's core support group nor be part of the

swing group. The authors' assertion is based on the experience of urban politics in the US. In the case of Sri Lanka, and many other developing nations where poor people constitute a significant share of the population, participation rates in the elections can be as high as 75 percent of the total population. Thus a poor person's vote is likely to matter in determining the outcome of an election in Sri Lanka. In fact because the poor will have a higher marginal utility from transfers than the wealthy, the poor are going to be more likely to vote in return for promises of greater levels of transfers (Dixit and Londregan, 1996).[17] Thus according to the literature on pork barrel politics when an incumbent is trying to maximize the chances of her/his re-election, it is a likely possibility that the targeting outcomes of transfer programs will be determined by both the political affiliation of the population and their poverty levels.

2.3 Political Equilibria and Targeting Outcomes

We now extend the discussion on pork barrel politics and targeting by focusing on the extent that political considerations affected the distribution of the benefits in the Samurdhi Program in Sri Lanka. The analysis undertaken in this chapter answers the following questions: (i) to what extent was the targeting of Samurdhi food stamps determined by political competition between the two main political parties in Sri Lanka, the Peoples' Alliance (PA) and the United Nationalist Party (UNP) during the tenure of the PA party's first term in office; and (ii) to what extent were Samurdhi food stamps given to the non-poor as a result of this political competition. We adopt the analytical framework developed by Cox and McCubbins (1986) in which the allocation of social assistance is determined within a context in which political parties maximize the expected number of votes subject to a budget constraint as a basis to derive testable implications for our analysis. We use the Cox and McCubbins framework also because of its simplicity and its relevance to the Sri Lankan political landscape.[18]

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[17] It is also possible that there is an altruistic parameter in the incumbent's utility function. This will mean that candidates will want to increase support for the poor voters irrespective of their political campaign strategy. See Coate (1995) for a model in which he shows that altruism provides an efficiency rationale for public provision of in-kind transfers of insurance to the poor. Empirically though, this implication is difficult to test for given that in general we do not observe this altruistic parameter in one's utility function.

[18] Although the Dixit and Londregan model is a more complete model than the Cox and McGubbins the data on the key parameters that the Dixit and Londregan model uses to calculate its equilibrium

The Cox and McCubbins framework assumes that two parties compete for votes by promising redistribution of welfare. Once elected, parties deliver the social assistance promised. They do so because they will run for re-election and will face the same voters repeatedly. This framework assumes that the parties cannot promise more than an exogenously given amount, i.e. they face a fixed budget constraint.[19] Citizens vote for the candidate who promises them greater utility than his or her opponent. The assumption here is that all voters are able to vote. Such an assumption is acceptable in the case of Sri Lanka given its history of high voter turnout averaging 75 percent. Candidates choose strategies that maximize the expected number of votes they receive subject to the given budget constraint. The expected number of votes for each candidate in turn depends on the proportion of voters who vote for that candidate once both candidates have revealed their respective promises of welfare. The function representing the proportion of votes is chosen such that there are diminishing marginal returns to investment in any group of voters (i.e. the more that is given to a group of voters, the less is the incremental support for the candidate).[20]

The assumption that parties will choose an allocation strategy that maximises the expected number of votes they receive is highly relevant to the Sri Lankan context given the way the parliamentary seats are allocated. The current parliament consists of 225 members, as discussed in chapter one. Out of these 225 seats, 29 are allocated among the recognised political parties and independent groups which contest the election *in proportion to the number of votes polled.* The remaining 196 parliament members are elected by popular vote to serve six-year terms on the basis of a proportional representation system in their district. Thus to maximise both the number

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strategies, such as the marginal utility of transfers, are not available in Sri Lanka. As a result I do not consider the model any further.

[19] For any anti-poverty program the budget constraint is generally applicable. However one could argue that governments can technically raise money by taxing the public or by borrowing from those who believe they will be repaid. However, taxpayers are not infinitely rich nor are potential lenders infinitely credulous. Even if a government has no explicit balanced budget provisions it is still bound by resource constraints (Dixit and Londregan, 1996). For the purposes of our discussion it is sufficient to take as given the sum that is available for tactical redistribution, and to note that the reallocations of the budget are relatively flexible.

[20] The vote proportion function is assumed to be twice differentiable, concave in the amount of welfare promised – i.e. the second partial derivative with respect to the amount of transfer is non-positive. The model assumes a similar set up for each party, but allows candidates to offer different sizes of welfare, resulting in different responses to the candidates by the voters.

of selected and elected parliamentary seats, parties must maximise the number of votes received.

The Cox and McCubbins model derives the following equilibrium strategies. First, the model predicts that transfers will be allocated based on the rates of return of electoral benefits such that "high return" voters will receive benefits while "low return" voters will receive nothing. The result does not predict levels of transfer but only that the allocation of patronage will not be even-handed. The second result of the model illustrates which of the following groups receive the lion share of the benefits – core supporters or swing groups or opposition groups. The equilibrium allocation requires the inclusion of a risk parameter in the maximization problem of the political parties. Instead of a simple maximization of expected votes (which implicitly assumes risk neutrality) the model maximizes a concave function of votes (reflecting an assumption of risk aversion on the part of the political parties). The response of the electorate to promises of transfers is not uniform since different groups will response differently to each party. For instance swing groups are expected to be a riskier bet than core supporters. This is because the candidate is in frequent and intensive contact with his/her core supporters and thus has a more accurate sense of their needs and responses to promises of transfers while swing groups are by definition unattached and thus "open game" to either candidate. Upon inclusion of the risk aversion parameter the result indicates that the more risk-averse the candidate is the more emphasis (s)he will give to avoiding a high variance investment, relative to the goal of achieving a high expected return. This in turn will mean that the candidate will "over invest " in core supporters, invest little (if at all) in opposition groups, and invest somewhat in swing groups.

The emphasis on the risk attitudes of the political parties by the Cox and McCubbins model is particularly relevant for the Sri Lankan general elections held in October 2000. In the general elections of 1994, the PA party won by a small margin – it received 47 percent of the total votes as compared to 42 percent received by its closest rival, the UNP party. More importantly, the PA won 113 seats in the parliament of 225 seats, and thus they narrowly managed to form a majority government. It is reasonable to believe that in the 2000 general elections the PA focused on holding on to the constituencies won in 1994 to maintain its majority in the parliament and hence

its hold on power. The results of the general elections of 2000 do show that the PA managed to hold on to 107 out of the 113 parliamentary seats won in the general elections of 1994. Such behaviour is also consistent with the pork barrel literature which suggests that incumbents will generally be less willing than challengers to take risks on policy positions, and thus maintain their core support via promises of material benefits (Cox and McCubbins, 1986). The above theoretical observations are the basis of the empirical tests conducted in this chapter. We will regress the probability that a household receives Samurdhi food stamps on a proxy variables that will be interpreted as measures of core PA support and swing vote. Our testable hypothesis is that core supporters of the PA and swing voters are more likely to receive Samurdhi assistance relative to opposition voters.

2.4 Targeting Outcomes of SFSP and Political Effects

Sri Lanka has a long history of varied transfer programs set up by the government to assist different groups of the population achieve equity and social goals. The main state-sponsored transfer program since the PA party came into power in 1994 is the Samurdhi Food Stamp Program. In the run-up to the elections of 1994, the PA party promised a reform of the welfare program operating under the previous UNP government, known as the Janasaviya Program. The Janasaviya Program (JSP) was implemented in rounds concentrating on a few areas at a time and covering an average of 100,000 households in each round. The Samurdhi Food Stamp Program however was set up to cover the whole island, as discussed in chapter one. The larger scope of the program necessitated an extensive administrative structure for the implementation of the program - a structure that runs parallel to the existing government administrative structure (see Chart A1.1 in Appendix one). Samurdhi employees, generally hired on the recommendations of the local politicians (Gunatilaka et al, 1997), are responsible for the screening of Samurdhi beneficiaries and for distributing the food stamps, as well as for supervising various Samurdhi village infrastructure projects.

As part of program policy, the district level allocation of Samurdhi funds is fixed by the central government. The fiscal transfer formula used by the government favours poorer districts with respect to per capita Samurdhi fund allocation. This pro-poor

allocation formula is supported by the correlation between funds allocated to each district and district-specific poverty measures that are presented in Table 2.1. The correlation between district-specific per capita Samurdhi funds and poverty rate (depth) is 0.814 (0.711) (World Bank, 2002). However, household level data shows that poorer districts do not necessarily allocate significantly higher shares of their Samurdhi funds to the poor residing in these districts. The correlation between the share of district-specific Samurdhi funds transferred to the poorest strata (defined as the bottom *pre-transfer* per capita expenditure[21] quintile) and district specific poverty rate and depth falls to 0.017 and 0.124 respectively. These results suggest the prevalence of *within district* targeting errors.

Table 2.1 District-wise Food Stamp Allocations and Welfare Indicators (%)

District	1999 Funds per person (Rs.)	Distribution of Samurdhi food stamp recipients across *pre-transfer* per capita expenditure quintiles					1995 Poverty rate (col. 8)	1995 Poverty depth (col. 9)
		Bottom 20 %	20-40 %	40-60 %	60-80 %	Top 20 %		
Colombo	**182**	**29.7**	24.2	18.7	18.7	8.8	**10**	**1.77**
Gampaha	**416**	**19.1**	28.2	25.2	14.5	13	**11**	**1.8**
Kalutara	**410**	**38.8**	25.5	12.2	18.4	5.1	**26**	**5.78**
Kandy	**456**	**50**	20.67	12	8.7	8.7	**30**	**7.04**
Matale	**686**	**48.8**	19.7	11.8	14.2	5.5	**35**	**8.53**
Nuwara Eliya	**270**	**17.4**	27.5	15.9	26.1	13	**21**	**3.61**
Galle	**483**	**45.2**	29.5	16.4	4.8	4.1	**25**	**5.62**
Matara	**594**	**31.5**	23.3	26	12.3	6.9	**28**	**5.84**
Hambantota	**655**	**20.2**	22.8	23.7	25.4	7.9	**27**	**5.4**
Kurunegala	**715**	**24.5**	25.8	19.7	18.8	11.4	**34**	**7.06**
Puttalam	**660**	**6.7**	22.5	29.2	30	11.7	**33**	**6.69**
Anuradhapura	**681**	**20.3**	27.8	30.1	12	9.8	**33**	**6.15**
Polonnaruwa	**576**	**20**	36	25	13	6	**28**	**6.45**
Badulla	**428**	**23.3**	28.9	22.2	17.8	7.8	**30**	**6.44**
Moneragala	**737**	**30.8**	31.5	19.6	12.6	5.6	**49**	**14.47**
Ratnapura	**725**	**17.5**	29.8	29.2	17	6.4	**37**	**8.26**
Kegalle	**512**	**51**	24.5	12.3	7.1	5.2	**25**	**5.07**
Correlation coefficient:								
Funds per person and col. 8							**0.814**	
Funds per person and col. 9								**0.711**
Share accrued to bottom 20 % and col. 8							**0.017**	
Share accrued to bottom 20 % and col. 9								**0.124**

Sources: World Bank, 2002; SLIS.

[21] Pre-transfer per capita expenditure was calculated by deducting the monthly per capita amount of Samurdhi benefits from the value of the monthly per capita expenditure.

Using the Sri Lanka Integrated Survey (SLIS), we find that out of the total sample of 2215 households who receive Samurdhi food stamps, only 30 percent of them belong to the bottom pre-transfer per capita expenditure quintile. Around 26.2 percent belong to the second quintile, whereas 7.8 percent are in the top quintile (see Table 2.2).

Table 2.2 Distribution of Samurdhi Households by Quintiles[22]

Pre-transfer Per capita expenditure quintiles	Total Sample	No. of Samurdhi households	% of Samurdhi households
Full sample	*5524**	*2213***	*100*
Bottom 20thpercentile	1043	659	30
20th - 40th percentile	1058	581	26.2
40th - 60th percentile	1020	457	20.6
60th – 80th percentile	1077	339	15.3
Top 20th percentile	1326	177	7.8

Notes to Table 2.2:

(a) *Six observations were dropped since these households lacked expenditure data.

(b) ** Two observations in the Samurdhi sample lacked expenditure data.

The estimate of poverty line at 1995/96 prices is Rs. 792 per capita per month (Gunewardena, 2000). The equivalent scale Gunawardena (2000) uses to calculate this poverty line is per capita consumption which is the special case of the general definition: equivalent consumption = total consumption/n^s where n is the household size and s is equal to one. There are obvious problems with using per capita expenditure, considerations of economies of scale not being the least. Poverty may be correlated with the number of children. However, Deaton (1997) points out that the equivalence scale literature is still far from providing satisfactory answers to the theoretical and methodological problems involved, and that "the use of household PCE [per capita expenditure] assigned to individuals is still best practice" (p. 150). Thus, inflating the 1995/96 poverty line by yearly inflation, we estimate the poverty line to be Rs. 1056 in 2000[23]. Given this estimate around twenty percent of households were below the poverty line using the 1999/2000 SLIS data[24]. This categorization is broadly consistent with the latest poverty estimations conducted by

[22] These are individual based pre-transfer per capita expenditure quintiles that are used in the rest of the thesis. Expenditure measures were adjusted by province specific price indices that represented differences in the cost of living of the low-income population.

[23] The most recent estimate of the consumption poverty line in Sri Lanka (excluding the North-eastern Province is Rs. 1423 per person per month at 2002 prices based on the consumption of 2030 kilocalories per person per day (DCS, 2004).

[24] Average per capita pre-transfer expenditure for households in the bottom quintile was Rs. 804 whereas it was Rs. 1198 for households in the second quintile.

the Department of Census and Statistics (2004) using HIES 2002. According to this DCS study, the official poverty line of 2002 was Rs. 1423, and given this poverty line, the proportion of poor households in 1995/96 and 2002 was estimated to be 24.3 and 19.2 percent respectively (see Table 1.1 in chapter one). As Table 2.2 indicates, this suggests that only 30 percent of households who receive Samurdhi food stamps can be considered to be poor. Grosh (1994) reviewed the design and targeting outcomes of 47 government welfare programs in Latin America. Based on her findings, a median untargeted program delivered 60 percent of the total budget to the poorest 40 percent of the households - an outcome similar to the Samurdhi Program which spent 56 percent of its total budget on the poorest 40 percent of households.

A detailed look at the eligibility criteria and the selection process used to identify beneficiaries points to possible reasons for these targeting errors. Households with a combined monthly income of less than Rs. 1500 are eligible for Samurdhi food stamps (see Table 1.6 in chapter one for detailed description of the eligibility criteria and the various Samurdhi entitlements). Development officers are expected to identify potential beneficiaries using household questionnaires about income sources, living conditions, and possession of durable goods. Once identified as eligible, households receive a supply of food stamps for six months. The stamps are validated for use at specific cooperative stores at the beginning of each month. When the income of households exceeds Rs. 2000 and remains at that level for more than six months, the household is expected to exit the program. If the household changes its place of residence it loses its supply of food stamps and it is required to re-apply for Samurdhi benefits in the new location (though new enrolments are not encouraged). Eligible extended families residing in one dwelling are not entitled to receiving more than one grant.

In theory, conducting a means test that correctly measures the earnings of a household is the best way to identify a poor household. In practice however, such apparently straightforward means tests suffer from several problems. First, prospective applicants have an incentive to under-report their welfare levels, and verifying the correct information is difficult. Second, there is also no record of anyone exiting the Samurdhi program. Historically we find a similar situation with all the other food subsidy programs in Sri Lanka where households are not constantly monitored and

removed from the program even if their incomes crossed a threshold (Sahn and Alderman, 1996). Instead the number of Samurdhi beneficiaries increased from 1.5 million households at the beginning of the program in 1995 to 2.3 million households by 2001. Third, income is generally considered to be an imperfect measure of welfare in developing countries due to: (i) the difficulty in measuring imputed value of own-produced goods, gifts and transfers, or owner-occupied housing, and (ii) the volatility of income resulting from the seasonality of agriculture and the unpredictability of employment in the informal sector. In the light of these difficulties in measurement and adjusting for volatility in income, actual welfare measures based on income will be inaccurate.

In the case of Samurdhi, even if we assume that the eligibility criteria of monthly household income of less than Rs. 1500 was accurately followed, the SLIS data shows that 84 percent of Samurdhi food stamp recipients had income greater than Rs. 1,500 and hence can be deemed ineligible. Given that the average household size in Sri Lanka is estimated to be 4.2 by the Department of Census and Statistics, a household will be officially eligible to receive Samurdhi food stamps if its per capita monthly income is below Rs. 357. According to SLIS, this implies that households in the bottom pre-transfer per capita expenditure *decile* are the precise Samurdhi target group. This group represented around 7 percent of the total households in Sri Lanka which would indicate that in theory, the SFSP is expected to target the extreme poor population (the official incidence of poor households was estimated to be 19 percent in 2002 and 24 percent in 1995/96 by the Department of Census and Statistics). However, only 16 percent of the total Samurdhi food stamp recipients belonged to the bottom per capita expenditure decile. Table 2.3 presents some *prima facie* evidence of errors of exclusion (37 percent of the households in the bottom quintile do not get food stamps) in the targeting of the Samurdhi program as well as clear errors of inclusion as shown by the numbers of households in the other quintiles who do receive Samurdhi benefits.

Table 2.3 Samurdhi Coverage by per capita Expenditure Quintiles

Pre-transfer Per capita expenditure quintiles	N=total sample	% of N who participate in SFSP
Full sample	*5524**	*40*
Bottom 20th percentile	1043	63.18
20th - 40th percentile	1058	54.91
40th - 60th percentile	1020	44.80
60th – 80th percentile	1077	31.48
Top 20th percentile	1326	13.35

*Six observations were dropped since these households lacked expenditure data.

Several qualitative studies suggest political influence on the allocation of food stamps as another possible reason for the errors of inclusion and exclusion found in the Samurdhi Food Stamp Program (Gunatilaka et al, 1997; Parker and Silva, 2000). These studies point to an accountability vacuum in the administrative structure of SFSP due in part to no clear line of authority for program management at the Divisional level. The resulting effect, as noted by Gunatilaka et al (op. cit.) is that: *"political affiliation determined the eligibility of some to receive the consumption grant ... this problem was confirmed by several Samurdhi Managers and niyamakas we spoke to. The niyamakas said that they are under pressure from area politicians and village-level party organizations to give the Samurdhi grant to PA families and to deny them to UNP supporters"* (p. 26). Prior to the general elections of 2000, newspapers also reported that the PA government hired additional Samurdhi field workers and promoted many existing staff, all in violation of the program's employment policy (Daily News, July 18 and 20, 2000). The opposition parties alleged that such recruitment and promotions were meant to be incentives to help with the government's election campaign. The food stamp program staff apparently promised Samurdhi benefits to people in return for helping out in the PA election campaign. The opposition went so far as to file a case against the Samurdhi Authority for using Samurdhi development officers as party activists. Since Samurdhi workers are *de facto* political appointees and that Sri Lanka has a history of political violence[25], it is quite plausible that Samurdhi development officers succumb to political pressure by politicians and village-based party organisations when carrying out their duties (Salih, 2000).

[25] Sives (2000) describes various incidents of violence surrounding the 2000 general election campaign run by the PA – "The campaign [2000] itself was blighted by violence from its inception. On the first day of campaigning, a JVP activist, Champike Sudantha Silva, was killed by PA thugs while pasting posters. This was to be the first of 73 murders which occurred throughout the campaign and on election day itself" (p.72).

Whilst it is unrealistic to consider that any political party can observe voter preference directly, it is reasonable to assume that the distribution of political preferences differs systematically across areas (Dixit and Londregan, 1996). Politicians can assess these differences by looking at geographic patterns in previous electoral outcomes. Shapiro and Deacon (1975) show that the probability that a randomly selected voter in an electoral district *A* will have voted for party X is equivalent to the share of the vote for party X in that district *A*. Thus voters in districts in which 50 percent of the population voted for the incumbent in the last election are most likely to be marginal voters – i.e. the probability they supported the incumbent is exactly the same as the probability that they supported any other candidate. Similarly, voters in districts that overwhelmingly voted for the incumbent in the last election can be considered as core voters (Schady, 1999).

There appears to be some *prima facie* evidence that politics played a role in the selection of households by the Samurdhi Food Stamp Program. Figures A2.1 and A2.2 in Appendix two show scatter diagrams of the percentage of households who received Samurdhi food stamps during October 1999 and July 2000 (that is just prior to the October 2000 elections) against the level of "core support" and the "swing voter effect" at the GS Divisional level. As in Schady (1999) and Case (2000), the "swing voter effect" is proxied by the absolute deviation of the percentage of PA vote from 50 ($|x - 50|$), and the "core" voter effect by the percentage of PA vote (e.g. x) in the 1994 general elections. Figure A2.1 shows how the percentage of households who received Samurdhi food stamps within a division varies with the percentage of votes received by the PA party in that division. A higher percentage of PA vote is associated with a higher percentage of food stamp recipient households in the division. The percentage of PA votes range from 24.8 to 65 while the mean value is 51 (std. dev. 7).

Figure A2.2 shows how the percentage of households who receive Samurdhi food stamps varies with the absolute difference between the percentage of votes received by the PA and 50. A more evenly divided division, represented by a smaller difference, is positively associated with a higher percentage of households receiving Samurdhi benefits. The absolute difference between the percentage of PA votes and

50, or the level of "swingness", ranges from 0 to 25.2 and the mean value is 5 (std dev 4.6). The corresponding correlation coefficients between the core and swing voter effects and participation rates are 0.14 and –0.21. Both values are significant at the 1 percent level. These correlation coefficients suggest that the probability of being a core voter of the PA or a swing voter is positively associated with receiving Samurdhi food stamps.

However, there are a couple of caveats regarding these political variables. First, it should be pointed out that the correlation between household participation rates and the political variables seems to be driven by a few outliers (see figures A2.1 and A2.2). Thus, this has to be taken into consideration when interpreting our results as evidence for political targeting of Samurdhi food stamps. Second, it could be argued that in the case of three party or multi-party constituencies, the swing voter variable would have to be calculated differently. Since some of the constituencies in Sri Lanka have multiple parties competing, we explore this point further. However, we find that excluding the leading PA and UNP, the smaller parties and independent candidates together constitute on average of 3 percent of the total votes per district (excluding the North-Eastern districts)[26]. Excluding such a small percentage of the voters when calculating the level of marginality of polling divisions is unlikely to have a significant impact on our swing voter variable. Thus, our analysis assesses the swing voter effect in the context of a two-party system as was done in Case (2000) and Schady (1999). In what follows we use multivariate regression analysis at the household level to further explore the extent to which voter political preferences affect the targeting of Samurdhi food stamps.

2.5 Estimating the Political Effects on Targeting Samurdhi Food Stamps

According to the Cox and McCubbins model, a political candidate is likely to compete in elections by promising transfers to his/her core supporters (if the candidate is risk-averse) and to swing voters (if the candidate is a risk-taker). Such a strategy is expected to maximize the number of votes received by the candidate. Similarly, the

[26] Percentage of votes for non-PA or non-UNP by district: Colombo=7.28; Gampaha=1.30; Kalutara=2.4; Kandy=1.23; Matale=1.54; Nuwara-Eliya=9.47; Galle=2.37; Matara=2.67; Hambantota=7.82; Karunegala=1.12; Puttalam=0.88; Anuradhapura=1.36; Polonnaruwa=1.20; Badulla=2.78; Moneragala=5.79; Ratnapura=1.27; Kegalle=0.85.

strategy for an incumbent seeking re-election therefore should also include transfer allocations to its core supporters and swing voters, which in turn would maximise the chances of staying in office. This is the basis for the empirical test in this section which tries to model the probability of participation in the Samurdhi food stamp program as determined proximately by the political agenda of the PA party in the run up to the general elections of October 2000. To maximize its chances of being re-elected, we expect the incumbent PA party to allocate Samurdhi benefits to its core supporters in the run up to the 2000 general elections. However, in the event that the PA party has a high level of risk tolerance (which is unlikely for an incumbent), it is likely that swing voters will receive transfer benefits. Accordingly, we estimate a simple targeting equation, which includes proxy measures of core and swing support as independent variables.

It should be pointed out that program participation is generally the outcome of both demand and supply-side factors. On the demand side, one set of factors will determine whether a household decides to participate in a program. On the supply side, another set of factors (which could also include some of the demand side determinants of participation) will determine whether the program administrator decides to target that household. Both events may occur sequentially or simultaneously, but ultimately determine whether the household participates in the program or not.[27] The analysis in this chapter mainly focuses on the supply-side factors that determine targeting errors in the Samurdhi Food Stamp Program. Thus we estimate the following "targeting" equation for household *i* at time *t*:

$$P_{it} = C_{dt-5}\beta + S_{dt-5}\chi + E_{it}\psi + V_{it}\gamma + D\phi + \eta_{idt} \qquad \text{Equation 2.1}$$

where P_{it} takes the value 1 if the household receives food stamps and 0 otherwise. C_{dt-5} is the percentage of votes received by PA in the general elections of 1994 in division *d*, and hence the time period is *t-5*; S_{dt-5} is the absolute value of the difference between the percentage votes received by the PA party in the 1994 general elections and 50; E_{it} is a dummy variable that takes the value 1 if the monthly household pre-transfer income is less than 1500, and zero otherwise; V_{it} is a vector of

[27] See Maddala (1983) for a comprehensive discussion on models that can be used to study such joint or sequential decision models.

household and village characteristics that we might expect to affect household welfare as well as other characteristics that make households more likely to be selected into the program; D is a dummy variable representing the provinces in Sri Lanka (except for the North-eastern Province); and η_{idt} is the error term which represents unmeasured and unobserved factors determining whether household *i* receives Samurdhi food stamps.

A potential problem associated with the above model is reverse causality should electoral outcomes be "contaminated" by household receipt of food stamps in previous time periods, as the Cox and McCubbins model would suggest. However we argue that this is not a problem since the Samurdhi program was only set up in 1995 as a distinct PA government initiative. Thus the election results of the 1994 have the advantage of not being affected by Samurdhi expenditures. This allows us to accurately identify the effect of the election on the targeting of Samurdhi food stamps[28]. Another feature of the 1994 elections also helps with the predictive power of our model. The PA coalition was put together by SLFP in 1994 as an alternative approach to contesting the elections against the then ruling UNP. The same coalition ran for elections in 2000. It is therefore reasonable to assume that if the PA government had any political objective surrounding the distribution of Samurdhi benefits we should expect to see the election results of 1994 to affect Samurdhi allocations during the PA's first term in office.

We estimate a second "mis-targeting" model where we replace the dependent variable in equation 2.1 with one that takes the value 1 if the household receives Samurdhi food stamps but is nonpoor and zero otherwise. We define being nonpoor as those households who belong to the second, third, fourth and fifth expenditure quintiles calculated based on the *pre-transfer* per capita monthly expenditure data. This second model allows us to explore the extent to which political competition affected the probability that a nonpoor household was selected to participate in the food stamp

[28] One could argue that PA's election promises to reform welfare programs could have influenced the outcome of the 1994 election on the premise that the promises were regarded credible. Sives (2001) however, attributes the win of the PA party not to the promise of welfare reform but more due to "UNP fatigue" and the PA's promise for peaceful resolution to the civil conflict with the Tamils Tigers.

program. Thus, we are in effect estimating the impact of political affiliation on the probability of making errors of inclusion using the following equation:

$$P_{it} = C_{dt-5}\delta + S_{dt-5}\varphi + V_{it}\zeta + D\lambda + \mu_{idt} \qquad \text{Equation 2.2}$$

where P_{it} takes the value 1 if the household receives food stamps but is nonpoor, and 0 otherwise. C_{dt-5} is the percentage of votes received by PA in the general elections of 1994 in division *d*, and hence the time period is *t-5*; S_{dt-5} is the absolute value of the difference between the percentage votes received by the PA party in the 1994 general elections and 50; V_{it} is a vector of household and village level characteristics that make non-poor households more likely to be selected into the program; D is a dummy variable representing the provinces in Sri Lanka (except for the North-eastern Province); and μ_{idt} is the error term which represents unmeasured and unobserved factors determining whether a nonpoor household *i* receives Samurdhi food stamps.

The one difference between equations 2.1 and 2.2 is the inclusion of the household eligibility status in equation 2.1. As discussed, eligibility is determined by a monthly household income threshold of less than Rs. 1500. Therefore we use a dummy variable that takes the value 1 if the pre-transfer monthly income of the household is less than Rs. 1500 and zero otherwise.[29] However, we do not include the eligibility criteria as an explanatory variable in equation 2.2 as by definition we are only looking at households who have more than Rs. 1500 by virtue of not belonging to the bottom quintile.[30]

Using OLS is considered inappropriate for estimating the above equations since the distribution of the error term is not normal (assumed in OLS) but binomial and because the error terms are heteroscedastic.[31] Logit or probit estimation techniques are commonly chosen to estimate regressions with dichotomous dependent variables. The

[29] The monthly household income variable is an aggregate of five different variables: monthly income from employment; monthly income from food received or produced at home; monthly income from social assistance and transfers; monthly income from agricultural activities; monthly income from other sources.

[30] This holds even though the quintiles are consumption-based and the eligibility criteria is income-based. There is no household in the second quintile or any of the upper quintiles whose income is less than Rs. 1500.

[31] Nevertheless we still estimate equations 2.1 and 2.2 using OLS as a robustness check for our models. The sign, and significance level on the two variables of interest, the level of core and swing support were the same while the magnitudes were similar (at least statistically indistinguishable).

logit model assumes a cumulative logistic distribution for the error term, while the probit model assumes a cumulative normal distribution. From a theoretical perspective, these two cumulative distribution functions are very close to each other, except at the tails (i.e. the probit curve approaches the axes more quickly than the logistic curve). Results from logit and probit estimates are not likely to vary significantly, unless the samples are large (so that we have enough observations at the tails).[32] In this chapter, the logit model is used to estimate equations 2.1 and 2.2. Probit estimates are also reported in Table A2.6 in Appendix two to show their similarities with the logit estimates.

2.6 Data and Variables

The data used in this chapter are from a nationally representative survey of 7500 Sri Lankan households conducted between October 1999 and July 2000. The household survey, known as the Sri Lankan Integrated Household Survey 1999/2000 (SLIS), was undertaken by the Ministry of Finance of the Government of Sri Lanka with technical and financial assistance from the World Bank. The data collected covered the war-torn North-eastern province. However, the analysis in the present chapter does not include this region because data collection was disrupted by the prevailing conflict conditions, and we expect sampling problems associated with the data on the North-east[33]. Taking into account the sample weights, the North-east sample amounted to about 12 percent of the total sample, which is consistent with this region's estimated share in the country's population. Using the sampling weights the residual sample by design is representative for the entire country excluding the North-East. The SLIS includes household-level questions on participation in the Samurdhi food stamp program, along with other detailed questions on household demographics, education, occupation and ethnicity of household head, household income and expenditure, and data on household ownership of assets and access to water and sanitation facilities. The SLIS also includes questions on various characteristics of the

[32] See Maddala (1983) for a discussion on the similarities between the logit and the probit model.
[33] Exclusion of all the data points from the North-east while unfortunate, it should be seen in the context that no survey has managed to cover the region during the past decade of the ethnic conflict. The problem of missing data on the North-east thus is not unique to SLIS.

villages.[34] These data allow us to identify the various household and community level determinants of participation in SFSP.

The divisional level voting patterns of the October 1994 national elections are retained by the Election Secretariat of Sri Lanka. This data was obtained from the Election Secretariat for the purpose of this thesis and then merged with the SLIS. This allows us to infer likely voting patterns of the participants of the Samurdhi Food Stamp Program, and thus their likely political affiliation. Case (2000) and Schady (1999) both use similar voting data to identify the impact of political competition in the allocation of block grants in the case of Albania and Peru respectively. Unlike these studies, the merged data allows us to identify the impact of within district variation in the voting patterns on the probability that a household receives Samurdhi food stamps, while controlling for the various household and community level variables.

Our dependent variable in equation 2.1 takes the value 1 if the household reports to have received food stamps from Samurdhi in the last 12 months, and 0 otherwise. Our independent variables of interest are the political variables. In the first "targeting" model we expect the coefficient on the proxy measure of core support (i.e. the percentage of votes received by the PA party) to be positively related to program participation. If on the other hand the strategy of the PA party turns out to be a more risky one, then we expect the coefficient on the proxy measure of swing voter effect (i.e. the absolute value of percent of votes received by the PA party minus 50) to be negative. In other words, the tighter the race in any one division, the more likely it is that a household in that division is a swing voter, and therefore the Samurdhi program is likely to target that household. Our dependent variable in equation 2.2 takes the value 1 if a non-poor household reports to have received food stamps from Samurdhi in the last 12 months, and 0 otherwise. Non-poor households are defined as those households who belong to the second, third, fourth and fifth expenditure quintiles. In equation 2.2 we expect the political variables (the core and swing voter effects) to significantly affect the probability that a non-poor household participates in SFSP in

[34] Section 1.4 in chapter one provides a more detailed description of the survey instrument.

the same way as in equation 2.1. Both equations include the full sample of 5530 households.[35]

In addition to the political variables, we include a host of observable characteristics that proxy for household wealth in both equations 2.1 and 2.2. We expect program officials to use these indicators when identifying potential food stamp recipient households. These variables include whether the household owns land and non-land productive assets (e.g. livestock and farming equipment); whether the household has access to proper sanitation; whether the household has access to electricity; and dummy variables that assess housing conditions.

We include a series of dummy variables representing the occupation of the household head as we expect households with heads engaged in low-income professions to be more likely to be selected into the food stamp program. We also expect a higher level of education to be associated with a lower probability of being selected into the Samurdhi program, as it is associated with better employment opportunities and with less of a need to participate in the food stamp program. Thus we include the number of years of education received by the household head as one of the independent variables. We also include data on household demographics that could be potentially used to target eligible households. We expect a lower age of the household head will positively affect participation as this is correlated with a household's poverty status in Sri Lanka. Parker and Silva (2000) find young families constitute "hidden pockets of poverty" due to a host of factors such as limited access to government benefits and employment opportunities. A higher number of dependents in the household is likely to be positively associated with participation in the program. Hence, we expect the variables representing the number of children under the age 17 and the number of members above the age of 65 to be positively related with household participation in the food stamp program. Similarly we also expect having a disabled member in the household to positively affect the probability that a household participates in SFSP. We also expect larger households to be poorer, and thus more likely to receive food stamps. Finally, we include household ethnicity to assess whether this affects the

[35] We also estimate equation 2.2 by restricting the sample to only non-poor households. The results did not vary significantly.

probability of participation in SFSP – this is particularly relevant in the light of the ethnic conflict in Sri Lanka.

In order to control for any village level unobservables, dummy variables are included that respectively take the value 1 if the household resides in what is considered as a traditional village; in an irrigation colony[36]; in a village expansion colony[37]; in a settlement scheme[38]; in a plantation estate[39]; in an urban slum; and in an urban middle-class neighbourhood, and zero otherwise. Dummy variables are included to control for household migration over the last 50 years. These variables are included since we expect households who have moved within the last five years to be less likely to receive Samurdhi food stamps. Change of location cancels any Samurdhi entitlements a household may have had, and new applications are generally not encouraged. Another dummy variable to control for program policy is included which takes the value 1 if the household has a member in the Sri Lankan military, and zero otherwise. We include this variable since households with members in the army are not required to be means tested but automatically become eligible to receive Samurdhi food stamps[40] (World Bank, 2002). Finally, dummy variables are included to control for any provincial level fixed effects. Table A2.1 in the Appendix provides descriptive statistics of all these variables.

Table A2.2 in Appendix two provides mean household characteristics of all Samurdhi food stamp recipients and compares them with the rest of the sample who do not receive any food stamps. P-values based on two-tailed t-tests are reported in column 4 of Table A2.2. We find that compared to non-members, a higher proportion of Samurdhi member households lived in divisions that largely voted for the PA in the general elections of 1994. As expected Samurdhi food stamp recipients have clearly

[36] Irrigation colonies are areas in the dry zone in the North and Central parts of the country that have been irrigated for mostly paddy cultivation under an ambitious Mahaweli Development Project.
[37] Village expansion colonies are settlements of peasants on land near traditional villages. These areas are generally backward with no proper water and sanitation systems; electricity; and access to roads, markets and health services.
[38] Subsequent to land reforms in 1972, the Government of Sri Lanka distributed small tea, rubber, coconut estates as well as undeveloped land under land settlement schemes. Settlers are only allowed to cultivate the land while full ownership and rights of disposal remain with the Government.
[39] Plantation estates are large commercial ventures that employ mostly Indian Tamil workers, and are located in geographically isolated areas.
[40] As of end 2002, the Government has cancelled this program and households with members in the military are no longer automatically eligible for Samurdhi food stamps. This policy was implemented as a cost-cutting measure (Central Bank, 2003).

worse socio-economic characteristics compared to non-members. First, Samurdhi food stamp recipients have significantly lower per capita monthly income relative to households who do not receive food stamps. Compared to non-Samurdhi members, a significantly higher proportion of Samurdhi members are landless. These differences are significant at the one percent level, as are most of the other differences discussed here. Second, household heads of Samurdhi food stamp recipients have significantly less years of education than their counterparts in households who are not Samurdhi food stamp recipients. Third, a significantly higher number of households who receive food stamps are female-headed, have a member who is disabled or chronically ill, and are larger in size compared to households who do not receive food stamps.

Fourth, village level and geographical data indicate that Samurdhi food stamp recipients are located in areas considered to be relatively poor. Compared to non-Samurdhi members, more Samurdhi households are located in village expansion colonies. A higher proportion of food stamp households reside in poorer provinces compared to households who do not receive food stamps. These poorer provinces are North Western, Sabaragamuwa, and North Central.

In short these descriptive statistics suggest that food stamps are targeted to relatively poorer household and regions. The data indicate that political affiliation also plays a part in receiving food stamps. Using maximum likelihood estimation techniques[41], the following section attempts to disentangle the relative importance of these various factors in the allocation of food stamps.

2.7 Empirical Results

Tables 2.4 and 2.5 present the logit estimates of the impact of political competition on two outcomes: (i) the probability that a household receives Samurdhi food stamps (equation 2.1), and (ii) the probability that specifically a non-poor household receives Samurdhi food stamps (equation 2.2). In the case of equation 2.1, the dependent variable takes the value 1 if the household receives Samurdhi food stamps, and zero otherwise. In the case of equation 2.2, the dependent variable takes the value 1 if the

[41] All estimation was undertaken using the STATA econometric package (version 7.0) (see StataCorp. 1997)

household receives food stamp but does not belong to the bottom per capita expenditure quintile, and zero otherwise. The literature does not specify the exact functional form with which to test for political effects on the distribution of transfers. Therefore, for each model, we estimate three specifications – the first one includes both the core voter effect ($C_{dt-5}\beta$) and the swing voter effect ($S_{dt-5}\chi$), and the second and third includes the core voter and swing voter effects separately. The measures of fit for the logit models that are estimated and are reported at the bottom of Tables 2.4 and 2.5 include the percent of correct predictions and the Pearson chi-square statistic. We find that in the case of equation 2.1 the percentage of correct prediction is 74 while the same figure for equation 2.2 is 66. Based on the Pearson chi-square goodness-of-fit statistic, both the models appear to fit reasonably well. These measures, taken together with the pseudo-R^2, suggest that the estimated models provide adequate description of the data. The standard errors reported in both Tables 2.4 and 2.5 are robust to the presence of heteroscedasticity and allow for the clustered nature of the household data.

For ease of interpretation, the logit estimates reported in Tables 2.4 and 2.5 are transformed into marginal and impact effects for the continuous and dummy variables respectively. These values are calculated at the means of the independent variables. Only significant marginal and impact effects in the logit regressions are reported in Tables 2.4 and 2.5. For all the variables included in the regressions see Table A2.3 (for equation 2.1) and Table A2.4 (for equation 2.2) in Appendix two. We first look at the core voter effect on participation as estimated by the targeting model in Table 2.4. In column 1, our results show that the probability of participating in Samurdhi is positively associated with the measure of core support for the PA party in a division. The coefficient is significant at the 5 percent level. A one percentage point increase in the percentage of votes for PA in a division has a half percent increase in the probability of a household subsequently receiving Samurdhi benefits holding constant the swing voter effect, other household and community level control variables and any provincial level fixed effects. The result suggests that households who live in divisions identified as core supporters of the PA party are more likely to be favoured by the Samurdhi program. This political effect on the targeting of SFSP is robust to the inclusion of provincial level fixed effects, and thus provides us with geographical controls for any unobservables that may also affect household participation in the

food stamp program. It has to be noted that this marginal effect, while significant, is somewhat small in magnitude relative to the impact effects of some of the other control variables discussed later. Nevertheless, the results lend support to recent reports that point to pervasive politicization of the Samurdhi program both at the administration and operational levels (Gunatilaka et al, 1997; World Bank, 2000; Parker and de Silva, 2000; World Bank, 2002).

However, we find no significant relationship between the swing voter effect (absolute distance of the percent of vote received by PA from 50) and the probability that a household in that division is selected by the SFSP. The sign on the coefficient on the swing voter effect is counter-intuitive but since it is not significant we do not worry about this result. We interpret the results through the lens of the Cox and McCubbins view that an incumbent party will generally be risk-averse and focus on welfare allocations to its core supporters. Having only won a majority by a small margin in the previous election, it is possible that in the run-up to the general elections of 2000, the PA party was being risk-averse, and thus made a strategic decision to patronize its core supporters and not try to woo swing voters using promises of Samurdhi food stamps.

Columns 2 and 3 report the estimates of the impact of the core voter and swing voter effects on the probability that a household participates in SFSP separately. We include these two additional specifications as a robustness check to ensure that the coefficient on the core voter effect is not being driven by its correlation with the swing voter effect. As shown in column 2, there are no significant changes in the way the core voter variable affects participation. The magnitude of the marginal effect of the percentage of PA vote on the probability that a household in that division is selected by the SFSP falls slightly but remains significant at the 5 percent level. The absolute difference of the percentage of PA vote from 50, or the swing voter effect, has a positive but an insignificant effect on household participation in SFSP, as in column 1.

Leaving aside the estimated coefficients on the political variables, columns 1-3 in Table 2.4 show that the coefficient estimates of the control variables are invariant to the different estimated models. Thus in the following discussion, we mainly focus on

the estimates presented in column 1. First, we find a highly significant impact of the eligibility criteria on the probability that a household receives Samurdhi food stamps. This finding shows that Samurdhi development officers are able to enforce the eligibility criteria to some extent despite the difficulties with means testing of income. Having a monthly household income of less than Rs. 1500 increases the probability that the household receives Samurdhi food stamps by 13 percent. Second, the results also confirm the findings from the descriptive analysis in the previous section that households with worse socio-economic characteristics are more likely to be Samurdhi food stamp recipients. For example, the level of the household head's education has a significant effect on the chances of the household receiving food stamps. Evaluated at a mean value of 7 years, an additional year of education received by the household head reduces the probability that the household receives food stamp by 3 percent. This result is consistent with the well-established fact that higher education translates into better employment opportunities, and thus less need to participate in a the food stamp program.

While a higher number of children under the age of 17 significantly increases the probability of joining SFSP, more elderly household members has no significant effect on the dependent variable. However, having a disabled household member increases the probability of receiving Samurdhi food stamps by 8 percent. The result is significant at the 1 percent level. In terms of the other household demographic variables, the results show that a female-headed household is able to increase its chances of receiving Samurdhi food stamps by 9 percent compared to male-headed households controlling for other factors. Once again, all of these household demographic variables that are significant determinants of participation in SFSP are also considered to be associated with low welfare. A few other variables that are associated with low household welfare appear to be significant determinants of household participation in SFSP. For example, households who live in shanties (relative to those who live in own home), those who do not have access to a latrine (relative to those who own latrine), and those who use kerosene for lighting (relative to those who have electricity), all have a higher chance of joining the SFSP.

The main occupation of the household head has a highly significant effect on the probability of participating in SFSP. Households employed as agricultural labourers,

and thus more likely to be poor, are also more likely to receive food stamps relative to households whose heads work in salaried occupations or are entrepreneurs. However, households employed in plantation estates are less likely to receive SFSP benefits compared to households engaged in casual labour. All of these results are significant at the one percent level for all the specifications of equation 2.1. This latter result is consistent with the finding that Indian Tamil households (who tend to work on these estates) are less likely to receive Samurdhi food stamps when compared with Sinhalese households. This effect is both highly significant and large – being an Indian Tamil household reduces the probability of participating in SFSP by 29 percent compared to being a Sinhalese household. One explanation for this result could be the fact that Indian Tamils do not enjoy citizenship, and therefore voting rights, despite having lived in Sri Lanka since the British colonial rule in the 19th and 20th centuries when they were brought over from India as plantation workers. The PA, like other political parties, will have no interest to court this group with promises of welfare benefits to "buy" their political loyalty.

Sri Lankan Tamils also do not seem to be likely recipients of Samurdhi benefits but perhaps for different reasons than Indian Tamils. Being a Sri Lankan Tamil household reduces the probability of participating in SFSP by 22 percent compared to being a Sinhalese household. This latter result can be explained by the on-going ethnic conflict with separatist Sri Lankan Tamils in the North-eastern Province of Sri Lanka. This long-drawn ethnic conflict is reported to have brought about both social and political divisions along ethnic lines. Sri Lankan Tamils, as a result, can be considered to constitute the opposition voters – those who will consistently oppose the PA[42]. The fact that the other major ethnic minority group – the Muslims – appear to have a slightly better chance of receiving food stamps compared to the Tamil population is further evidence of the fact that politics may play a role in determining which ethnic groups receive Samurdhi food stamps. Even though the Muslim population mainly live in the Tamil-dominated North-eastern province, they are historically known to not identify with the Tamils and have generally been wooed by both Tamil and Sinhalese political groups. In fact, the main Muslim political party, Sri Lanka Muslim Congress, was part of the PA coalition that came to power after the general elections

[42] The same will hold for PA's rival party, the UNP, which is also considered to represent the mainstream Sinhalese population.

of 2000. This provides a possible explanation for the result that being a Muslim only reduces the chances of receiving Samurdhi food stamps by 12 percent compared with 29 (in the case of Indian Tamils) and 22 (in the case of Sri Lankan Tamils) percent, relative to the Sinhalese population.

Table 2.4. The Determinants of Targeting Samurdhi Food Stamps (Equation 2.1)

	(1)		(2)		(3)	
	Marginal effects (std. error)		Marginal effects (std. error)		Marginal effects (std. error)	
Political variables						
% vote for PA in 1994	0.005	**	0.004	**		
	(0.002)		(0.002)			
Abs.Value (% vote for PA – 50)	0.003				0.002	
	(0.003)				(0.002)	
Eligibility Criteria						
1, if HH pre-transfer monthly income < Rs. 1500	0.129	***	0.128	***	0.123	***
	0.029		0.029		0.030	
Household variables						
Years of education of household head	-0.027	***	-0.028	***	-0.028	***
	(0.003)		(0.003)		(0.003)	
No. of children aged 0 to 17 years	0.031	***	0.031	***	0.031	***
	(0.008)		(0.008)		(0.008)	
1, if no men in the household	0.074	***	0.073	***	0.077	***
	(0.028)		(0.028)		(0.028)	
1, if there is disabled household member	0.083	***	0.082	***	0.083	***
	(0.018)		(0.018)		(0.018)	
Ethnicity of the household head, Sinhalese omitted						
1, if Sri Lankan Tamil	-0.222	***	-0.221	***	-0.233	***
	(0.045)		(0.045)		(0.046)	
1, if Indian Tamil	-0.286	***	-0.288	***	-0.296	***
	(0.081)		(0.082)		(0.077)	
1, if Moor	-0.125	***	-0.129	***	-0.136	***
	(0.048)		(0.049)		(0.049)	
1, if Other	-0.192	*	-0.190	*	-0.212	**
	(0.100)		(0.102)		(0.097)	
1, if household owns farming assets	-0.052	*	-0.053	*	-0.052	*
	(0.031)		(0.031)		(0.031)	
1, if household member in military	0.152	***	0.151	***	0.153	***
	(0.039)		(0.039)		(0.039)	
Migration status, never moved omitted						
1, if household moved between 1970-90	-0.084	***	-0.083	***	-0.082	***
	(0.026)		(0.026)		(0.026)	
Occupation of household head, farm labourer omitted						
1, if government employee	-0.470	***	-0.468	***	-0.469	***
	(0.047)		(0.047)		(0.047)	
1, if private salaried employee	-0.166	***	-0.165	***	-0.166	***
	(0.044)		(0.044)		(0.044)	
1, if employed in estates	-0.213	***	-0.212	***	-0.218	***
	(0.067)		(0.067)		(0.066)	
1, if employed in petty business	-0.176	***	-0.176	***	-0.176	***

	(0.034)		(0.034)		(0.034)	
1, if employed in other occupations	-0.182	*	-0.189	*	-0.174	
	(0.108)		(0.109)		(0.109)	
1, if retired	-0.193	***	-0.191	***	-0.194	***
	(0.039)		(0.039)		(0.039)	
Type of house, own house omitted						
1, if shanty	0.152	*	0.151	*	0.142	*
	(0.085)		(0.085)		(0.085)	
1, if other type of housing	-0.236	***	-0.239	***	-0.233	***
	(0.076)		(0.076)		(0.076)	
Type of latrine, own latrine omitted						
1, if has no access to latrines	0.111	***	0.112	***	0.112	***
	(0.034)		(0.034)		(0.034)	
Type of lighting used, electricity omitted						
1, if use kerosene for light	0.205	***	0.204	***	0.204	***
	(0.021)		(0.021)		(0.021)	
Village level and geographical variables						
Type of community, traditional village omitted						
1, if irrigation colony	-0.172	***	-0.171	***	-0.173	***
	(0.064)		(0.064)		(0.064)	
1, if expansion colony	0.120	**	0.116	**	0.110	*
	(0.057)		(0.057)		(0.057)	
1, if plantation estate	-0.260	***	-0.240	***	-0.287	***
	(0.076)		(0.072)		(0.077)	
1, if urban middle income neighbourhood	-0.098	**	-0.093	**	-0.088	**
	(0.041)		(0.041)		(0.041)	
Province, Western omitted						
1, if Central	0.202	***	0.200	***	0.160	***
	(0.046)		(0.046)		(0.038)	
1, if Southern	0.163	***	0.167	***	0.178	***
	(0.033)		(0.033)		(0.033)	
1, if North Western	0.197	***	0.190	***	0.191	***
	(0.041)		(0.040)		(0.041)	
1, if North Central	0.121	**	0.117	**	0.120	**
	(0.049)		(0.048)		(0.048)	
1, if Uva	0.191	***	0.183	***	0.161	***
	(0.046)		(0.045)		(0.040)	
1, if Sabaragamuwa	0.241	***	0.232	***	0.218	***
	(0.041)		(0.040)		(0.039)	
Number of observations	5527		5527		5527	
Psuedo R^2	0.23		0.23		0.23	
Percent correct predictions	74		74		74	
Pearson $\chi 2$	5517.27		5517.27		5517.27	
Prob > $\chi 2$	0.32		0.32		0.32	

Notes to Table 2.4

a) Robust standard errors, adjusted for clustering, are used in all cases
b) Standard errors are reported in parentheses
c) ***denotes statistical significance at the 1% level, ** at the 5% level, * at the 10% level using two-tailed tests.
d) The logit estimates are transformed into marginal effects for the continuous variables and impact effects for the binary variables.
e) The Pearson $\chi 2$ goodness of fit test is a test of the observed against the expected number of responses using cells defined by covariate patterns (two observations are said to share the same covariate pattern if the independent variables for the two observations are identical).
f) Only significant coefficients in the logit regression are reported in the above table. For all the variables included in the regression see Table A2.3 in Appendix two.

Household migration between 1970 and 1990, i.e. prior to the establishment of the Samurdhi program, relative to never having moved, appears to have a significant negative effect on the probability of participating in SFSP. We are not able to explain why this is the case. The expectation was that households who moved between 1990 and 1995, and households who moved between 1995 and 1999 would be less likely to join SFSP since migration causes households to lose their Samurdhi entitlements. The probability of receiving Samurdhi food stamps increases by 15 percent if a household member is in the military. The result is significant at the 1 percent level, and is consistent with the fact that it is government policy to provide Samurdhi benefits to households who have a member in the army regardless of their poverty status (World Bank, 2002).

The results show that there are a number of household and community characteristics that influence whether a household receives food stamps. Political affiliation with the PA is one such factor. The results are robust to the inclusion of provincial level fixed effects, and are consistent with the predictions of the Cox and McCubbins model that risk-averse incumbents will court their existing core supporters and not try to woo swing voters when faced with electoral competition. The results in Table 2.4 however, are unable to shed any light on the extent to which politically motivated distribution of Samurdhi food stamps results in errors of inclusion (i.e. inclusion of the non-poor) in the Samurdhi program. We now turn to the estimation that focuses on this issue.

Equation 2.2 enables us to empirically test whether errors of inclusion found in SFSP can be explained by the probability that a household is a core PA supporter or a swing voter. This mis-targeting model is able to estimate the effect of household political support for the PA on the probability that a non-poor household participates in SFSP. Columns 1 to 3 in Table 2.5 provide logit estimates for equation 2.2. Column 1 includes all the variables of equation 2.2, while column 2 excludes the swing voter effect and column 3 excludes the core voter effect.

The results show that the probability of a non-poor household participating in SFSP is positively associated with the measure of core support for the Peoples' Alliance party. The coefficient is significant at the 5 percent level. The logit estimates show that if the percentage of votes for the PA goes up by 1 percentage point in a division, the

probability of a non-poor household (living in that division) subsequently participating in SFSP goes up by 0.4 percent, holding constant the swing voter effect, other household and village level control variables, and provincial level fixed effects. The result suggests that the mis-targeting in the SFSP to some extent served the political ambitions of the ruling PA party in the run up to the general elections of 2000. Such politically motivated allocations of Samurdhi food stamps to core PA supporters are consistent with qualitative analysis of the targeting of Samurdhi food stamps. Using results based on Rapid Rural Appraisal (RRA) and Participatory Rural Appraisal (PRA) research methodologies, Parker and de Silva (2000) also find that a large number of ineligible households received food stamps as a reward for political loyalty to the PA party.

We find no significant effect of being a swing voter on the probability that a non-poor household is targeted by a Samurdhi development worker. This result is consistent with the results in Table 2.4. Column 2 in Table 2.5 reports the logit estimates of equation 2.2 that does not include the swing voter effect while the results in column 3 do not include the core voter effect. Comparisons of the results across these three specifications show that there are no significant changes in the way the core voter variable affects participation in SFSP by a non-poor household. Column 2 shows that the magnitude of the marginal effect of the percentage of PA vote on the probability that a nonpoor households receives Samurdhi food stamps falls slightly but remains significant at the 5 percent level. Column 3 shows that the absolute difference of the percentage of PA vote from 50, or the swing voter effect, has a positive but an insignificant effect on the probability that a non-poor household participates in the SFSP, as in column 1. Columns 1-3 in Table 2.5 also show that the coefficient estimates of the other household level and geographical variables are invariant to the different specifications of equation 2.2. We therefore concentrate mainly on the results presented in column 1.

The results show that non-poor households who have weaker demographic or educational attributes are more likely to be Samurdhi food stamp recipients. This suggests that Samurdhi officials use a broader socio-economic criteria to target prospective beneficiaries (a result that is consistent with the results of equation 2.1), and these characteristics are more likely to encourage participation in the program by

non-poor households. For instance, having a disabled member in the household increases the probability of a non-poor household participating by 8.3 percent (compared to 5.4 percent in equation 2.1). The results in both the models are significant at the 1 percent level. The more educated the household head, the less likely is a non-poor household to receive food stamps. An additional year of education for the household head reduces the probability that a non-poor household receives Samurdhi food stamp by 1.3 percent (compared to 2.8 percent in equation 2.1). The results in this case can be interpreted in the same way as in the case of equation 2.1 - that a more educated household will have better earning capabilities, and thus have less of a need for Samurdhi food stamps. In terms of the occupation of the household head, we find that being employed as a non-agricultural labourer or a farmer increases the probability that a non-poor household receives Samurdhi food stamps relative to households whose head work as agricultural labourers. Non-poor households who do not have access to their own personal latrine and who have to use kerosene for light are also likely to be targeted by Samurdhi officials relative to households who have their own latrines and electricity respectively. These results, all of them significant at the 1 percent level, support the view that along with household political affiliation, non-income indicators are also responsible for the deviation from strict income-based targeting of Samurdhi food stamps.

Results from estimating equation 2.2 also show that having a member of the household in the military increases the probability that a nonpoor household participates in SFSP by 9.3 percent. The result is significant at the 1 percent level, and implies that such favourable policy towards the military is one of the reasons of mis-targeting Samurdhi food stamps. According to the results in Table 2.5, similar preferential treatment is also provided to non-poor households who live in expansion colonies (set up to increase Sinhalese representation in overwhelmingly Tamil areas). Both these results are consistent with those of the targeting model and with our hypothesis that households that are politically important to the government are likely to receive food stamps. On the other hand, living in relatively affluent communities such as irrigation colonies and urban middle class neighbourhoods, relative to living in traditional villages, reduces the probability that a non-poor household joins the SFSP by 9.4 and 6.2 percent respectively.

Table 2.5 The Determinants of Mis-targeting of Samurdhi Food Stamps (Equation 2.2)

	(1) Marginal effects (std. error)		(2) Marginal effects (std. error)		(3) Marginal effects (std. error)	
Political variables						
% vote for PA in 1994	0.004	**	0.003	**		
	(0.002)		(0.002)			
Abs.Value (% vote for PA – 50)	0.003				0.002	
	(0.002)				(0.002)	
Household variables						
Years of education of household head	-0.013	***	-0.013	***	-0.013	***
	(0.002)		(0.002)		(0.002)	
Household size	-0.023	***	-0.023	***	-0.023	***
	(0.006)		(0.006)		(0.006)	
1, if there is disabled household member	0.055	***	0.054	***	0.055	***
	(0.014)		(0.014)		(0.014)	
Ethnicity of the household head, Sinhalese omitted						
1, if Sri Lankan Tamil	-0.083	**	-0.081	**	-0.092	**
	(0.037)		(0.036)		(0.037)	
1, if household owns livestock	0.038	*	0.039	*	0.040	**
	(0.020)		(0.020)		(0.020)	
1, if household member in military	0.093	***	0.092	***	0.094	***
	(0.031)		(0.031)		(0.031)	
Occupation of household head, farm labourer omitted						
1, if non-farm labourer	0.070	***	0.070	***	0.071	***
	(0.026)		(0.026)		(0.026)	
1, if government employee	-0.237	***	-0.235	***	-0.237	***
	(0.040)		(0.040)		(0.040)	
1, if a farmer	0.060	**	0.060	**	0.057	**
	(0.029)		(0.029)		(0.029)	
1, if retired	-0.052	*	-0.051		-0.053	*
	(0.032)		(0.032)		(0.031)	
Type of house, own house omitted						
1, if other type of housing	-0.213	***	-0.215	***	-0.209	***
	(0.057)		(0.057)		(0.058)	
Type of latrine, own latrine omitted						
1, if has no access to latrines	0.066	***	0.067	***	0.067	***
	(0.023)		(0.023)		(0.023)	
Type of lighting used, electricity omitted						
1, if use kerosene for light	0.064	***	0.063	***	0.063	***
	(0.016)		(0.016)		(0.016)	
Village level and geographical variables						
Type of community, traditional village omitted						
1, if irrigation colony	-0.094	**	-0.094	**	-0.095	**
	(0.042)		(0.042)		(0.042)	
1, if expansion colony	0.104	***	0.101	***	0.097	***
	(0.035)		(0.035)		(0.035)	
1, if urban middle income neighbourhood	-0.062	*	-0.059		-0.054	
	(0.036)		(0.036)		(0.037)	
Province, Western omitted						
1, if Central	0.068	**	0.067	**	0.036	
	(0.033)		(0.033)		(0.029)	

1, if Southern	0.097	***	0.100	***	0.107	***
	(0.027)		(0.026)		(0.026)	
1, if North Western	0.161	***	0.156	***	0.157	***
	(0.030)		(0.029)		(0.030)	
1, if North Central	0.116	***	0.113	***	0.116	***
	(0.038)		(0.037)		(0.037)	
1, if Uva	0.123	***	0.118	***	0.102	***
	(0.036)		(0.034)		(0.036)	
1, if Sabaragamuwa	0.141	***	0.135	***	0.123	***
	(0.030)		(0.029)		(0.029)	
Number of observations	5527		5527		5527	
Psuedo R^2	0.125		0.125		0.125	
Percent correct predictions	66		66		66	
Pearson $\chi 2$	5457.24		5457.24		5457.24	
Prob > $\chi 2$	0.5423		0.5423		0.5423	

Notes to Table 2.5

a) Robust standard errors, adjusted for clustering, are used in all cases
b) Standard errors are reported in parentheses
c) ***denotes statistical significance at the 1% level, ** at the 5% level, * at the 10% level using two-tailed t tests.
d) The logit estimates are transformed into marginal effects for the continuous variables and impact effects for the binary variables.
e) The Pearson $\chi 2$ goodness of fit test is a test of the observed against the expected number of responses using cells defined by covariate patterns (two observations are said to share the same covariate pattern if the independent variables for the two observations are identical).
f) Only significant coefficients in the logit regression are reported in the above table. For all the variables included in the regression see Table A2.4 in Appendix two.

Some of the results in column 1 in Table 2.5 remain unexplained. For instance, the results show that non-poor households who own livestock are also more likely to receive food stamps. We also find that non-poor households who have larger household sizes are less likely to receive food stamps. The result is significant at the 1 percent level. Both these two results are unexpected since livestock ownership and larger household size are associated with low welfare. Overall, the results suggest that the errors of inclusion occur partly due to politics and partly due to mis-identification by Samurdhi program officials. However, the magnitude of the marginal effect of politics is small compared to the effect of these other broader socio-economic indicators that determine targeting and mis-targeting of food stamps.

To check for the robustness of the above results, we estimate an alternate specification where we interact the political variable representing core support for the PA with the poverty variables. Specifically, we interact the percentage of votes for the PA at the divisional level with a dummy variable which takes the value 1 if the household belongs to pre-transfer per capita expenditure quintile one. Four other dummy variables representing the households belonging to quintiles two to five are also

interacted with the percentage of PA votes at the divisional level respectively. Thus we have five interaction terms that represent the extent of the mis-targeting of the different expenditure quintiles due to political considerations. In other words, we are able to estimate the marginal effect of a poor and a non-poor household living in divisions identified as core PA areas on the probability of that household receiving Samurdhi food stamps. The logit estimates of this mis-targeting model using interaction terms are presented in Table A2.5 in Appendix two.

According to the results presented in Table A2.5, there is a positive association between the probability of receiving Samurdhi benefits and the interaction terms for all the households except for those belonging to the fifth expenditure quintile. However, this result is significant only for the households belonging to the first three quintiles. More specifically, a one percentage point increase in the percentage of votes for PA in a division has a little more than half a percent (0.579) increase in the probability that a poor household (i.e. belonging to the first expenditure quintile) living in that division subsequently receives Samurdhi benefits holding constant other household and community level control variables and any provincial level fixed effects. The result is significant at the one percent level. Similarly, a one percentage point increase in the percentage of votes for PA in a division has around half a percent (0.492) increase in the probability that a non-poor household belonging to the second expenditure quintile that is living in that division subsequently receives Samurdhi benefits holding constant other household and community level control variables and any provincial level fixed effects. This result is also significant at the one percent level. The results suggest that both poor and less poor households who live in divisions identified as PA core support areas are likely to be more or less equally favoured by the Samurdhi program. The marginal effect of the political variable on the probability of participating in Samurdhi by a non-poor household belonging to the third expenditure quintile is slightly less (0.383) but nevertheless significant at the five percent level. These set of results suggest that some of the mis-targeting in the SFSP is driven by political consideration, and thus lend support to the results in Table 2.5. All of the control variables that are significant in equations 2.1 and 2.2 are also significant in this case. The magnitude of the marginal effects though varies slightly (see Table A2.5).

The above three sets of results do not rule out the possibility that the correlation between the political variables and the probability of receiving Samurdhi food stamps is due to some omitted variable that is driving both votes for PA in a division and the probability of receiving food stamps. For example, poorer divisions may have voted for the PA because the SLFP (the dominant party in the PA coalition) is historically considered to be a left-leaning party, and therefore more pro-poor than the UNP party (which is known to be more of a centrist party). This may be the reason behind a higher probability of a household living in a poorer division receiving Samurdhi food stamps and not necessarily pork barrel politics. If this were true, then we would also expect the incidence of poverty to be high in the divisions where the PA won a majority of the votes in the 1994 elections. However, we find a weak positive relationship – the correlation coefficient between the district level percentage of PA votes and the 1995 district level poverty rates is 0.01[43].

Another alternate hypothesis could be that divisions that voted overwhelmingly for the PA in 1994 experienced a rise in the incidence of poverty, thus leading to a subsequent higher probability that households who live in these divisions received Samurdhi food stamps in 1999/2000. The data on poverty rates suggest an improvement over the period 1994-2000 in all 17 districts[44] except for two districts where the PA had a majority of the votes: Hambantota (poverty rate went up from 31 to 32 percent) and Polonnaruwa (poverty rate went up from 20 to 24 percent). The percentage of votes the PA received in both these districts in 1994 were 53.5 percent and 51.18 percent respectively.

2.8 Conclusion

This chapter has attempted to understand the extent to which pork barrel politics affects the distribution of transfers at the household level. The studies reviewed provide both theoretical and empirical analysis that suggest that when faced with electoral competition political parties often resort to using transfers to win political loyalty from certain groups of voters. The theory is consistent with the results found

[43] Since we do not have data on divisional level poverty rates, we are not able to calculate the correlation coefficient between poverty rates and the total percentage of PA votes at the divisional level.
[44] Excluding the North-East districts.

in this chapter, which show that politics played a role in the selection of beneficiaries of the state-run Samurdhi Food Stamp Program in Sri Lanka during the period 1995-1999 when the PA party was in power. There is a positive, significant and robust relationship between the percentage of votes for the PA party at the divisional level and the probability that a household in that division participates in the Samurdhi Food Stamp Program. We interpret this result as follows: a higher probability of a household being a PA supporter is associated with a higher probability of participation in SFSP. The results are robust to the inclusion of household, village and geographical level control variables. The chapter also shows that such politically motivated allocation of Samurdhi food stamps is one of the causes of targeting errors faced by the program. There is a positive, significant and robust relationship between the percentage of votes for the PA party at the divisional level and the probability that a non-poor household in that division receives Samurdhi food stamps. This result is consistent with existing qualitative analysis which point out that supporters of the PA were indeed given Samurdhi food stamps regardless of their poverty status (Parker and De Silva, 2000).

The chapter has also shown that household level political affiliation is only one of the determinants of receiving Samurdhi food stamps. Given the difficulties associated with means-testing, the results in this chapter show that Samurdhi officials use "income-correlates" for the identification purposes. In addition to the official targeting criteria, Samurdhi program officials apply a broad set of non-income indicators that are associated with low welfare to select program beneficiaries. These indicators include whether a household member is disabled, housing conditions, access to electricity, place of residence etc. The fact that these variables have the advantage of being easily identifiable household and village characteristics makes them a viable component of a set of "unofficial" targeting criteria. The use of this "unofficial" targeting criteria however, raises the probability of making targeting errors of inclusion, as has been shown by the results in this chapter. Overall, the results show that targeting and mis-targeting of Samurdhi food stamps are driven by both political and other identifiable household and village characteristics. Contrary to our expectation however, the marginal effect of these non-political variables on the probability of receiving Samurdhi food stamps is larger than the effect of the political variable.

There are some reasons, however, why the results presented in this chapter should be interpreted with caution. The political effect estimated here using divisional level voting outcomes is only a proxy for household political affiliation. Due to the lack of data on household level voting behaviour, we are unable to assess a more direct impact of household support for the PA on the probability that it participates in the Samurdhi Food Stamp Program. Such household level voting data would have allowed us to the quantify the "cost" to a household in terms of forgone Samurdhi benefits due to its political preference. Moreover, voting data at the household level would have given us more variation and thus better econometric estimates.

Nevertheless, the above results lend some support to the many allegations by Sri Lankan opposition parties in the run-up to the general elections of October 2000 that the PA government used the Samurdhi Food Stamp Program as a political instrument to secure votes. While Samurdhi clearly allocates funds to districts according to district poverty rates, we find that within district allocation of Samurdhi benefits are less well correlated with poverty. The political bias in the implementation of SFSP makes the poor vulnerable to changes in the country's political climate. For instance in the early 1990s, the UNP government introduced a cash transfer program known as the Janasaviya program, allegedly allocated to pro-UNP households, which lasted until the UNP lost the general elections of 1994 to the PA party. Upon assuming office the PA party replaced the Janasaviya program with the Samurdhi, which provided essentially the same service but required a fresh selection of beneficiaries. There is no guarantee that some future government will not eliminate the SFSP and introduce another welfare program targeted to a different set of beneficiaries with different political inclinations.

The results presented in this chapter also support the view that the politicization of the Samurdhi food stamp program explains why a portion of these food stamps goes to the non-poor. Consequently, the thin spread of Samurdhi consumption transfers across the population diverts scarce resources away from the most needy segment of the population. The chapter therefore shows that despite the extensive administrative apparatus in place to identify beneficiaries, the targeting outcomes of the anti-poverty program Samurdhi in Sri Lanka will not improve unless the program is somehow

insulated from the politics of the country and beneficiary identification by program officials is made more accurate. The relatively small marginal effects of politics on the allocation of Samurdhi food stamps found in this chapter does not preclude the fact that current pork barrel politics practised by the government may set a precedent for future elections, and thus these marginal effects may rise over time to overshadow the broader targeting criteria used to allocate Samurdhi benefits. Thus, preventing SFSP from becoming a full-fledged "political rewards" program may require a complete overhaul of the administrative structure of the program to make it more transparent and more accountable to the beneficiaries and not to the central Government. Alternatively, the government could consider reforming the program design to make it largely based on self-targeting such that only the poor is willing to self-select into the program. Further discussions on the merits of self-targeting and ways to reform the Samurdhi food stamp program is presented in chapter five.

The experience of the Samurdhi food stamp program in Sri Lanka offers lessons for other developing countries. Policy makers should be cognizant of the fact that when devising safety-net programs for the poor they need to be aware of the potential losses that can be caused by politicians interfering and using their discretion to influence the targeting performance of these programs. In addition to politics, targeting of anti-poverty programs can also be determined by social factors. The next chapter explores the extent to which household social capital is a significant determinant of participation in the Samurdhi microfinance program.

Appendix Two

Figure A2.1 Divisional level participation in SFSP and % of PA votes

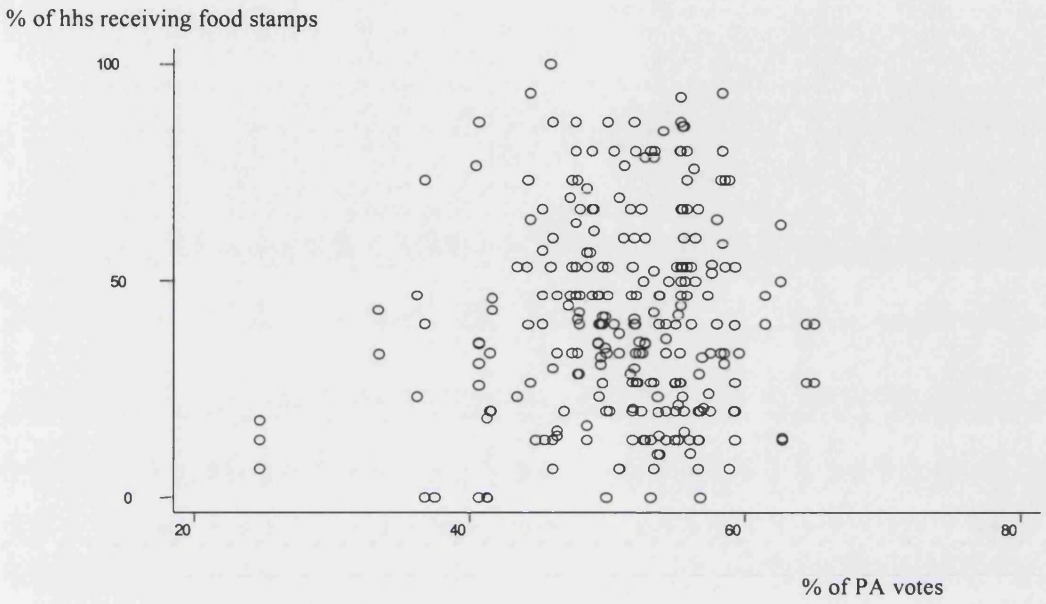


Figure A2.2 Divisional level participation in SFSP and abs. value (% of Pa votes – 50)|

Table A2.1 Descriptive Statistics for Targeting and Mis-targeting Models

	Mean (standard deviation)
Dependent Variables	
Proportion of hh who receives Samurdhi food stamps	0.401 (0.490)
Proportion of non-poor hh who receives Samurdhi food stamps	0.281 (0.450)
Explanatory Variables	
Political Variables	
% vote for PA in 1994	50.790 (7.248)
Abs.value (% vote for PA – 50)	5.508 (4.777)
Eligibility Criteria	
Proportion of hh with pre-transfer monthly income < Rs.1500	0.116 (0.320)
Household Variables	
Years of education of household head	7.434 (3.384)
Age of household head (years)	50.406 (13.619)
No. of children aged 0 to 17 years	1.267 (1.247)
No. of elderly (60+ years)	0.395 (0.646)
Proportion of female-headed households	0.100 (0.300)
Household size	4.515 (1.749)
Proportion of households with disabled members	0.310 (0.463)
Proportion of Sinhalese households	0.861 (0.346)
Proportion of Sri Lankan Tamil households	0.073 (0.261)
Proportion of Indian Tamil households	0.024 (0.152)
Proportion of Muslim Moor households	0.051 (0.221)
Proportion of households of other ethnicities	0.007 (0.082)
Proportion of households who own livestock	0.078 (0.268)
Proportion of households who own farming assets	0.293 (0.455)
Proportion of landless household	0.297 (0.457)
Proportion of households with member in military	0.046 (0.209)
Proportion of households who never moved	0.703 (0.457)
Proportion of households who moved before 1950	0.025

	(0.157)
Proportion of households who moved between 1950-70	0.088
	(0.283)
Proportion of households who moved between 1970-90	0.143
	(0.350)
Proportion of households who moved between 1993-95	0.020
	(0.139)
Proportion of households who moved between 1995-99	0.012
	(0.110)
Proportion of farm labourer households	0.054
	(0.226)
Proportion of non-farm labourer households	0.165
	(0.371)
Proportion of government employee households	0.089
	(0.285)
Proportion of private salaried employee households	0.072
	(0.258)
Proportion of employed in estates households	0.041
	(0.199)
Proportion of employed in petty business households	0.104
	(0.305)
Proportion of employed domestic service households	0.011
	(0.105)
Proportion of farmer households	0.171
	(0.377)
Proportion of fisherman households	0.010
	(0.101)
Proportion of employed in other occupations households	0.003
	(0.059)
Proportion of household heads who do house duties only	0.065
	(0.247)
Proportion of retired households	0.157
	(0.364)
Proportion of households with disabled household head	0.026
	(0.158)
Proportion of households with unemployed household head	0.023
	(0.149)
Proportion of self-owned houses	0.883
	(0.321)
Proportion of attached houses	0.049
	(0.216)
Proportion of flats	0.010
	(0.100)
Proportion of shanties	0.016
	(0.127)
Proportion of other type of housing	0.042
	(0.202)
Proportion of hhs who own latrine	0.863
	(0.344)
Proportion of hhs who has no access to latrines	0.092
	(0.289)
Proportion of hhs who has access to community latrine	0.037
	(0.189)
Proportion of hhs who use electricity	(0.611)
	(0.488)

Proportion of hhs who has no light	0.037
	(0.190)
Proportion of hhs who use kerosene for light	0.333
	(0.471)
Village level and geographical variables	
Proportion of traditional villages	(0.733)
	(0.442)
Proportion of irrigation colony	0.050
	(0.218)
Proportion of expansion colony	0.055
	(0.227)
Proportion of settlement scheme	0.059
	(0.236)
Proportion of plantation estate	0.043
	(0.204)
Proportion of urban low income neighbourhood	0.011
	(0.103)
Proportion of urban middle income neighbourhood	0.075
	(0.264)
Proportion of households in Western Province	0.24
	(0.427)
Proportion of households in Central	0.166
	(0.372)
Proportion of households in Southern	0.165
	(0.371)
Proportion of households in North Western	0.126
	(0.332)
Proportion of households in North Central	0.091
	(0.287)
Proportion of households in Uva	0.097
	(0.295)
Proportion of households in Sabaragamuwa	0.117
	(0.321)

Table A2.2 Political Preferences and Socio-economic Characteristics of Non-Samurdhi and Samurdhi Households

	Non-members	Samurdhi Food stamp recipients	Comparison (p-value)
N	3315	2215	
Political Variables			
% vote for PA in 1994	0.50	0.51	0.00
Abs.Value (% vote for PA – 50)	0.05	0.06	0.00
Household variables			
Hh monthly per capita income (Rs.)	5314.06	1650.83	0.00
Years of education of household head	8.2	6.2	0.00
Age of household head	51	50	0.14
Household size	4.5	4.6	0.07
Proportion of household with a disable/chronically ill member	0.28	0.35	0.00
Proportion of households with no male adults in household	0.10	0.12	0.00
Proportion of households who are landless	0.26	0.36	0.00
Proportion of Sinhalese households	0.80	0.91	0.00
Proportion of Sri Lankan Tamil households	0.10	0.04	0.00
Proportion of Muslim households	0.06	0.04	0.00
Proportion of hhs who own livestock	0.06	0.10	0.00
Proportion of hhs who own farming equipment	0.25	0.35	0.00
Proportion of landless hhs	0.26	0.36	0.00
Village level & geographical variables			
% of villages that are:			
Traditional villages	0.68	0.74	0.00
Irrigation colonies	0.05	0.05	0.99
Settlement schemes	0.06	0.06	0.31
Plantation estates	0.06	0.01	0.00
Urban slum	0.01	0.01	0.21
Urban middle class neighbourhood	0.10	0.04	0.00
Expansion colonies	0.04	0.08	0.00
Household distance to market (miles)	4.1	4.6	0.03
Proportion of households located in:			
Western Province	0.30	0.15	0.00
Central Province	0.17	0.16	0.10
Southern Province	0.15	0.18	0.00
N. Western Province	0.10	0.16	0.00
N. Central Province	0.08	0.10	0.11
Uva Province	0.09	0.10	0.00
Sabaragamuwa Province	0.09	0.15	0.00

Table A.2.3 The Determinants of Targeting Samurdhi Food Stamps (Equation 2.1)

	(1) Marginal effects (std. error)		(2) Marginal effects (std. error)		(3) Marginal effects (std. error)	
Political variables						
% vote for PA in 1994	0.005	**	0.004	**		
	(0.002)		(0.002)			
Abs.Value (% vote for PA – 50)	0.003				0.002	
	(0.003)				(0.002)	
Eligibility Criteria						
1, if HH pre-transfer monthly income < Rs. 1500	0.129	***	0.128	***	0.123	***
	0.029		0.029		0.030	
Household variables						
Years of education of household head	-0.027	***	-0.028	***	-0.028	***
	(0.003)		(0.003)		(0.003)	
Age of household head	-0.001		-0.001		-0.001	
	(0.001)		(0.001)		(0.001)	
No. of children aged 0 to 17 years	0.031	***	0.031	***	0.031	***
	(0.008)		(0.008)		(0.008)	
No. of elderly (60+ years)	-0.003		-0.003		-0.003	
	(0.015)		(0.015)		(0.015)	
1, if no men in the household	0.074	***	0.073	***	0.077	***
	(0.028)		(0.028)		(0.028)	
Household size	0.010		0.010		0.010	*
	(0.006)		(0.006)		(0.006)	
1, if there is disabled household member	0.083	***	0.082	***	0.083	***
	(0.018)		(0.018)		(0.018)	
Ethnicity of the household head, Sinhalese omitted						
1, if Sri Lankan Tamil	-0.222	***	-0.221	***	-0.233	***
	(0.045)		(0.045)		(0.046)	
1, if Indian Tamil	-0.286	***	-0.288	***	-0.296	***
	(0.081)		(0.082)		(0.077)	
1, if Moor	-0.125	***	-0.129	***	-0.136	***
	(0.048)		(0.049)		(0.049)	
1, if Other	-0.192	*	-0.190	*	-0.212	**
	(0.100)		(0.102)		(0.097)	
1, if household owns livestock	0.013		0.015		0.017	
	(0.031)		(0.031)		(0.031)	
1, if household owns farming assets	-0.052	*	-0.053	*	-0.052	*
	(0.031)		(0.031)		(0.031)	
1, if household is landless	-0.025		-0.024		-0.024	
	(0.031)		(0.031)		(0.031)	
1, if household member in military	0.152	***	0.151	***	0.153	***
	(0.039)		(0.039)		(0.039)	
Migration status, never moved omitted						
1, if household moved before 1950	-0.024		-0.023		-0.026	
	(0.048)		(0.048)		(0.049)	
1, if household moved between 1950-70	-0.035		-0.035		-0.034	
	(0.029)		(0.029)		(0.029)	
1, if household moved between 1970-90	-0.084	***	-0.083	***	-0.082	***
	(0.026)		(0.026)		(0.026)	
1, if household moved between 1990-95	-0.068		0.068		-0.070	

	(0.042)		(0.043)		(0.044)	
1, if household moved between 1995-99	-0.039		-0.036		-0.043	
	(0.086)		(0.086)		(0.084)	
Occupation of household head, farm labourer omitted						
1, if non-farm labourer	0.038		0.038		0.040	
	(0.033)		(0.033)		(0.034)	
1, if government employee	-0.470	***	-0.468	***	-0.469	***
	(0.047)		(0.047)		(0.047)	
1, if private salaried employee	-0.166	***	-0.165	***	-0.166	***
	(0.044)		(0.044)		(0.044)	
1, if employed in estates	-0.213	***	-0.212	***	-0.218	***
	(0.067)		(0.067)		(0.066)	
1, if employed in petty business	-0.176	***	-0.176	***	-0.176	***
	(0.034)		(0.034)		(0.034)	
1, if employed domestic service	-0.081		-0.081		-0.081	
	(0.068)		(0.068)		(0.068)	
1, if a farmer	-0.035		-0.036		-0.039	
	(0.038)		(0.038)		(0.038)	
1, if a fisherman	-0.026		-0.037		-0.038	
	(0.097)		(0.095)		(0.095)	
1, if employed in other occupations	-0.182	*	-0.189	*	-0.174	
	(0.108)		(0.109)		(0.109)	
1, house duties only	-0.054		-0.054		-0.056	
	(0.038)		(0.038)		(0.038)	
1, if retired	-0.193	***	-0.191	***	-0.194	***
	(0.039)		(0.039)		(0.039)	
1, if disabled	-0.010		-0.008		-0.010	
	(0.056)		(0.056)		(0.056)	
1, if not working	-0.051		-0.051		-0.054	
	(0.052)		(0.052)		(0.052)	
Type of house, own house omitted						
1, if attached house	-0.036		-0.035		-0.044	
	(0.049)		(0.049)		(0.048)	
1, if flat	-0.160		-0.156		-0.169	
	(0.140)		(0.142)		(0.145)	
1, if shanty	0.152	*	0.151	*	0.142	*
	(0.085)		(0.085)		(0.085)	
1, if other type of housing	-0.236	***	-0.239	***	-0.233	***
	(0.076)		(0.076)		(0.076)	
Type of latrine, own latrine omitted						
1, if has no access to latrines	0.111	***	0.112	***	0.112	***
	(0.034)		(0.034)		(0.034)	
1, if has access to community latrine	0.083		0.084		0.076	
	(0.056)		(0.056)		(0.057)	
Type of lighting used, electricity omitted						
1, if no light	0.023		0.024		0.029	
	(0.043)		(0.043)		(0.043)	
1, if use kerosene for light	0.205	***	0.204	***	0.204	***
	(0.021)		(0.021)		(0.021)	
Village level and geographical variables						
Type of community, traditional village omitted						
1, if irrigation colony	-0.172	***	-0.171	***	-0.173	***
	(0.064)		(0.064)		(0.064)	

1, if expansion colony	0.120	**	0.116	**	0.110	*
	(0.057)		(0.057)		(0.057)	
1, if settlement scheme	-0.034		-0.037		-0.036	
	(0.050)		(0.050)		(0.049)	
1, if plantation estate	-0.260	***	-0.240	***	-0.287	***
	(0.076)		(0.072)		(0.077)	
1, if urban low income neighbourhood	-0.019		-0.025		-0.039	
	(0.067)		(0.068)		(0.069)	
1, if urban middle income neighbourhood	-0.098	**	-0.093	**	-0.088	**
	(0.041)		(0.041)		(0.041)	
Province, Western omitted						
1, if Central	0.202	***	0.200	***	0.160	***
	(0.046)		(0.046)		(0.038)	
1, if Southern	0.163	***	0.167	***	0.178	***
	(0.033)		(0.033)		(0.033)	
1, if North Western	0.197	***	0.190	***	0.191	***
	(0.041)		(0.040)		(0.041)	
1, if North Central	0.121	**	0.117	**	0.120	**
	(0.049)		(0.048)		(0.048)	
1, if Uva	0.191	***	0.183	***	0.161	***
	(0.046)		(0.045)		(0.040)	
1, if Sabaragamuwa	0.241	***	0.232	***	0.218	***
	(0.041)		(0.040)		(0.039)	
Number of observations	5527		5527		5527	
Psuedo R^2	0.23		0.23		0.23	
Percent correct predictions	74		74		74	
Pearson $\chi 2$	5517.27		5517.27		5517.27	
Prob > $\chi 2$	0.32		0.32		0.32	

Notes to Table A2.3

g) Robust standard errors, adjusted for clustering, are used in all cases
h) Standard errors are reported in parentheses
i) ***denotes statistical significance at the 1% level, ** at the 5% level, * at the 10% level using two-tailed tests.
j) The logit estimates are transformed into marginal effects for the continuous variables and impact effects for the binary variables.
k) The Pearson $\chi 2$ goodness of fit test is a test of the observed against the expected number of responses using cells defined by covariate patterns (two observations are said to share the same covariate pattern if the independent variables for the two observations are identical).

Table A2.4 The Determinants of Mis-targeting of Samurdhi Food Stamps (Equation 2.2)

	(1) Marginal effects (std error)		(2) Marginal effects (std error)		(3) Marginal effects (std error)	
Political variables						
% vote for PA in 1994	0.004	**	0.003	**		
	(0.002)		(0.002)			
Abs.Value (% vote for PA – 50)	0.003				0.002	
	(0.002)				(0.002)	
Household variables						
Years of education of household head	-0.013	***	-0.013	***	-0.013	***
	(0.002)		(0.002)		(0.002)	
Age of household head	-0.001		-0.001		-0.001	
	(0.001)		(0.001)		(0.001)	
No. of children aged 0 to 17 years	0.007		0.007		0.007	
	(0.007)		(0.007)		(0.007)	
No. of elderly (60+ years)	-0.013		-0.013		-0.013	
	(0.013)		(0.013)		(0.013)	
1, if no men in the household	0.026		0.025		0.028	
	(0.023)		(0.023)		(0.023)	
Household size	-0.023	***	-0.023	***	-0.023	***
	(0.006)		(0.006)		(0.006)	
1, if there is disabled household member	0.055	***	0.054	***	0.055	***
	(0.014)		(0.014)		(0.014)	
Ethnicity of the household head, Sinhalese omitted						
1, if Sri Lankan Tamil	-0.083	**	-0.081	**	-0.092	**
	(0.037)		(0.036)		(0.037)	
1, if Indian Tamil	-0.090		-0.091		-0.100	*
	(0.060)		(0.061)		(0.058)	
1, if Moor	-0.021		-0.024		-0.029	
	(0.046)		(0.047)		(0.047)	
1, if Other	-0.032		-0.031		-0.047	
	(0.088)		(0.089)		(0.087)	
1, if household owns livestock	0.038	*	0.039	*	0.040	**
	(0.020)		(0.020)		(0.020)	
1, if household owns farming assets	0.005		0.004		0.005	
	(0.023)		(0.023)		(0.023)	
1, if household is landless	0.023		0.024		0.023	
	(0.022)		(0.022)		(0.022)	
1, if household member in military	0.093	***	0.092	***	0.094	***
	(0.031)		(0.031)		(0.031)	
Migration status, never moved omitted						
1, if household moved before 1950	0.018		0.019		0.017	
	(0.039)		(0.039)		(0.039)	
1, if household moved between 1950-70	0.016		0.016		0.017	
	(0.022)		(0.022)		(0.022)	
1, if household moved between 1970-90	-0.028		-0.027		-0.026	
	(0.020)		(0.020)		(0.020)	
1, if household moved between 1990-95	-0.033		-0.033		-0.035	
	(0.039)		(0.040)		(0.041)	
1, if household moved between 1995-99	-0.040		-0.037		-0.041	
	(0.071)		(0.071)		(0.071)	

Occupation of household head, farm labourer omitted						
1, if non-farm labourer	0.070	***	0.070	***	0.071	***
	(0.026)		(0.026)		(0.026)	
1, if government employee	-0.237	***	-0.235	***	-0.237	***
	(0.040)		(0.040)		(0.040)	
1, if private salaried employee	-0.029		-0.028		-0.029	
	(0.037)		(0.037)		(0.037)	
1, if employed in estates	-0.068		-0.067		-0.071	
	(0.053)		(0.054)		(0.053)	
1, if employed in petty business	-0.015		-0.016		-0.015	
	(0.030)		(0.030)		(0.030)	
1, if employed domestic service	0.028		0.027		0.029	
	(0.059)		(0.059)		(0.059)	
1, if a farmer	0.060	**	0.060	**	0.057	**
	(0.029)		(0.029)		(0.029)	
1, if a fisherman	0.115		0.106		0.106	
	(0.077)		(0.076)		(0.076)	
1, if employed in other occupations	0.015		0.010		0.021	
	(0.097)		(0.097)		(0.098)	
1, house duties only	0.051		0.051		0.050	
	(0.031)		(0.031)		(0.031)	
1, if retired	-0.052	*	-0.051		-0.053	*
	(0.032)		(0.032)		(0.031)	
1, if disabled	0.026		0.027		0.026	
	(0.042)		(0.042)		(0.041)	
1, if not working	0.046		0.045		0.044	
	(0.042)		(0.042)		(0.042)	
Type of house, own house omitted						
1, if attached house	-0.005		-0.004		-0.011	
	(0.043)		(0.043)		(0.043)	
1, if flat	-0.061		-0.058		-0.068	
	(0.109)		(0.111)		(0.114)	
1, if shanty	-0.068		-0.070		-0.075	
	(0.058)		(0.058)		(0.059)	
1, if other type of housing	-0.213	***	-0.215	***	-0.209	***
	(0.057)		(0.057)		(0.058)	
Type of latrine, own latrine omitted						
1, if has no access to latrines	0.066	***	0.067	***	0.067	***
	(0.023)		(0.023)		(0.023)	
1, if has access to community latrine	0.034		0.035		0.029	
	(0.043)		(0.043)		(0.043)	
Type of lighting used, electricity omitted						
1, if no light	-0.019		-0.019		-0.015	
	(0.038)		(0.038)		(0.038)	
1, if use kerosene for light	0.064	***	0.063	***	0.063	***
	(0.016)		(0.016)		(0.016)	
Village level and geographical variables						
Type of community, traditional village omitted						
1, if irrigation colony	-0.094	**	-0.094	**	-0.095	**
	(0.042)		(0.042)		(0.042)	
1, if expansion colony	0.104	***	0.101	***	0.097	***
	(0.035)		(0.035)		(0.035)	
1, if settlement scheme	-0.063		-0.066		-0.065	

	(0.044)		(0.044)		(0.044)	
1, if plantation estate	-0.087		-0.073		-0.109	
	(0.068)		(0.067)		(0.068)	
1, if urban low income neighbourhood	-0.027		-0.031		-0.041	
	(0.105)		(0.107)		(0.105)	
1, if urban middle income neighbourhood	-0.062	*	-0.059		-0.054	
	(0.036)		(0.036)		(0.037)	
Province, Western omitted						
1, if Central	0.068	**	0.067	**	0.036	
	(0.033)		(0.033)		(0.029)	
1, if Southern	0.097	***	0.100	***	0.107	***
	(0.027)		(0.026)		(0.026)	
1, if North Western	0.161	***	0.156	***	0.157	***
	(0.030)		(0.029)		(0.030)	
1, if North Central	0.116	***	0.113	***	0.116	***
	(0.038)		(0.037)		(0.037)	
1, if Uva	0.123	***	0.118	***	0.102	***
	(0.036)		(0.034)		(0.036)	
1, if Sabaragamuwa	0.141	***	0.135	***	0.123	***
	(0.030)		(0.029)		(0.029)	
Number of observations	5527		5527		5527	
Psuedo R^2	0.125		0.125		0.125	
Percent correct predictions	66		66		66	
Pearson $\chi 2$	5457.24		5457.24		5457.24	
Prob > $\chi 2$	0.5423		0.5423		0.5423	

Notes to Table A2.4

a) Robust standard errors, adjusted for clustering, are used in all cases
g) Standard errors are reported in parentheses
h) ***denotes statistical significance at the 1% level, ** at the 5% level, * at the 10% level using two-tailed t tests.
i) The logit estimates are transformed into marginal effects for the continuous variables and impact effects for the binary variables.
j) The Pearson $\chi 2$ goodness of fit test is a test of the observed against the expected number of responses using cells defined by covariate patterns (two observations are said to share the same covariate pattern if the independent variables for the two observations are identical).

Table A2.5 The Determinants of Targeting Samurdhi Food Stamps: Using Interaction between Political and Poverty Variables

	Marginal effects (std. error)	
Interaction variables		
(% vote for PA in 1994)*(1, if hh belongs to expenditure quintile one)	0.0058	***
	(0.002)	
(% vote for PA in 1994)*(1, if hh belongs to expenditure quintile two)	0.0049	***
	(0.002)	
(% vote for PA in 1994)*(1, if hh belongs to expenditure quintile three)	0.0038	**
	(0.002)	
(% vote for PA in 1994)*(1, if hh belongs to expenditure quintile four)	0.0015	
	(0.002)	
(% vote for PA in 1994)*(1, if hh belongs to expenditure quintile five)	-0.002	
	(0.001)	
Household variables		
Years of education of household head	-0.0187	***
	(0.003)	
Age of household head	-0.001	
	(0.001)	
No. of children aged 0 to 17 years	0.029	***
	(0.008)	
No. of elderly (60+ years)	-0.010	
	(0.015)	
1, if no men in the household	0.091	***
	(0.029)	
Household size	0.017	***
	(0.006)	
1, if there is disabled household member	0.092	***
	(0.019)	
Ethnicity of the household head, Sinhalese omitted		
1, if Sri Lankan Tamil	-0.206	***
	(0.042)	
1, if Indian Tamil	-0.294	***
	(0.079)	
1, if Moor	-0.097	**
	(0.052)	
1, if Other	-0.097	
	(0.098)	
1, if household owns livestock	0.029	
	(0.031)	
1, if household owns farming assets	-0.043	
	(0.030)	
1, if household is landless	-0.015	
	(0.029)	
1, if household member in military	0.127	***
	(0.040)	
Migration status, never moved omitted		
1, if household moved before 1950	-0.003	
	(0.046)	
1, if household moved between 1950-70	-0.008	

	(0.029)	
1, if household moved between 1970-90	-0.066	***
	(0.027)	
1, if household moved between 1990-95	-0.082	
	(0.049)	
1, if household moved between 1995-99	-0.040	
	(0.082)	
Occupation of household head, farm labourer omitted		
1, if non-farm labourer	0.022	
	(0.033)	
1, if government employee	-0.430	***
	(0.049)	
1, if private salaried employee	-0.144	***
	(0.045)	
1, if employed in estates	-0.201	***
	(0.066)	
1, if employed in petty business	-0.115	***
	(0.034)	
1, if employed domestic service	-0.032	
	(0.071)	
1, if a farmer	-0.008	
	(0.037)	
1, if a fisherman	-0.014	
	(0.095)	
1, if employed in other occupations	-0.074	
	(0.104)	
1, house duties only	-0.024	
	(0.039)	
1, if retired	-0.167	***
	(0.040)	
1, if disabled	-0.007	
	(0.058)	
1, if not working	-0.042	
	(0.052)	
Type of house, own house omitted		
1, if attached house	-0.041	
	(0.051)	
1, if flat	-0.080	
	(0.134)	
1, if shanty	0.091	
	(0.084)	
1, if other type of housing	-0.242	***
	(0.076)	
Type of latrine, own latrine omitted		
1, if has no access to latrines	0.103	***
	(0.034)	
1, if has access to community latrine	0.063	
	(0.057)	
Type of lighting used, electricity omitted		
1, if no light	0.019	
	(0.043)	
1, if use kerosene for light	0.159	***
	(0.021)	

Village level and geographical variables		
Type of community, traditional village omitted		
1, if irrigation colony	-0.175	***
	(0.064)	
1, if expansion colony	0.130	***
	(0.054)	
1, if settlement scheme	-0.027	
	(0.045)	
1, if plantation estate	-0.219	***
	(0.070)	
1, if urban low income neighbourhood	-0.011	
	(0.097)	
1, if urban middle income neighbourhood	-0.049	
	(0.040)	
Province, Western omitted		
1, if Central	0.151	***
	(0.043)	
1, if Southern	0.139	***
	(0.033)	
1, if North Western	0.199	***
	(0.039)	
1, if North Central	0.123	***
	(0.047)	
1, if Uva	0.167	***
	(0.041)	
1, if Sabaragamuwa	0.199	***
	(0.037)	
Number of observations	5527	
Psuedo R^2	0.26	
Percent correct predictions	75	

Notes to Table A2.5

l) Robust standard errors, adjusted for clustering, are used in all cases

m) Standard errors are reported in parentheses

n) ***denotes statistical significance at the 1% level, ** at the 5% level, * at the 10% level using two-tailed tests.

o) The logit estimates are transformed into marginal effects for the continuous variables and impact effects for the binary variables.

Table A2.6 Determinants of Targeting and Mis-targeting Samurdhi Food Stamps (Probit Estimates)

	Targeting Model (Eq. 2.1)	Mis-targeting Model (Eqn. 2.2)
	Marginal effects (standard error)	Marginal effects (standard error)
Political variables		
% vote for PA in 1994	0.005**	0.004**
	(0.002)	(0.002)
Abs.Value (% vote for PA – 50)	0.003	0.002
	(0.002)	(0.002)
Eligibility Criteria		
1, if HH pre-transfer monthly income < Rs. 1500 (eligible)	0.126***	
	(0.027)	
Household variables		
Years of education of household head	-0.027***	-0.014***
	(0.003)	(0.002)
Age of household head	-0.001*	-0.001*
	(0.001)	(0.001)
No. of children aged 0 to 17 years	0.029***	0.006
	(0.008)	(0.007)
No. of elderly (60+ years)	0.000	-0.012
	(0.015)	(0.013)
1, if no men in the household	0.074***	0.029
	(0.028)	(0.024)
Household size	0.010*	-0.022***
	(0.006)	(0.005)
1, if there is disabled household member	0.079***	0.056***
	(0.018)	(0.015)
Ethnicity of the household head, Sinhalese omitted		
1, if Sri Lankan Tamil	-0.189***	-0.083**
	(0.031)	(0.030)
1, if Indian Tamil	-0.220***	-0.073
	(0.045)	(0.045)
1, if Moor	-0.109**	-0.020
	(0.040)	(0.044)
1, if Other	-0.166**	-0.035
	(0.070)	(0.077)
1, if household owns livestock	0.012	0.040*
	(0.031)	(0.023)
1, if household owns farming assets	-0.049*	0.005
	(0.029)	(0.024)
1, if household is landless	-0.024	0.022
	(0.030)	(0.023)
1, if household member in military	0.155***	0.108***
	(0.038)	(0.035)
Migration status, never moved omitted		
1, if household moved before 1950	-0.020	0.020
	(0.046)	(0.041)
1, if household moved between 1950-70	-0.036	0.017
	(0.027)	(0.023)
1, if household moved between 1970-90	-0.080***	-0.027
	(0.023)	(0.019)
1, if household moved between 1990-95	-0.069*	-0.040

	(0.039)	(0.036)
1, if household moved between 1995-99	-0.033	-0.033
	(0.075)	(0.062)
Occupation of household head, farm labourer omitted		
1, if non-farm labourer	0.032	0.078***
	(0.033)	(0.030)
1, if government employee	-0.325***	-0.174***
	(0.020)	(0.023)
1, if private salaried employee	-0.155***	-0.025
	(0.034)	(0.035)
1, if employed in estates	-0.188***	-0.066
	(0.045)	(0.044)
1, if employed in petty business	-0.161***	-0.015
	(0.027)	(0.030)
1, if employed domestic service	-0.084	0.030
	(0.060)	(0.063)
1, if a farmer	-0.036	0.067**
	(0.037)	(0.033)
1, if a fisherman	-0.034	0.129
	(0.089)	(0.093)
1, if employed in other occupations	-0.162*	0.011
	(0.081)	(0.101)
1, house duties only	-0.056	0.055
	(0.035)	(0.035)
1, if retired	-0.178***	-0.049
	(0.032)	(0.030)
1, if disabled	-0.014	0.029
	(0.054)	(0.046)
1, if not working	-0.054	0.050
	(0.049)	(0.047)
Type of house, own house omitted		
1, if attached house	-0.029	-0.001
	(0.045)	(0.041)
1, if flat	-0.138	-0.061
	(0.100)	(0.084)
1, if shanty	0.152*	-0.062
	(0.084)	(0.049)
1, if other type of housing	-0.186***	-0.153***
	(0.049)	(0.030)
Type of latrine, own latrine omitted		
1, if has no access to latrines	0.105***	0.072***
	(0.034)	(0.026)
1, if has access to community latrine	0.080	0.037
	(0.055)	(0.045)
Type of lighting used, electricity omitted		
1, if no light	0.020	-0.020
	(0.042)	(0.036)
1, if use kerosene for light	0.205***	0.068***
	(0.020)	(0.017)
Village level and geographical variables	-	-
Type of community, traditional village omitted		
1, if irrigation colony	-0.151***	-0.086**

	(0.049)	(0.035)
1, if expansion colony	0.123**	0.118***
	(0.058)	(0.043)
1, if settlement scheme	-0.033	-0.060
	(0.047)	(0.038)
1, if plantation estate	-0.205***	-0.081
	(0.046)	(0.051)
1, if urban low income neighbourhood	-0.019	-0.019
	(0.064)	(0.096)
1, if urban middle income neighbourhood	-0.099***	-0.062*
	(0.035)	(0.030)
Province, Western omitted		
1, if Central	0.199***	0.074**
	(0.046)	(0.036)
1, if Southern	0.161***	0.105***
	(0.033)	(0.030)
1, if North Western	0.195***	0.182***
	(0.041)	(0.036)
1, if North Central	0.119**	0.128***
	(0.049)	(0.045)
1, if Uva	0.192***	0.134***
	(0.046)	(0.042)
1, if Sabaragamuwa	0.241***	0.155***
	(0.041)	(0.036)
Number of observations	5527	5527
Pseudo R^2	0.2267	0.1255
Wald $chi^2(55)$	1283.47	756.38
Prob > chi^2	0	0

Chapter Three

Religious Diversity, Social Cohesion and Credit Group Formation

3.1 Introduction

The analysis in chapter two assesses the targeting strategy of the Samurdhi food stamp program. In this chapter we evaluate the targeting strategy employed by the Samurdhi microfinance program. Specifically, the analysis in the chapter attempts to identify the factors that determine participation in Samurdhi credit groups.

Identifying the determinants of credit group formation leads us to assess potential barriers to joining credit groups, an issue that is not just relevant for policy makers in Sri Lanka but for all microfinance practitioners worldwide. For instance two of the largest microfinance programs in the world, the Grameen Bank and BRAC, have been grappling with accessibility constraints to their programs by the poorest segment of their target population (Evans et al, 1995; Hashemi, 1998; Zaman, 1998; Evans et al, 1999). This has led to significant policy debates over the years on appropriate targeting methods and has stimulated the development of new financial products for the poorest (Rhyne, 1998; Morduch, 1999).

There are trade-offs however, between the rate of program expansion[45] and sustainability. Sustainability is generally accepted to mean full cost recovery or profit-making ability of microfinance programs, and therefore the term is closely linked to issues of program costs. There has been little analysis on the different lending modalities and intermediary structures used to target microfinance borrowers in order to identify those that may help to reduce costs, and more importantly the conditions necessary to implement these cost-reducing lending modalities. Using the SLIS data this chapter attempts to fill part of this void by identifying the determinants of two modalities of credit group formation in the Samurdhi microfinance program. These

[45] The recent commercialization agenda of microfinance institutions has meant that the microfinance target population has increasing becoming more heterogeneous. This has meant that microfinance programs are currently engaged in extending loans and other financial services to a wider less poor market (thereby increasing the breadth of their outreach) as well as to the poorest of the poor (thereby increasing the depth of their outreach).

two modes relate to using self-selected or spontaneous credit groups (which is less costly) versus using credit groups that are formed by program officials (which is more costly) to deliver credit to Samurdhi food stamp households. Such analysis is made possible since the Samurdhi microfinance program uses both lending models to target borrowers. The findings of this chapter offer guidance on the conditions that allow the implementation of the more cost-effective lending model and consequently help minimize the trade-off between program outreach and sustainability.

A number of studies suggest that one of the cost-saving innovations of joint liability based group lending is that it allows members of a group to use their social connections to access better information to screen out high risk borrowers and be able to monitor each other and therefore, be able to better enforce repayment of loans via peer pressure (Stiglitz, 1990; Varian, 1990; Wenner, 1995; Ghatak, 1999; van Tassel, 1999). Thus according to these mostly theoretical studies, the success of microfinance programs in reducing costs is based largely on the notion that borrowers can utilize their social capital to overcome adverse selection and moral hazard problems in credit markets. Using this framework, in this chapter we assess the extent to which household social connections – an important facet of social capital – determine whether households who participate in the Samurdhi microfinance program self-select into spontaneous credit groups. Given the nature of the program set up, the analysis in this chapter is also able to identify and to estimate factors that determine household participation in credit groups that are formed by Samurdhi program officials.

If the results in this chapter show that household social "connectedness" or cohesion is indeed an important determinant of credit group formation, then one can draw significant implications for the design, placement and coverage of microfinance programs. Microfinance programs that operate in socially cohesive communities can afford to be less staff intensive during group formation, thereby increasing program outreach without compromising sustainability targets. In less socially cohesive communities microfinance organizations will have to bear the higher costs associated with an increase in outreach. In this context it will be important to have the necessary program staff to engage in forming credit groups and to provide the necessary follow-up to ensure loan repayments. By recognizing the need to use program officials for group formation in these areas, microfinance programs will have also saved the

potential costs associated with credit groups that are not founded on the social capital of their members. If achieving sustainability is more important than extending coverage, microfinance programs will have to be selective and avoid areas that are not socially cohesive[46].

The chapter is organized in the following manner. The following section presents a review of the literature on the theory of group lending mechanisms. Section 3.3 provides a short description of the Samurdhi microfinance program and discusses the relevance of the Samurdhi microfinance program to the theory of group lending contracts. A discussion on the econometric model, the relevant descriptive statistics, and the empirical results are then presented in sections 3.4 - 3.6. Policy implications emanating from the results are discussed in a concluding section.

3.2 Group Lending, Social Cohesion and Peer Selection

Considerable attention has been devoted in the literature to the study of credit groups with joint liability. Group lending with joint liability is based on the following three key factors: the ability of a household to signal its creditworthiness, its ability to monitor other members of its group, and its ability to persuade other members of the group to repay. These features of credit group members help to mitigate problems of adverse selection, moral hazard and contract enforcement. The resulting outcomes of group lending include higher repayment rates and lower interest rates than individual lending contracts (Stiglitz, 1990; Varian, 1990; Besley and Coate, 1995; Ghatak, 1999). We elaborate on these themes below.

As mentioned, there are three basic mechanisms that characterize group-lending contracts. First, group credit overcomes informational asymmetries on default risk between contracting parties, thereby lowering screening costs. According to the model in Ghatak (1999) group lending schemes induce borrowers to engage in assortative matching where informal knowledge about each other's assets, capabilities and

[46] We are not suggesting that it is not at all possible to achieve sustainability and increase outreach in less socially cohesive communities, but that in general such a dual goal will be difficult in the context of Sri Lanka which is ethnically and religiously a heterogeneous country.

character traits are used to sort and self-select into a group.[47] Thus "better risk individuals" signal their creditworthiness by forming a jointly liable group. The "poorer risk individuals[48]" find it too costly to 'signal' and are excluded from taking advantage of the lending scheme. Examples of signalling costs include not having access to an existing social network or having a bad reputation in terms of trustworthiness. Individuals who share these characteristics would have to actively engage with the social community and somehow manage to convince others to allow them entry into credit groups. In so doing, the individual will incur some costs. These "poorer risk individuals" are either forced to do without credit or seek loan contracts with higher interest rates (Wenner, 1995).[49] Thus the peer selection effect resulting in spontaneous group formation lowers interest rates and improves average repayment rates over individual lending contracts.

Second, group credit solves the problem of moral hazard by inducing members to monitor their peers (Stiglitz, 1990; Ghatak and Guinnane, 1998). Stiglitz (1990) shows how the implementation of joint liability can be welfare enhancing in a lending model subject to moral hazard. Under such circumstances, lenders usually ration the quantity of credit made available under an individual lending contract in order to force individual borrowers to take investment decisions that are optimal from the point of view of the lender. Using joint liability however, the Stiglitz framework shows that the rationing constraint can be relaxed and interest rate lowered such that the borrower is made better off. This is made possible when the jointly liable group is relatively small and the group members live close to each other, since it is easy and low-cost to detect any diversion of funds by any one member, and to assess whether

[47] A similar model on the role of joint liability in separating borrower types is developed by Tassel (1999) in which he shows that under imperfect information, joint liability contracts can be used to screen borrowers by inducing endogenous group formation and self-selection among borrowers. Varian (1990) also looks at a screening problem. However, he does not model the joint liability aspect of group lending schemes. His model concentrates on a sequential aspect of group lending where availability of a loan is made conditional on the repayment record of other members of the group.

[48] Wenner (1995) points out that the dichotomous case of "good" vs. "bad" credit risks is mostly used in the literature for simplicity's sake. In reality, there will be a continuum of credit groups, ranging from the least likely to default, the next least likely to default, and so on. Hence, we use the terms "poorer" and "better risks."

[49] For example, Ghatak and Guinnane (1998) show in a formal model that "poorer" risks can also form a group and apply for a loan. They show that "poorer risks" are less willing than "better risks" to accept an increase in the extent of joint liability. If the lender offers two contracts, one with high joint liability and low interest rates and the other with low joint liability and high interest rate, "better risks" will select the former contract and "poorer risks" the latter.

the loan is being used effectively. Therefore, the savings in the form of better project choice by group members allow the lender to pass on some of the benefits in the form of reduced interest rates.

Third, a number of theoretical papers have shown that joint liability can improve the willingness of borrowers to make their loan repayments. Besley and Coate (1995) show that in some cases joint liability can be used to induce a group of borrowers to utilize unique penalty capacities on those group members who choose to default. This is possible due to the termination threat faced by the group as a whole: default by a member results in sanctions against the whole group. Group members consequently use moral persuasion, social ostracism and mutual insurance to lessen the possibility of "wilful" default by any one member (Besley and Coate, 1995). In these cases joint liability improves repayment rates for the lender. Conning (1996) also looks at how monitoring can directly affect borrower behaviour. He shows how joint liability can influence endogenous monitoring as a means to resolve moral hazard problems in borrower investment choices.

Effective group lending schemes therefore cannot operate in a vacuum. Underlying these schemes is the notion that group members, because of shared location and social connections, know a great deal about one another, can observe each other's day-to-day business activities and the outcome of those activities, and have ways of pressuring each other to repay loans. One implication of joint liability credit contracts is that households who have high levels of social cohesion among each other and who live in close proximity are well-placed to "signal" their creditworthiness to each other and to form spontaneous credit groups via peer selection. These "spontaneously formed credit groups" can then enforce savings and lending contracts amongst themselves via peer monitoring. Social cohesion among group members is therefore key to bring members of the group together and prevent the breakdown of cooperation among them in the event of a default.

However, households who are not that socially integrated with the village might require the assistance of a loan officer to help them form groups with other socially

isolated households and to help with group lending activities.[50] Conning (1996) provides a theoretical justification for using program staff as the monitor of group lending schemes to increase the scale of microfinance operations, so long as proper incentives are given to program staff for their performance. The model presented by Conning suggests that all else equal, microfinance programs that want to target poorer borrowers will have to depend on program staff to help with supervising and monitoring credit groups. This result seems to support the above hypothesis that socially isolated households – who are generally poorer as well – can also join credit groups with the help of an external agent.

To summarize, the adverse selection and moral hazard framework embedded within the theory of group lending contracts suggests that the decision to form groups depends on the group formation and functioning costs associated with signalling one's creditworthiness and with monitoring group members. Households who are socially connected will face lower group formation and functioning costs associated with peer selection and monitoring, and thus end up joining spontaneous groups. Households who are not so socially connected may need loan officers to help mitigate some of these group formation and functioning costs, and thereby help them join credit groups. Two possible testable hypotheses that emerge from the above discussion and that can be applied to the Samurdhi microfinance program are the following:

(1) High levels of household social cohesion increase the probability that a household joins a spontaneous Samurdhi credit group.

[50] One could also argue that officer groups will differ from spontaneous groups in that they will only include risky borrowers whereas spontaneous groups would include both risky and safe borrowers. This happens because spontaneous group formation allows assortative matching as per the predictions of the Ghatak model. But given the underlying assumption that the loan officer has imperfect information about borrower types, risky borrowers have the same chance of joining a group formed by the loan officer as safe borrowers. Thus the expected returns of households who join officer groups depend on whether the officer selects a risky or a safe type in that group. If a safe type and a risky type are selected, the risky type benefits due to lower joint liability requirements while the safe type loses due to higher joint liability requirements. If two risky types or two safe types are selected instead, the net benefits will be the same if these households joined a spontaneous group (this is the assortative matching prediction of the Ghatak model). Thus risky types will always have a greater incentive to join officer groups than safe types. This will mean that certain characteristics that are associated with being a risky borrower such as the lack of entrepreneurial skill, or the sincerity or the commitment of the borrower towards his or her project, etc. will also determine participation in loan officer groups. However the SLIS data set does not have information on the risk attitudes of borrowers, and thus we are not able to account for these household characteristics in our empirical analysis.

(2) Low levels of household social cohesion but household access to loan officers increase the probability that a household joins an officer-formed Samurdhi credit group.

3.3 Targeting Samurdhi Credit: The Role of Social Cohesion and Loan Officers

This section provides a brief description of the Samurdhi microfinance program (SMP), focusing on the lending modalities used by the program. A more detailed description of the program is provided in chapter one, section 1.3.4.

Modelled primarily after the Grameen Bank, SMP offers a voluntary group-based microcredit scheme. All Samurdhi food stamp recipient households are eligible to form credit groups and borrow. The two types of lending products offered by the SMP program are: (i) small loans from the credit group's collection of savings; (ii) larger loans from the Samurdhi Bank set up as part of the SMP program. Five households who receive Samurdhi food stamps organize themselves into a savings and credit group. All group members must be from the same village. Generally two types of groups are formed – those that are formed voluntarily among friends and neighbours; and those that are facilitated by Samurdhi loan officers. After the formation of the group, members receive training from loan officers on the program rules and begin to contribute weekly savings to a group fund. Groups are allowed to lend to any member of the group from that fund, and these are typically small emergency loans. Hence, social links are important both for Samurdhi credit group formation and functioning. Pre-existing social ties make it easier for Samurdhi households not only to signal their creditworthiness to each other but also to allow intra-group lending to occur. The stronger the social ties, the more effective will be the peer pressure to repay a group loan, thereby making group members more willing to lend to each other.

Once the groups have been made operational, members of the credit groups have the option of buying shares worth Rs. 500 each and joining a Samurdhi Banking Society. Membership of a Banking Society makes group members eligible to borrow from the Samurdhi Bank. The conditions to access an individual loan from the Samurdhi Bank are the following: (i) the loan amount should not exceed 10 times the share capital of the group; (ii) the loan amount should not exceed 25 percent of the group savings; (iii)

group guarantee (via group members signature on the loan application) and the recommendation of the group leader and the Samurdhi officer should be provided; and (iv) the borrower should have a reasonable balance in his/her own savings account with the Samurdhi Bank. Thus, there is an incentive for group members who want to borrow from the Samurdhi Bank to include within their credit group: (i) wealthier households, since the higher amount of share capital and savings raised by the group, the larger the amount of loans that they can access; and (ii) households among whom there are strong social ties to secure the group guarantee required to apply for a Samurdhi Bank loan. Thus household wealth and strong social ties are likely to determine the formation of spontaneous Samurdhi credit groups.

The design of the Samurdhi Bank operations also makes the role of the wider community members an important determinant of spontaneous credit group formation and functioning costs. This is because Samurdhi banks are based on a federated structure with Samurdhi Banks being set up at the zonal level. The "board" of the bank is selected from the presidents of Samurdhi groups who meet every two weeks to approve loan applications and coordinate the activities of the banks. Further, since loans are granted against the shares and deposits of the Bank shareholders, peer monitoring and pressure to repay loans from the wider community are important elements of the group formation and functioning costs of Samurdhi credit groups. Thus social cohesion at the community level is also likely to determine the formation of spontaneous Samurdhi credit groups.

The Samurdhi program provides clear incentives for its loan officers to ensure the formation of as many credit groups as possible. An officer's promotion and salary are both related to the number of credit groups formed under his or her supervision since this is the only quantifiable indicator of their performance (Gunatilaka et al, 1997). The officer therefore, is likely to make the extra effort needed, such as actively putting households into groups, to ensure that as many Samurdhi households as possible join a Samurdhi credit group. However, there are clear administrative constraints to the number of loan officer groups that can be formed. On average, there is only one Samurdhi Bank available for 15 villages. The Zonal Manager/Samurdhi Manager who is in charge of all Samurdhi programs at the zonal level manages the Samurdhi Bank while only two Samurdhi *niyamakas,* or loan officers, are in charge of

supervising credit groups. The rest of the administrative staff includes an assistant manager, two accounts clerks, a bookkeeper and a cashier. Thus the loan officer is likely to focus on those households who live within the vicinity of the Samurdhi Bank. The limited capacity of the loan officer to form groups is reflected in the SLIS data. We find that although all Samurdhi food stamp recipients are eligible to participate in the SMP, 43 percent of Samurdhi households in the SLIS sample do not join the microfinance program. Out of those 1250 households who participate in SMP, 86 percent of them form credit groups voluntarily ("spontaneous groups"), while only 14 percent join groups formed by loan officers. Table 3.1 provides the distribution of these three types of households across *pre-transfer* per capita expenditure quintiles.[51] Similar distributions of spontaneous groups and officer-formed groups appear across all quintiles. The reasonable level of variation in the data on the different ways Samurdhi credit groups are formed allows us to use econometric techniques to identify the factors that determine such group formation patterns, and thus test the hypotheses laid out at the end of the previous section.

Table 3.1 Distribution of Samurdhi Credit Group Members and Non-members

Individual based per capita expenditure quintile	1 (lowest)	2	3	4	5 (highest)	Total
N (sample size)	***1043***	***1058***	***1020***	***1077***	***1326***	***5524****
% of Samurdhi households (i.e. food stamp recipients)	63	55	45	31	13	40
No. of Samurdhi hhs	***659***	***581***	***457***	***339***		***2213****
• % of non-SMP households	42	43	42	46	52	43
• % of spontaneous group members	51	49	47	48	44	49
• % of officer group members	7	8	11	6	4	8

Notes to Table 3.1: a)* Six observations out of the total sample did not report household expenditure data. b)**Two observations in the Samurdhi sample did not report expenditure data.

3.4 Empirical Strategy

The theory of group lending based on joint liability and the structure of the Samurdhi microfinance program leads us to propose the following two hypotheses regarding credit group formation patterns. First, a higher level of social cohesion between

[51] Note that because poorer households are often larger in size than non-poor households individual-based quintiles will contain fewer households in bottom quintiles than the higher ones. As in the rest of the thesis, expenditure measures were adjusted by province specific price indices that represented differences in the cost of living of the low-income population.

households and within a village is more likely to lead to a Samurdhi household joining a spontaneous credit group. Second, lower levels of household and village level social cohesion but proximity to a Samurdhi loan officer is more likely to lead to a Samurdhi household joining a credit group facilitated by a loan officer. To test whether these hypotheses are true, we need to set up a group formation model that relates the household decision to participate in Samurdhi credit groups to various household and village level attributes, including proxies for household social cohesion and for access to a Samurdhi loan officer. The way the Samurdhi microfinance program is structured the household group formation decision can be viewed as essentially a two-stage decision-making process. In the first stage households decide whether to join the Samurdhi food stamp program. In the second stage, conditional on being a food stamp recipient, the household decides whether to join a spontaneous group, or a group formed by the loan officer, or not to join any credit group. Often, the Heckman two-stage estimation technique is used for such a two-stage decision-making model. However in order to use this estimation strategy in the case of Samurdhi we would need to find an identification variable that explains selection into the food stamp program but does not affect the household decision to join a credit group. Since most variables that determine participation in the food stamp are associated with low welfare, and are also likely to affect the household decision to join the microfinance program, it is very difficult to find a valid identification variable.

It is also possible that households first decide to join the SMP program, and then conditional on that decision they select to participate in the Samurdhi food stamp program (since being a participant of the food stamp program makes the household eligible to join the SMP program). This implies that households must jointly decide to participate in the food stamp program and the microfinance program. One way to model this joint decision-making process would be to use a simple multinomial logit model, also known as a polychotomous logistic regression,[52] to estimate the factors that determine the given group formation patterns in the SMP. These models are intended for use when the dependent variable takes on more than two outcomes.[53] In

[52] I am grateful to Dr. Steve Pischke, London School of Economics, for suggesting this methodology.
[53] Maddala (1985) provides an extensive review of previous studies that employ multinomial logit models.

our household decision model with regards to credit group formation the multinomial model can be used to allow the household to choose one of the following mutually exclusive alternatives: (i) to not join the Samurdhi food stamp program (indexed *m*); (ii) to join the Samurdhi food stamp program but not participate in any credit group (indexed *h*); (iii) to join the Samurdhi food stamp program and participate in spontaneous credit group (indexed *s*); and (iv) to join the Samurdhi food stamp program and participate in officer-formed credit group (indexed *f*). We assume that the household chooses the alternative that maximizes its utility. The structural equation underlying our estimates can be presented as the probability function of choosing the j^{th} alternative by the i^{th} household and is written as:

$$P_{ji} = \exp(\beta_j X_i)/[\exp(\beta_m X_i) + \exp(\beta_h X_i) + \exp(\beta_f X_i) + \exp(\beta_s X_i)] \quad j = m, s, f, h \qquad \text{Eqn. 3.1}$$

X_i is a vector of both village and household variables explaining the household's participation in credit groups and β_j is the unknown parameter vector. As with the simple bivariate logit model the coefficients in the multinomial logit model are estimated only up to a scalar factor, while the coefficients for the reference choice or the "base" state or outcome (β_f or β_h or βs_a or β_m) are set to zero. The multinomial logit model is attractive because the probability function is of a simple form and is strictly concave; hence the β vector has a unique solution, which is easily estimable using standard maximum likelihood techniques.

However, the empirical tractability of the MNL model is obtained at the expense of a strong underlying assumption. The model assumes that the odds ratio of choosing alternative *s* (i.e. to join spontaneously-formed groups) relative to *h* (i.e. to not participate in any group whatsoever) is independent of the other alternative *f* (i.e. to join animator-formed groups), which the household may choose. This characteristic of the MNL model is known as the Independence of Irrelevant Alternatives (IIA) property where the error terms are assumed to be independently and identically distributed. The IIA assumption is problematic if the attributes of two alternatives are similar. For example, consider two alternatives - the decision to join a spontaneous group or to join a officer-formed group - with attached value *U* to each of them. For any particular household, let *U* be given by $U_1 = \bar{U}_1 + \varepsilon_1$, and $U_2 = \bar{U}_2 + \varepsilon_2$ where $\bar{U}_1$ is the average value assigned to the first alternative, where the average is taken over

all individual decision makers, and ε_1 is a random term representing the deviation of any particular individual's valuation from the average. Suppose each alternative is characterized by two attributes, Y and Z so that $U_1 = U(Y, Z) = \bar{U}_1(Y_1, Z_1) + \varepsilon_1$ and similarly, $U_2 = U(Y, Z) = \bar{U}_2(Y_2, Z_2) + \varepsilon_2$. If the attributes of the two alternatives are similar to each other in the two-dimensional attribute space, then a household that attaches greater value than the average to the first alternative (i.e. $\varepsilon_1 > 0$), would also attach greater value than the average to the second. Thus, the error terms will be correlated with the degree of correlation increasing with the "closeness" of the attributes. The IIA property of the MNL model basically assumes that these deviation terms are independent. In other words, the odds ratio between two alternatives will not change by the inclusion or exclusion of any other alternative.

In the case of the model laid out in equation 3.1 one could argue that the two alternatives that are similar are the decision to join a spontaneous group and the decision to join the officer group. Their similarity may potentially violate the IIA assumption. However, to show that the IIA assumption is likely to hold, we conduct a simple but widely used test proposed by Hausman and McFadden (1984) and described in Stata7 manual (StataCorp, 1997). The test involves the comparison of the above model using a full set of alternatives with a model estimated using a restricted set of alternatives. The logic behind this test is that if the IIA property holds, the parameters of the restricted alternatives model should be "approximately the same" as those of the full choice set model. Accordingly, we create a restricted choice model by deleting the decision to join officer groups to compare with the full choice model, and subsequently test whether there are any systematic differences between the coefficients of this model with that of the full choice model (i.e. equation 3.1). Our results show that we cannot reject our null hypothesis that the differences in the coefficients are not systematic.[54]

3.5 Data and Variables

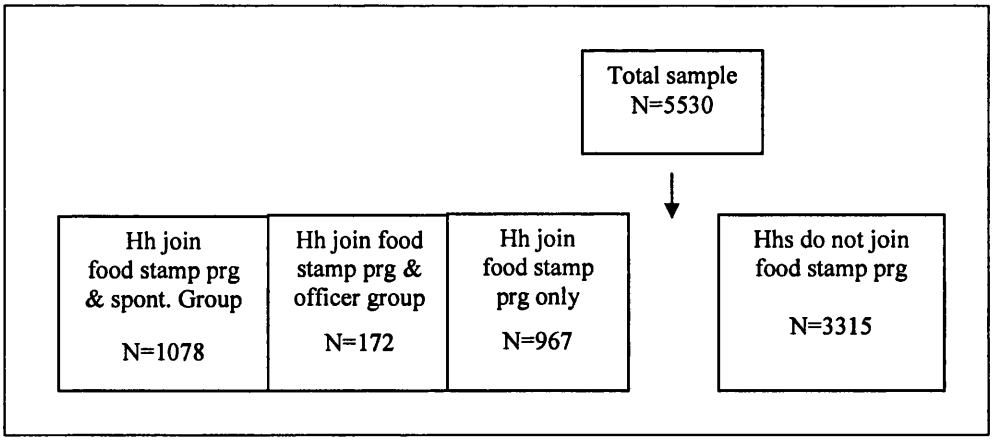
The data used in this chapter are from a nationally representative Sri Lankan Integrated Household Survey 1999/2000 (SLIS). Conducted between October 1999

[54] The chi-square statistic was 8.87; and prob>chi2=1.00, which indicates that there is no discernible difference between the restricted and full MNL models.

and July 2000 the SLIS includes 7500 Sri Lankan households, and was undertaken by the Ministry of Finance of the Government of Sri Lanka with technical and financial assistance from the World Bank. The data collected covered the war-torn North-eastern province. However, as with the previous chapter, the analysis in this chapter does not include this region because data collection was disrupted by the prevailing conflict conditions, and we expect sampling problems associated with the data on the North-East. This is not a weakness of SLIS but all other surveys in Sri Lanka have not been able to collect data on this region. Section 1.4 in chapter one provides a description of the survey instrument.

The SLIS includes specific questions on group formation patterns in the Samurdhi microfinance program. The answers to these questions allow us to create our polychotomous dependent variable which takes the value 1 if the household decides to not join the Samurdhi food stamp program at all; the value 2 if the household decides to join the Samurdhi program but not join a credit group; the value 3 if the household decides to join a spontaneous credit group; and the value 4 if the household decides to join a credit group formed by a loan officer. Chart 3.1 presents the distribution of the dependent variable across the total sample of 5530 observations.

Chart 3.1. Samurdhi Group Formation Patterns across the SLIS Sample



Out of the 5530 households in the total sample, 3315 households do not participate in the Samurdhi program, and thus are not eligible to participate in any SMP credit groups. Out of the 2215 households who do participate in Samurdhi, and thus are eligible to join SMP credit groups, 1078 households report to have joined groups that

was "formed by friends and neighbours" (or spontaneous groups); 967 household decide to not join any group; and 172 households join "groups formed by Samurdhi animator" (or officer).

We expect the following two key variables to influence the type of credit group formed: the level of social cohesion between households and within the village, and the presence of the Samurdhi loan officer in the village. Let us first consider ways to measure household and village level social cohesion.[55] The literature on social capital has generally created proxy variables for social capital by using data on people's participation in formal and informal groups or social networks, measured at both the household and community level. Based on evidence from Indonesia, Grootaert (1999) finds that social capital is built during interactions, which occur for social, religious, or cultural reasons. His social capital index consists of the frequency of membership in these groups; the characteristics of group members; the frequency of attending meetings; the level of involvement in groups' decision-making; membership dues and whether groups were locally formed. Narayan and Pritchett (1999) proxy for social capital by creating an index of village associational life in Tanzania based on the frequency of membership in groups, the characteristics of these groups and the level of trust among individual members. In the absence of specific social capital modules in household surveys, the literature has used village level characteristics that influence household level social capital. In a formal model Alesina and LaFerrara (2000) show that where the population is heterogeneous, individual utility from joining a group depends positively on the share of members in a group of one's "type" and negatively on the share of group members of different "types." Using household survey data on group membership and data on U. S. localities, the authors show that households that are located in homogeneous communities, measured by their ethnic composition, have a higher level of social connections. Early work on social identity theory also established that patterns of intra-group behaviour can be understood by considering that individuals may attribute positive utility to the well being of members of their

[55] The literature on social capital recognizes that social capital can exist at many levels: at individual, household, or community level (Alesina and LaFerrara, 2000; Alesina et al, 1999, 2000). For the purposes of our analysis, it is sufficient to think about social capital at the household and community levels and not at the individual level since participation in Samurdhi groups is not restricted to any member of the household.

own clan or ethnicity, and a negative utility to that of members of other clans (Tajfel et al, 1971).

Ethnic heterogeneity has been used as a measure of social capital in a number of other studies. Research interest on using ethnic heterogeneity to understand various economic outcomes can be traced back to a paper by Easterly and Levine (1997), in which the authors used an ethnic heterogeneity measure to explain economic growth in Africa.[56] While the results of that study has come under some criticism for missing crucial data points, the ethnic heterogeneity measure has been widely accepted and used in numerous follow-up studies in the social capital literature.[57] The study that is most relevant for the research question addressed in this chapter is one by La Ferrara (2002b) in which she focuses on ethnic heterogeneity in credit groups and access to group loans. La Ferrara uses data on credit cooperatives in the informal settlements of Nairobi, Kenya, and has information on all members of the surveyed groups, which allows her to construct exact measures of group composition in terms of income, education, age and ethnicity. She finds that ethnicity matters for gaining access to group loans. Group members who share the same ethnicity as the group chairperson are 20 to 25 percentage points more likely to borrow from the group or from other members. In the case of SMP groups though, we do not have the data on group composition. Thus we are not able to create proxy variables for within group social cohesion, which would indicate the level of social cohesion at the household level. However, we have data on the ethnic composition of the community to help us create a proxy variable for the village level social cohesion. This variable is considered to be important since members of the community also play a role in securing and enforcing loan contracts from the Samurdhi Bank. We expect households living in socially cohesive villages to join spontaneous groups due to lower group formation and functioning costs.

In line with the above studies, we also use ethnic heterogeneity within villages as a proxy for village level social cohesion. The use of an ethnic heterogeneity measure to

[56] In fact Mauro (1995) used the ethnic diversity measure to explain corruption in another cross-country study before the Easterly and Levine study was conducted. However, research interest on ethnic diversity took off after the Easterly and Levine paper was widely presented.
[57] See Alesina and La Ferrara (2004) for a comprehensive review of the studies that have used ethnic diversity to explain economic outcomes.

proxy for social cohesion is highly relevant in the multi-ethnic Sri Lankan context. The country's 22 year long history of ethnic conflict between the Tamil rebels of the North-east and the Sinhalese government over the war-torn North-eastern has polarized the Sri Lankan society across ethnic and religious divides, and entrenched hostilities in members of one ethnic group towards the other (Perrara, 1998). Thus one would expect lower levels of social cohesion in highly ethnically diverse communities in Sri Lanka. However, there is a potential problem with using an ethnic heterogeneity variable to proxy for social cohesion. Since we exclude the North-eastern Province (where the majority of the Sri Lankan Tamils and Muslims live) from the full SLIS sample due to sampling problems, we wipe out much of the variation in the ethnic heterogeneity variable.

As an alternative we consider the village level heterogeneity in religion as our proxy for village level social cohesion. The rationale for using this variable is that, like ethnicity, households belonging to the same religion are likely to form stronger social bonds than with households of a different religion. This happens because different religions are bound by their respective traditions and social occasions, which encourage social cohesion among people of the same religion. Schiff (2001) points out that people who share cultural or religious customs, values, and history interact with each other at a lower cost. Thus we expect lower religious heterogeneity at the village level to generate more social cohesion within the village. Using religion instead of ethnicity to proxy for social cohesion is just as applicable in the context of Sri Lanka due to: (i) the diverse religions practiced, and (ii) the fact that religion plays an important role in national politics and in the ethnic conflict.

The religious breakdown of the Sri Lankan population is as follows. Approximately 70 percent of the population is Buddhist, 15 percent are Hindu, 8 percent are Muslim, and 7 percent are Christian. Christians tend to be concentrated in the west, with much of the north almost exclusively Hindu. Muslims, although present in many other areas, make up a particularly large percentage of the population in the east. The other parts of the country have a mixture of religions, with Buddhism overwhelmingly present in the south. According to the 2002 U.S. government report on International Religious Freedom Report on Sri Lanka, this diversity in religions has often sparked off violence:

"In general, the members of the various faiths tend to be tolerant of each other's religious beliefs. On occasion, evangelical Christians, or anyone perceived to be attempting to convert Buddhists to Christianity, have been harassed by Buddhist monks. Some Christian organizations complain that the Government tacitly condones such harassment, although there is no evidence to support this claim.

There are credible reports that in some rural areas members of Christian organizations have been physically assaulted for alleged attempts to convert Buddhists. In one instance, in April, a Buddhist monk was reported to have assaulted two members of the Salvation Army, claiming that they were attempting to convert a person they were meeting with. The Salvation Army members were shaken by the incident but not seriously injured. In some rural areas, small Christian organizations have stated that they do not report cases of harassment in order to avoid additional attention. In other areas, religious leaders have found that a peaceful coexistence can be maintained as long as the leaders of all of the religious communities maintain a dialog.

On December 5, 2001, a total of 12 Muslim supporters of the Sri Lankan Muslim Congress were killed in 2 separate incidents. The killings occurred on Parliamentary election day and appear to have been politically--and not religiously--motivated. The alleged perpetrators, including a former Minister, currently are awaiting trial.

There are reports that members of various religious groups give preference in hiring in the private sector to members of their own group or denomination. This practice likely is linked to the country's ongoing ethnic problems and does not appear to be based principally on religion. There is no indication of preference in employment in the public sector on the basis of religion.

In April 2001, three Sinhalese men attacked a Muslim cashier. The Muslim community in Mawanella protested police inaction during and after the attack. In response, approximately 2,000 Sinhalese, including Buddhist monks, rioted in the Muslim section of town and confronted the Muslim protesters. Two Muslims were killed, and a number of buildings and vehicles were destroyed. The Muslim community throughout the western portion of the country staged a number of protests claiming the police did nothing to prevent the riot. Some of the protests resulted in direct clashes between the Muslim and Sinhalese communities. The police investigation of these incidents remains open, but no one has been arrested in connection with the violence."

The above list of violent episodes resulting from religious differences suggests social divisions within the Sri Lankan community along religious lines. There is also anthropological research that suggests the same and to some extent explains the reasons behind the important role played by religion in the social and political life in Sri Lanka (Tambiah, 1992; Seneviratne, 1999). Tambiah (op. cit.) argues that Buddhism in Sri Lanka has become ethnicized. Seneviratne goes one step forward to provide a historical analysis as to how modern day Buddhism in Sri Lanka has come

to its current politicized state. Beginning with Anagarika Dharmapala's (a very prominent and influential monk) "rationalization" of Buddhism in the early twentieth century, which called for monks to take on a more activist role in the community, Seneviratne shows how the monks have gradually revised their role to include involvement in political and economic spheres. The altruistic, morally pure monks of Dharamapala's teachings have become, Seneviratne argues, self-centred and arrogant, concealing self-aggrandizement behind a façade of "social service." He suggests that modern day monks are now involved as speakers and party organizers in national elections with the goal to establish Sinhala Buddhist hegemony in Sri Lankan life.

The above anthropological literature implies religious diversity in Sri Lanka is very much a source of conflict, and thereby a good proxy for measuring social cohesion. The religious heterogeneity index is calculated as follows: $1 - \sum_k s_{ki}^2$ where s represents the proportion of households who belong to the religious group k in village i. This index captures the probability that two individuals randomly drawn from the population belong to two different religions. A higher index represents higher levels of religious heterogeneity. The index reaches 1 when every individual belongs to a different group and it becomes 0 when the population is homogeneous. The religions used to calculate this index include the four main religions represented in the Sri Lankan population: Buddhism, Hinduism, Islam and Christianity. This calculation of a heterogeneity index is widely used in the social capital literature to measure various types of heterogeneity at the village level such as ethnic heterogeneity, income inequality, heterogeneity in economic activities, etc. (LaFerrara, 2002a; Alesina et al, 1999; Alesina and LaFerrara, 2000; Miguel, 2000).

As for the other variable affecting group formation and functioning costs, we measure household access to Samurdhi officer by whether a Samurdhi Bank is located in the village or not. As chapter one and the previous section pointed out, one Samurdhi Bank branch is set up for every 15 villages. Samurdhi households across villages thus will have unequal access to Samurdhi loan officers. We expect having a Samurdhi Bank in the village allows for better access to officers by Samurdhi food stamp households due to the physical proximity of the Samurdhi officer (who is stationed at the Bank). It is possible to use this "access" variable as an exogenous explanatory variable since Bank placement is not a function of group formation but rather it has

been a supply-driven initiative on the part of the Samurdhi Authority. As pointed out in section 1.3.3 in chapter one, since the inception of the Samurdhi Bank program in 1997, the program has undergone a rapid expansion. For example, by June 1999 (that is just prior to the SLIS survey) a total of 686 Samurdhi Banks was established across the country. By early 2000, the total number of Banks opened was 840 (an increase of 22 percent) and an additional 100 were under construction, which would make the total number of Banks to be 940[58] at end 2000 (Charitonenko, S and D. de Silva, 2002). Over the same period, the number of Samurdhi credit groups went from 207,890 to 219,130, a rise of only 5 percent (Monitoring and Evaluation Division, Samurdhi Authority of Sri Lanka, 2000). Such growth is consistent with the goal of the Samurdhi Authority to set up Samurdhi Banks across all of Sri Lanka. The above data on the expansion of the Samurdhi Bank program confirms the observation made by Gunatilaka and Salih (1999) that it does not seem to be necessary for groups to have been formed in a village for a Samurdhi Bank to be established. Instead, given its explicit goal to ensure total national coverage, the Samurdhi Authority uses a geographical criterion for Bank placement.[59]

The data on these two variables that we expect to influence group formation and functioning costs appear to significantly differ across all Samurdhi households. Table 3.2 presents the means of the variable that measures village level religious diversity and the proxy variable for household access to Samurdhi loan officer across the three types of Samurdhi households – those who decide not to join any credit group, those who decide to join a spontaneous credit group, and those who decide to join a credit group formed by the Samurdhi loan officer. P-values of two-tailed t-tests comparing the mean values of the two variables are reported in the last three columns of Table 3.2. The three types of Samurdhi households appear to live in villages that are characterized by significantly different levels of religious diversity from one another. We find that households who decide to not join any SMP credit group are located in villages that are the most religiously diverse relative to the villages where the other two types of households reside. A household who joins a credit group formed by loan officers lives in more religiously homogeneous villages relative to the two other

[58] By end 2003, this figure had increased to 1,027 (Samurdhi Ministry Progress Report, 2002-2003)
[59] To wipe out any geographical effects of Bank placement however, any regression analysis will need to include dummies for the type of community and provinces in our regression, which is discussed in the next section.

groups – a result that is in contrast to the group lending framework which predicts that spontaneous credit groups and are more likely to form in relatively more homogeneous villages than officer-formed groups. However, we find as per our hypothesis, a higher proportion of households who join loan officer groups, compared to households who join spontaneous credit groups, live in villages that have a Samurdhi Bank branch. This implies households who join credit groups formed by the loan officer are more likely to have greater access to these officers relative to households who join spontaneous Samurdhi credit groups or those do not join any Samurdhi credit group. Non-credit group Samurdhi households appear to have the "least" access to loan officers due to the fact that a significantly lower proportion of these households reside in Samurdhi Bank villages compared to the other two types of Samurdhi households. The differences in household access to Samurdhi Bank officials across the three groups are highly significant.

Table 3.2. Means of Group Formation and Functioning Costs across Samurdhi Households

	Spontaneous groups (1)	Non-credit group participants (2)	Officer formed groups (3)	Comparison between (1) & (2) p-value	Comparison between (1) & (3) p-value	Comparison between (2) & (3) p-value
Village level religious heterogeneity	0.134 (0.188)	0.155 (0.203)	0.075 (0.147)	0.03	0.00	0.00
Proportion of households in each type of group who live in a Samurdhi Bank village	0.484 (0.50)	0.352 (0.478)	0.594 (0.493)	0.00	0.01	0.00

Notes to Table 3.2

a) Standard deviations are reported in parenthesis.
b) Religious heterogeneity index is calculated as follows: $1 - \sum_k s_{ki}^2$ where s represents the proportion of households who belong to the religious group k in community i. A higher index represents higher levels of religious heterogeneity. The religions used to calculate this index include Buddhism, Hinduism, Islam, and Christianity.
c) Access to Samurdhi Bank officer is measured by a dummy variable which takes the value 1 if the village where the household resides has a Samurdhi Bank office, and zero otherwise.

Thus according to the results in Table 3.2, we find some *prima facie* evidence for our hypothesis that both the village level religious diversity variable and the access to Samurdhi Bank variables affect the household decision to join a spontaneous group as opposed to a group formed by a Samurdhi loan officer.

We now turn to using multivariate regression analysis at the household level to explore to what extent group formation and functioning costs proxied by village level religious diversity and household access to Samurdhi loan officer affect credit group formation decisions controlling for a host of other factors. The SLIS data allow us to control for various exogenous household and community level determinants of credit group formation. For instance, the SLIS dataset includes questions on household demographics, education, occupation and ethnicity of household head, household income and expenditure, ownership of assets and access to facilities such as water, electricity and sanitation facilities, etc. The following household control variables are included in our group formation model: age, sex, and years of education of the household head; household size; number of household members under the age of 17; number of household members over the age of 65; household distance to the village market; dummy variables which take the value 1 if the household owns productive assets such as livestock and farming equipment, and zero otherwise; and a dummy variable which takes the value 1 if it is landless and zero otherwise.

To control for household wealth we include information on whether the household owns productive assets such as livestock and farming equipment. We specifically include these two variables since small-holder agricultural activity is the mainstay of the Sri Lankan population. We expect households who own productive assets to be more likely to join spontaneous groups relative to officer groups since it is in the interest of group members to include relatively wealthier households. This is because, as was noted in section 3.3, having higher groups savings allows members to get larger loans from the Samurdhi Bank, and because of the perception that poorer households are higher credit risks. Given that landless households depend on agriculture as wage labourers and are considered the most disadvantaged,[60] we expect them to join officer groups.

We expect the household demographic variables to also affect the household's social interactions and hence the ability to signal its creditworthiness. For example, an older and a more educated household head is likely to have more social connections with

[60] See Parker and de Silva (2000) for an extensive discussion on the different agricultural livelihoods found in Sri Lanka.

others in the village, and therefore the household is more likely to join spontaneous credit groups. We also control for the sex of the household head since we expect female-headed households to be in both socially and economically disadvantaged positions when it comes to joining spontaneous credit groups due to mainly two reasons. First, despite the fact that Sri Lanka is in the forefront of developing countries with respect to women's rights and education, women face lower wages compared to men for the same quality and quantity of work. Poor rural women are the most likely to suffer from these inequities since it is in casual wage labour where the male-female wage differential is the greatest (Parker and de Silva, 2000). Second, not all women in Sri Lanka are able to take part in economic activity. Among the Muslim and to some extent Tamil women, there are cultural barriers to enter the labour force even when impoverished. This presents a serious social and economic disadvantage to female-headed households among these ethnic groups. Hence, the socio-economic situation in Sri Lanka implies that female-headed households are likely to join credit groups formed by loan officers.

Since there is no restriction by the SMP on which household member joins a Samurdhi credit group, it is also possible that loan officers are more willing to form credit groups with females than males. Women have been found to be better at repaying joint liability loans than men (Khandker, 1998). By focusing on female-headed households, loan officers are more likely to increase the number of female clients, and hence the overall performance of the program. Finally we include the number of children and elderly members of the household as control variables. The expectation is that these household members have more time on their hand to socialize with neighbours, and thus a higher number of children and elderly household members are likely to make a household more likely to join a spontaneous group. Similarly, having a larger household size allows for more occasions for each household to have social interactions with the rest of the community, and thus form social bonds within the village. Thus we expect a higher household size to be associated with spontaneous group formation. Finally, we include the household distance to the market as another control variable since we expect households that are located far away from the market (generally the centre of most economic activity in a community) to have less of a demand for loans for investment purposes due to high marketing costs.

Along with the household controls, village level control variables are just as important since both our variables of interest (religious diversity index, and access to Samurdhi officers) are at the village level. The SLIS includes a host of community-level questions. Some of these questions provide information on the socio-economic structure of the village and the nature of Samurdhi presence at the village level. It is crucial for any analysis on Sri Lanka to underscore the fact that although not a large country, Sri Lanka has a variety of distinct social, ethnic, economic and livelihood settings – traditional villages, plantation estates, resettlement colonies, fishing villages, war-affected areas and urban formal and informal settlements – each of which is characterized by its own particular set of opportunities and limitations. Thus community level variables are included to control for any unobservable factor related to geographical location. These include dummy variables that respectively take the value 1 if the household resides in what is considered a traditional village; an irrigation colony; an expansion colony; a settlement scheme; a plantation estate, an urban slum; and an urban middle-class neighbourhood, and zero otherwise.

We also include the proportion of Samurdhi households in the village as a control variable but we do not have an *a priori* hypothesis on how this variable would affect the outcome. This is because a higher proportion of Samurdhi households would indicate a higher probability of finding a critical mass of similar households to form credit groups, both by officers as well as by households who join spontaneous groups. It could also be possible that since there is a limit to the number of credit groups loan officers are physically capable of supervising, a higher number of eligible households in the village may also mean greater competition to form groups, and thus a lower probability to join any credit group. Finally, dummies are included to control for any provincial level fixed effects.

Table 3.3 compares the means of household characteristics of the three types of Samurdhi households: those who do not join any credit group; those who join spontaneous credit groups and those who join credit groups formed by loan officers. P-values from two-tailed t-tests are reported in the last three columns. The results suggest that households who join spontaneous groups are relatively better off compared to households who do not join any group or who join credit groups formed

by loan officers. For instance, households who join spontaneous groups have higher household monthly expenditure relative to both other groups. The result is significant at the 1 percent level. However, households who do not join any credit group do not have significantly different levels of household monthly expenditure from households who join credit groups formed by loan officers. Based on two-tailed t-tests on two other wealth-related variables – household ownership of livestock and farming assets – we find that a significantly higher proportion of households who join spontaneous groups own livestock and farming assets compared to the households who do not join any credit group. However, there is no significant difference in the proportion of households who join spontaneous and the proportion of households who join officer formed groups when it comes to ownership of livestock and farming assets. The data is consistent with our expectation that households who join credit groups are more likely to own productive assets with which to utilize credit. Moreover since the SLIS data was collected after the SMP started operating, the other explanation is that borrowing resulted in an increase in productive assets. The other variable reflecting household wealth – the percentage of households who are landless – does not vary across the three types of households. One possible explanation for the lack of much variation in the land ownership data is that the government of Sri Lanka owns 80 percent of the land, two thirds of which is used by private farmers under various tenure arrangements (Charitonenko and de Silva, 2002).[61]

We find that heads of those households who join spontaneous groups are significantly more educated than the household heads of the other two types of households. This result is consistent with our earlier finding that households who join spontaneous groups appear to be better off that the other households. Higher education of the household head is often associated with better employment opportunities making the household better off. A significantly higher percentage of households who do not join any group are female-headed compared to households who join Samurdhi credit groups. However, the incidence of female-headedness does not vary significantly between the households who join spontaneous groups and those who join officer groups. Households who join spontaneous groups are significantly larger in size than

[61] Land ownership in Sri Lanka is complicated by an outdated system of land titling, which can lead to lengthy legal disputes over land rights. The land market also has restricted sale and use of land. Weak land tenure and complicated registration arrangements hinder the use of land as a potentially valuable source of collateral for credit from formal sources.

the household of the other two types of households, lending weight to our hypothesis that larger households have greater social networks in the village.

Table 3.3. Socio-economic Characteristics of Non-group, Spontaneous and Officer Group Households

	Non-group households	Spontaneous groups	Officer groups	Comparison (p-value)	Comparison (p-value)	Comparison (p-value)
	(1)	(2)	(3)	1 vs. 2	1 vs. 3	2 vs. 3
N	967	1078	172			
Household variables						
Monthly expenditure (Rs.)	5614.48	6381.34	5667.46	0.00	0.84	0.01
Per capita food expenses as a proportion of monthly expenditure	0.63	0.63	0.66	0.70	0.04	0.01
Years of education of household head	6.0	6.40	6.02	0.00	0.93	0.02
Age of household head, years	52	49	48	0.00	0.00	0.80
Household size	4.2	4.86	4.34	0.00	0.54	0.00
Proportion of household with a disable/ chronically ill member	0.34	0.36	0.38	0.28	0.34	0.59
Proportion of households with no male adults in household	0.17	0.08	0.09	0.00	0.01	0.71
No. of children aged 0 to 17 years	1.23	1.54	1.43	0.00	0.08	0.34
No. of elderly (60+ years)	0.46	0.33	0.26	0.00	0.00	0.17
Proportion of household who owns livestock	0.07	0.11	0.14	0.00	0.01	0.38
Proportion of household who owns farming assets	0.28	0.37	0.43	0.00	0.00	0.12
Proportion of landless households	0.32	0.37	0.37	0.07	0.17	0.70
Household distance to mkt. (miles)	3.78	3.73	5.64	0.77	0.00	0.00
Village level and geographical variables						
Proportion of hhs located in:						
Traditional villages	0.74	0.77	0.55	0.12	0.00	0.00
Irrigation colonies	0.04	0.04	0.13	0.81	0.00	0.00
Settlement schemes	0.07	0.04	0.13	0.00	0.01	0.00
Plantation estates	0.02	0.01	0	0.50	0.09	0.13
Urban slum	0.01	0.01	0	0.06	0.13	0.32
Urban middle class neighbourhood	0.04	0.04	0.08	0.86	0.03	0.03
Expansion colonies	0.08	0.09	0.11	0.47	0.13	0.29
Proportion of Samurdhi hhs	0.56	0.59	0.58	0.01	0.37	0.63
Province level variables						
Proportion of households located in:						
Western Province	0.18	0.13	0.03	0.00	0.00	0.00
Central Province	0.14	0.19	0.02	0.23	0.00	0.00
Southern Province	0.20	0.16	0.22	0.03	0.63	0.04
N. Western Province	0.14	0.17	0.17	0.03	0.18	0.99
N. Central Province	0.07	0.07	0.53	0.00	0.00	0.00
Uva Province	0.10	0.13	0	0.77	0.00	0.00
Sabaragamuwa Province	0.17	0.15	0.02	0.04	0.00	0.04

Table 3.3 shows that households in officer groups tend to be from migrant communities such as irrigation colonies, settlement schemes and expansion colonies. Over 50 percent of all loan officer groups are located in the North-central Province, where the majority of the settlement and irrigation schemes were set up. The fact that a significantly higher number of credit groups formed by officers are found in these migrant communities, often located along the periphery of villages, is also consistent with the fact that households who join officer formed groups are also located the farthest away from the village market.

Finally, we find that the proportion of households in the village who are eligible to form credit groups (i.e. the proportion of households who are Samurdhi food stamp recipient divided by the number of households in the village) varies across the three groups. Villages where households belong to spontaneous groups have a slightly higher proportion of Samurdhi households than villages where households belong to officer groups or do not belong to any group. The data is consistent with the notion that having a higher proportion of Samurdhi households relates to the fact that there is a higher chance for a household to find a match, and to consequently form a spontaneous group. We now turn to the results of our multinomial logit model of group formation to assess the relative importance of all the above factors.

3.6 Empirical Results

In Table 3.4 we report the results of our multinomial logit model of household credit group formation which estimates the impact of village level religious heterogeneity and proximity to Samurdhi loan officers on the probability that a household chooses one of the following options: not to join the Samurdhi program at all; decide to join the Samurdhi food stamp program but not a credit group; decide to join the Samurdhi food stamp program and a spontaneous credit group; and decide to join the Samurdhi food stamp program and an officer-formed credit group. The multinomial logit estimates reported in Table 3.4 are the relative probabilities of the three choices associated with the decision to join credit groups: whether to join a Samurdhi credit group, whether to join a spontaneous credit group, or whether to join a group formed by a loan officer. Table 3.4 does not include the results of the relative probability of

the household decision to not join the Samurdhi program since those results are not relevant to the test of our hypotheses. The full set of coefficients including the determinants of the household decision to not participate in the Samurdhi program, are presented in Tables A3.1 and A3.2 in Appendix three.

For ease of interpretation, the results in Table 3.4 are presented in terms of the impact of the explanatory variables on the relative risk ratio (RRR), as is done in Glewwe, Gragnolati and Zaman (2002). The RRR is the probability of a given outcome divided by the probability of the "base" outcome. The base outcome in columns 1 and 2 in Table 3.4 is the probability that a household receives food stamps but does not participate in a credit group (in columns 3 and 4 we change the base category to identify the factors that distinguish the household decision to join a spontaneous group from the decision to join officer-formed groups). The interpretation of RRRs is as follows. Suppose a household has a 40 percent chance of receiving food stamps but not participating in any credit group (the base outcome) and a 20 percent chance of participating in a spontaneous group (the alternate outcome). For that household, the RRR of participating in a spontaneous group (relative to not participating) is 0.5 (20 divided by 40). The RRR columns in Tables 3.4 show the impact of one unit increase in each explanatory variable on the RRR's for the other categories. For example, suppose that the RRR for a Samurdhi household that does not participate in a group with characteristic X (where X=1) is 0.7, and an otherwise identical household without the characteristic (i.e. X=0) but who joins a spontaneous group has a RRR of 0.4. The impact of one unit increase in the variable X on the RRR is 1.75 (0.7 divided by 0.4), which means that one unit increase in the variable X raises the relative probability of being in a spontaneous group (relative to the probability of not participating in any group) by 75 %.

A simple rule for interpretation of the impact of the explanatory variables on the RRR is that an impact of less than one implies that a one unit increase in the variable increases the relative probability of being in the base outcome (in our case, the probability of not participating in the SMP program). An impact of more than 1

implies that one unit increase in the variable increases the relative probability of being in the alternate state (in our example joining a spontaneous group).[62]

Columns 1 and 2 in Table 3.4 present the relative probabilities of joining a spontaneous group and of joining an officer-formed group with the base state being a Samurdhi food stamp recipient but not a credit group member household. Columns 3 and 4 provide the relative probabilities of being a Samurdhi food stamp recipient but not a credit group member household and of joining an officer-formed group with membership in a spontaneous group as the base state. By estimating the results using two base states we are able to compare all the three types of Samurdhi members with each other: those who do not participate in any Samurdhi credit group; those who participate in spontaneous Samurdhi credit groups; and those who participate in Samurdhi credit groups formed by Samurdhi officers. Let us first consider columns 1 and 2. The first column identifies the variables that determine the household decision to join a spontaneous group as opposed to not joining any credit group. Column 2 identifies variables that distinguish non-credit group households from households who belong in officer-formed groups.

We find that religious diversity in the village is significant and negatively associated with the probability that households decide to form spontaneous credit groups. In terms of magnitude, the estimates in column 1 suggest that *ceteris paribus* going from perfect homogeneity to maximum heterogeneity (i.e. increasing the religious diversity index from 0 to 1) would increase the relative probability that a household decides not to join a Samurdhi credit group relative to the probability of joining a spontaneous group by 63.5 percent. The result is significant at the 5 percent level, and is consistent with our argument that greater diversity is linked with fewer social interactions, which in turn lowers the probability of households forming spontaneous credit groups. The results in column 2 show that relative to being in an officer group, increasing the religious diversity index from 0 to 1 also increases the relative probability of being a non-participant household by 90.5 percent. The result is significant at the 10 percent level. Community level religious heterogeneity thus appears to be a significant

[62] As per the multinomial logit equation, the impact of one unit increase in a given explanatory variable on the RRR for a given outcome (relative to the base outcome) is equal to e to the power of its associated coefficient, i.e., $\exp(\beta_{jk})$ where j indicates the outcome and k indicates the variable.

deterrent to Samurdhi credit group formation regardless of whether groups are spontaneous or officer-formed.

The RRR of the coefficient on "access to Samurdhi loan officer" is also significant and suggests that holding all other variables constant, being located in a village with a Samurdhi Bank (which implies having greater access to loan officers than households who live in villages that do not have a Samurdhi Bank branch) raises the relative probability of being in a spontaneous group relative to the probability of being a non-participant by 132 percent. The result is significant at the 1 percent level, and is suggestive of the important role Samurdhi loan officers can play in motivating households, who would otherwise not be in a credit group, to form spontaneous groups. The results in column 2 also show that living in a village with a Samurdhi Bank raises the relative probability of being in an officer-formed group relative to the probability of being in a non-credit group household by 113 percent. The result is significant at the 1 percent level, and is consistent with the fact that Samurdhi loan officers are under pressure to ensure that as many Samurdhi credit groups as possible are formed. The above results suggest that Samurdhi loan officers can play an important role as a catalyst in forming both spontaneous and officer-formed credit groups.

As for the household level control variables in column 1, we find that increasing the age of the household head by one year increases the relative probability of not joining any credit group relative to joining a spontaneous group by 2 percent. A likely explanation is that household heads become more risk averse with age, doubting their household's ability to service debt. The result could also be a reflection of the fact that younger people face limited employment opportunities in the formal sector (Parker and Silva, 2000), and therefore are likely to be self-employed. Increasing the household size by one extra member raises the relative probability of being in a spontaneous group compared to the probability that a household decides to not join a credit group. The result is significant at the 1 percent level. This could be interpreted as larger households being able to increase the volume of social connections, and being able to signal their willingness to join spontaneous groups to friends and neighbours. The result could also be interpreted as larger households being poorer and in more need of loans. As expected, owning livestock increases the relative

probability of joining a spontaneous group by 53 percent relative to the probability of not joining a credit group.

Table 3.4 The Determinants of Samurdhi Credit Group Formation

	Base category: Samurdhi non-credit group members		Base category: households in spontaneous groups	
	(1)	(2)	(3)	(4)
	Households in spontaneous groups RRR (std. error)	Officer-formed group members RRR (std. error)	Samurdhi non-group members RRR (std. error)	Officer-formed group members RRR (std. error)
Proxy variables for group formation & functioning costs				
Religious heterogeneity	0.365**	0.095*	2.739**	0.260
	(0.156)	(0.138)	(1.177)	(0.340)
Access to loan officer	2.32***	2.131***	0.432***	0.920
	(0.482)	(0.645)	(0.090)	(0.272)
Household variables				
1, if Female-headed household	0.767	0.619	1.304	0.808
	(0.188)	(0.257)	(0.320)	(0.367)
Years of education of hh head	0.982	0.962	1.019	0.980
	(0.022)	(0.051)	(0.023)	(0.052)
Age of hh head	0.983***	0.988	1.017***	1.005
	(0.006)	(0.017)	(0.007)	(0.017)
No. of elders (60+ years)	0.869	0.888	1.150	1.022
	(0.115)	(0.280)	(0.153)	(0.322)
No. of children aged 0 to 17 years	0.901	1.040	1.110	1.154
	(0.065)	(0.157)	(0.080)	(0.181)
Hh size	1.257***	0.982	0.795***	0.781**
	(0.072)	(0.121)	(0.045)	(0.097)
1, if hh owns livestock	1.53*	0.849	0.653*	0.554
	(0.353)	(0.410)	(0.151)	(0.275)
1, if hh owns farming assets	1.200)	1.654	0.833	1.378
	(0.243)	(0.613)	(0.169)	(0.501)
1, if hh is landless	0.943	0.515	1.060	0.546
	(0.199)	(0.219)	(0.223)	(0.221)
HH distance to market, miles	0.943**	1.012	1.060**	1.073***
	(0.024)	(0.025)	(0.027)	(0.031)
Village level and geographical variables				
Type of Settlement, traditional village omitted				
1, if Settlement Scheme	0.446***	1.261	2.244***	2.830***
	(0.128)	(0.405)	(0.644)	(1.109)
1, if Irrigation colony	0.195***	2.010	5.133***	10.317***
	(0.126)	(0.876)	(3.323)	(5.559)
1, if Expansion colony	0.866	0.772	1.154	0.891
	(0.266)	(0.380)	(0.355)	(0.445)
1, if Plantation estate	0.243***	5.40e-14***	4.110***	1.50e-15***
	(0.100)	(4.65-14)	(1.695)	(1.19e-15)
1, if Urban slum	0.353**	1.28e-14***	2.832**	2.45e-16***
	(0.169)	(1.36e-14)	(1.354)	(2.33e-16)
1, if Urban middle-class	0.838	2.415	1.193	2.877
	(0.238)	(1.741)	(0.339)	(2.002)
Proportion of Samurdhi hhs	0.569	0.248*	1.756	0.436
	(0.228)	(0.212)	(0.703)	(0.372)
Province, Western Province omitted				

Central Province	2.784***	1.327	0.359***	0.477
	(0.856)	(1.272)	(0.110)	(0.422)
Southern Province	0.922	3.342**	1.085	3.626**
	(0.249)	(2.093)	(0.293)	(2.341)
N. Western Province	1.664	10.037***	0.601	6.032***
	(0.599)	(7.589)	(0.216)	(4.281)
N. Central Province	1.128	32.293***	0.886	28.628***
	(0.504)	(20.197)	(0.397)	(19.948)
Uva Province	2.945***	5.91e-14***	0.340***	1.35e-16***
	(0.993)	(4.05e-14)	(0.114)	(9.39e-17)
Sabaragamuwa Province	2.479***	1.631	0.403***	0.658
	(0.830)	(1.667)	(0.135)	(0.666)
No. of observations	3275		3275	
No. of strata	2		2	
No. of PSUs	238		238	
Population size	2206910		2206910	
F (75, 162)	312.98		408.84	
Prob > F	0.00		0.00	

Notes to Table 3.4:

a) RRR stands for relative risk ratio.
b) Robust standard errors are reported in parenthesis. We control for clustering of the data within each primary sampling unit. This allows us to estimate correct standard errors for those explanatory variables that do not vary within the clusters but only between clusters.
c) Religious heterogeneity index is calculated as follows: $1 - \sum_k s_{ki}^2$ where s represents the proportion of households who belong to the religious group k in village i. The index represents the probability that two randomly chosen household will belong to different religions. A higher index represents higher levels of religious heterogeneity with 1 being the maximum. Total homogeneity will mean an index value of zero.
d) We measure household access to Samurdhi officer using a dummy variable which takes the value 1 if a Samurdhi Bank is located in the village, and the value zero otherwise. We assume having a Samurdhi Bank in the village allows for better access to officers by Samurdhi households and vice versa.
e) ***denotes statistical significance at the 1% level; ** at the 5% level; * at the 10% level.

The coefficient on the household "distance from the market" shows that *ceteris paribus*, the farther away a household is located from the market, the more likely it is that the household will not join a Samurdhi credit group relative to joining a spontaneous credit group. Increasing the household distance from the market by a mile increases the relative probability of not joining a group relative to the probability of joining a spontaneous credit group by 6 percent. The result is significant at the five percent level. The likely explanation is that being farther away from the market makes households less willing to borrow and invest in a micro-enterprise as their transaction costs of marketing their product is higher.

In terms of the village level control variables, the results in column 1 inTable 3.4 show that most of the village dummy variables are highly significant. For example, we find that households living in migrant communities such as settlement schemes,

irrigation colonies, plantation estates and urban slums are more likely to not join Samurdhi credit groups when compared with the probability of joining spontaneous groups. The results are consistent given the unique characteristics of each type of settlement. For example, households who have been resettled as a result of the war in the North-east are considered to be the extreme poor as most of them have lost all their assets during the process of having to flee their homes. These poor households are unlikely to be members of spontaneous groups. Households who live in irrigation colonies are generally provided with government credit since the government places a lot of importance to these schemes. This may explain why these households are less likely to join spontaneous Samurdhi credit groups and only receive food stamps from Samurdhi.

Households in plantation estates live in hostels provided by the plantation management and face mobility restrictions outside of these estates, making them unlikely candidates for receiving microcredit. We also find that residing in plantation estates has a highly significant negative impact on the relative probability of joining any type of credit group. The same is true in the case of households who live in urban slums. The latter result is consistent with the literature on microfinance which explains that given the floating nature of the urban slum population and the lack of social ties among them, forming joint-liability based credit groups among these people can be both costly and risky.

Finally, as for the control variables that distinguish between households who do not join a credit and those who join loan officer groups (column 2), we find that a one unit increase in the proportion of Samurdhi food stamp recipient households in a village reduces the probability of any household joining an officer-formed credit group. The result is significant at the 10 percent level. This result is consistent with the hypothesis that there is a limit to the number of credit groups loan officers are physically capable of supervising. A higher number of eligible households in the village may mean greater competition to join groups, and thus a lower probability of any one household to joining a credit group. None of the household level control variables significantly affect the relative probabilities of being in an officer-formed group relative to not being in any group.

The results in columns 1 and 2 in Table 3.4 suggest that when given the choice between not joining a Samurdhi credit group and joining a spontaneous or a loan officer-formed Samurdhi credit group, both homogeneity of the village as well as having access to Samurdhi loan officers are important determinants of credit group formation. Loan officers can therefore play an important role in increasing program outreach among the eligible population, both by forming groups as well as taking the added initiative to encourage spontaneous credit groups. The only exception is in estates and urban slums where loan officers do not seem to have any influence on households over credit group formation.

Some of the other household level control variables that we expected to affect the relative probabilities of the household decision to join a spontaneous or an officer-formed Samurdhi credit group relative to not joining any group turn out to be not significant. These variables include being a female-headed household, years of education of household head, the number of dependents in the household, owning farming assets and being landless. One possible explanation for these results is that there is very little variation in these variables due to the fact that, as we found out from chapter two, Samurdhi officials of the food stamp program use some of these household characteristics to identify prospective food stamp recipients. Hence, household characteristics of Samurdhi members are similar (see Table 3.3).

Overall, the evidence so far is consistent with our hypothesis that households who do not join SMP credit groups face higher group formation and functioning costs relative to spontaneous group members because these non-credit group members tend to live in villages that may have lower levels of social cohesion (measured by village level religious diversity). The results also show that having a Samurdhi Bank branch in the village, and thus greater access to Samurdhi loan officers, play a significant role in fostering the formation of officer-formed groups (as well as spontaneous groups) among eligible households.

Columns 3 and 4 in Table 3.4 provide multinomial logit estimates of the relative probabilities of the household decision to not join any Samurdhi credit group and to join an officer-formed Samurdhi credit group relative to the probability that a household joins a spontaneous group (base state). Column 3 provides information on

the variables that affect the relative probability of not joining a credit group compared with the probability of joining a spontaneous group, which is essentially a "mirror image" of column 1. The results, as expected, are consistent with those in column 1, and hence are not discussed in detail here.

Column 4 in Table 3.4 presents some interesting results as it shows which variables significantly distinguish between the household decision to join a spontaneous credit group and the household decision to join a credit group formed by a loan officer. Neither the religious diversity variable nor the access to a Samurdhi loan officer variable significantly distinguishes between these two household decisions when controlling for other factors. This result implies that both village level religious homogeneity and access to Samurdhi loan officers significantly determine the formation of both spontaneous and officer-formed groups, and that the magnitude of this effect is broadly similar across these two groups. The result is consistent with our earlier finding in columns 1-3.

The household characteristic that has a significant impact on increasing the relative probability of being in a spontaneous credit group relative to the probability of being in an officer-formed credit group is household size. A one-person increase in the size of the household increases the relative probability of joining a spontaneous credit group relative to the probability of joining an officer-formed group by 22 percent. The result is consistent with our hypothesis that having more household members increases social contacts, and thus the chance to form spontaneous credit groups. As we have argued before, it is plausible that the reason why some of the other household characteristics do not significantly affect the household decision whether to join a spontaneous Samurdhi credit group or to join a Samurdhi credit group formed by the loan officer is because these household characteristics do not differ much across the two groups. Results from two-tailed t-tests on the means of these variables across these two groups reported in Table 3.3 support this argument.

There are village level variables that have significantly different impacts on these two outcomes. The results show that being located farther away from the market by one mile raises the relative probability of joining an officer-formed group relative to the probability of joining a spontaneous credit group by 7 percent. This result is supported

by the RRRs on the household location dummy variables. For instance, households located in remote migrant villages such as settlement schemes are, *ceteris paribus*, more likely to join officer groups compared to spontaneous groups. Specifically, being located in a settlement scheme increases the probability of joining an officer group relative to joining a spontaneous group by 183 percent. The result is significant at the 1 percent level. These results imply that extending microfinance to households who are geographically and economically isolated, and therefore likely to be socially isolated, will require the intervention of loan officers to form credit groups, and that SMP does not have the choice to use spontaneous groups for its credit operations in these areas. Expanding the outreach of the Samurdhi microfinance program in these areas therefore will have to bear the higher costs associated with groups formed by loan officers.

It is possible that both these two types of communities – settlement schemes and irrigation colonies – have unique characteristics that are correlated with the religious diversity or access to Samurdhi officer variables. For example, we know for a fact that the irrigation colonies and settlement schemes are relatively homogenous in that mostly Sinhalese people were rehabilitated there, but since the government places a lot of importance to these schemes for both economic and political reasons, there may be an emphasis on the part of the Samurdhi Authority to ensure that these areas are covered by the SMP. Thus Samurdhi loan officers may have implicit instructions to form credit groups in these areas. An interesting point to note is that earlier we found that households living in irrigation schemes, given the choice between not joining a Samurdhi credit group and joining a spontaneous group, choose to not join a credit group (column 1). Our explanation was that this group do not have much of a demand for Samurdhi credit considering that government-subsidized credit is generally available for these households. The results in column 4 therefore seem to suggest that loan officers may be "compelling" some households to join Samurdhi credit groups.

It is also possible for the religious heterogeneity index to proxy for village characteristics other than social cohesion. For example, it is reasonable to expect areas that are economically better off are more likely to attract migrant households belonging to a minority religion (e.g. the Muslim Moors, Hindu Sri Lankan Tamils or Christian Burghers of European descent). Poor households will generally be willing to

incur the "social costs" associated with being a minority if they can secure economic prosperity by migrating to a new village. This would imply that religiously diverse villages are economically better-off than religiously homogenous villages.

For multinomial logit models we cannot calculate an R^2. Instead, the recommended goodness-of-fit measure is based on the proportion of successful predictions of the choices made, similar to binary choice models such as the logit (Maddala, 1983). Given that the choices are polychotomous and not binomial the STATA econometric package version 7 (StataCorp, 1999) suggests assessing the predictive power of a multinomial model by comparing the predicted values of two choices at a time with the observed outcomes. In Table 3.5 we compare the predicted value of the decision to join a spontaneous group and the decision to join officer-formed group with the four observed outcomes.

Table 3.5 Percent of Correct Predictions

Household type	Correctly predicting hh participation in spontaneous group	Correctly predicting hh participation in officer-formed group	Total sample*	Percent of correct predictions
Spontaneous group member	661	331	982	67
Officer-formed group member	37	118	155	76
Total			5090	

Note: *The sample sizes of each category is less than the original sample since Stata dropped some of the observations that it could not classify.

Although there are a number of misclassifications for both spontaneous and officer-formed group members, there are more correctly classified observations than misclassified observations. The percent of correct predictions of the outcome representing the decision to join a spontaneous group and a officer-formed group is 67 and 76 percent respectively. These results suggest that the predictive power of the group formation model is good.

Finally, as an additional check of the interpretation of our group formation model, in Table 3.6 we calculate the predicted probabilities of the three types of group formation outcomes to check how they vary with our key variables of interest -

religious diversity and access to Samurdhi loan officer variables. To do this we use the "method of recycled predictions" as recommended by StataCorp (1997), in which we vary these explanatory variables across the whole dataset and average the predictions. For example, we vary the religious diversity variable to make all villages completely homogenous (the religious diversity index takes on the value of 0) but hold all other characteristics constant. We then calculate the probabilities of each outcome. Next, we vary the religious diversity variable to make all villages completely heterogeneous (the religious diversity index takes on the value of 1) but hold all other characteristics constant. Again we calculate the probabilities of each outcome. The difference in these two sets of probabilities represents the difference due to religious diversity, holding all other characteristics constant. We do the same exercise for the access to Samurdhi loan officer variable as well. Table 3.6 presents two sets of predicted probabilities of the different outcomes of our group formation model due to the religious diversity and access to Samurdhi loan officer variables.

The predicted probabilities lend support to the overall hypothesis of this chapter. Table 3.6 shows that *ceteris paribus*, moving from a totally heterogeneous village (where the religious diversity index is equal to 1) to a totally homogeneous village (where the religious diversity index is equal to 0) increases the predicted probability that a household joins a spontaneous Samurdhi credit group from 0.09 to 0.20; increases the predicted probability that a household joins an officer-formed Samurdhi credit group from 0.005 to 0.04; and reduces the predicted probability that a household does not join a Samurdhi credit group from 0.24 to 0.20.

The predicted probabilities also show that, *ceteris paribus*, moving from having no access to a Samurdhi loan officer (where the dummy variable representing access to Samurdhi loan officer is equal to 0) to having access to a Samurdhi loan officer (where the dummy variable representing access to Samurdhi loan officer is equal to 1) increases the predicted probability that a household joins a spontaneous Samurdhi credit group from 0.16 to 0.23; increases the predicted probability that a household joins an officer-formed Samurdhi credit group from 0.03 to 0.04; and reduces the predicted probability that a household does not join a Samurdhi credit group from 0.24 to 0.16.

Table 3.6 Mean Predicted Probabilities of Group Formation

	Explanatory variables of Interest			
Group types	Totally heterogeneous village (std. dev.)	Totally homogeneous village (std. dev.)	No access to Samurdhi loan officer (std. dev.)	Access to Samurdhi loan officer (std. dev.)
Not member of Samurdhi	0.66 (0.21)	0.56 (0.23)	0.56 (0.23)	0.57 (0.23)
Member of Samurdhi but not credit group	0.24 (0.17)	0.20 (0.14)	0.24 (0.15)	0.16 (0.11)
Member of Samurdhi and spontaneous credit group	0.09 (0.09)	0.20 (0.15)	0.16 (0.12)	0.23 (0.16)
Member of Samurdhi and officer-formed credit group	0.005 (0.01)	0.04 (0.08)	0.03 (0.06)	0.04 (0.05)

The results from the method of recycled predictions analysis reported in Table 3.6 together with the results of the multinomial logit estimates reported in Table 3.5. highlight the importance of village level religious homogeneity and access to Samurdhi loan officers in determining the formation of Samurdhi credit groups. Overall, the evidence seems to suggest that both variables are important in increasing the outreach of the Samurdhi microfinance program.

3.7 Conclusion

This chapter explored the determinants of credit group formation in the Samurdhi microfinance program, distinguishing between two types of groups – spontaneous credit groups and credit groups that are formed by loan officers. The hypotheses that the chapter set out to test were two-fold: (i) high levels of household and village level social cohesion increase the probability that a household joins a spontaneous Samurdhi credit group; and (ii) low levels of household and village level social cohesion but access to loan officers increase the probability that a household joins an officer-formed Samurdhi credit group. Since the SLIS data did not have a social capital module that measured the level of household social connections, the chapter used a village level religious heterogeneity index as the only proxy measure of social cohesion. Consistent with the literature on social capital is the expectation that a higher value of the religious heterogeneity index represents a lower level of social cohesion within the village and vice versa. Access to Samurdhi loan officers is measured by a dummy variable that varies according to whether a Samurdhi

household lives in a village that has a Samurdhi Bank branch or not. The chapter tests its hypothesis using a multinomial logit model given that the household is faced with four choices in the group formation model that we set up.

The empirical results presented in this chapter based on multinomial logit estimates suggest that village level religious diversity significantly determine the formation of both types of Samurdhi credit groups (spontaneous as well as officer-formed) relative to the probability of that household not joining any Samurdhi credit group. The results are consistent with other empirical studies in the social capital literature that find that heterogeneity significantly affects participation in credit groups. The multinomial logit estimates also show that having access to Samurdhi loan officers is a significant determinant of both spontaneous and officer-formed credit group formation relative to the probability that the household does not join any Samurdhi credit group.

The part of the results that suggests access to Samurdhi officials significantly determines participation in spontaneous groups is unexpected but at the same time presents an important policy implication for the Samurdhi microfinance program. As a cost-saving measure, the SMP could focus on operating only in homogeneous villages via spontaneous credit groups and simply cut down on staff. Alternatively, the SMP could reallocate their Samurdhi officers who are currently stationed in homogeneous villages to other heterogeneous areas to encourage spontaneous credit groups to form. Whichever strategy the SMP chooses, it will help to minimize the trade-off between increasing program outreach without compromising program sustainability.

The results also suggest that in certain areas there will be a need for employing Samurdhi staff to form credit groups. The multinomial logit estimates show that being located farther away from the village market increases the relative probability that a household joins an officer-formed Samurdhi credit group relative to the probability that the household joins a spontaneous Samurdhi credit group. Similarly, being located in certain migrant communities such as settlement schemes, according to the results, increases the relative probability that a household joins an officer-formed Samurdhi credit group relative to the probability that the household joins a spontaneous Samurdhi credit group. Therefore if the SMP wants to increase outreach

in areas that are economically and geographically isolated, it will need to adopt a more "interventionist" approach and hire the necessary staff to engage in credit group formation activity.

The analysis in this chapter provides a comparative assessment of two different lending modalities and the implication of each on the widely debated topic of the outreach-sustainability trade-off in the microfinance literature. The results of this chapter also contribute to the growing literature on social capital, which emphasizes the role of heterogeneity and participation in groups as important ingredients in the development process.

The findings of this chapter and chapter two are important in that they identify the factors that determine participation in the two main components of the Samurdhi Program, and the resulting inefficiencies. Efforts to address these inefficiencies in the targeting strategy of the Samurdhi food stamp and microfinance programs can only be justified if these programs are able to have a significant impact on poverty. However, the results in these chapters are not able to address this important policy question for the Government of Sri Lanka. This question of program impact is taken up in the following chapter.

Appendix Three

Table A3.1 The Determinants of Samurdhi Credit Group Formation (Base Category: Samurdhi Non-credit Group Members)

	Base category: Samurdhi non-credit group members		
	Non-Samurdhi households	Households in spontaneous groups	Households in officer-formed group
	Coefficient	Coefficient	Coefficient
Group formation & functioning costs			
Religious heterogeneity	0.042	-1.01**	-2.35*
	(0.359)	(0.429)	(1.449)
Access to loan officer	0.407**	0.838***	0.756***
	(0.174)	(0.208)	(0.302)
Household variables			
1, if Female-headed household	-0.562***	-0.265	-0.479
	(0.201)	(0.245)	(0.414)
Years of education of hh head	0.182***	-0.019	-0.038
	(0.018)	(0.022)	(0.053)
Age of hh head	0.002	-0.017***	-0.0121
	(0.005)	(0.006)	(0.017)
No. of elders in hh	-0.097	-0.140	-0.118
	(0.114)	(0.133)	(0.315)
No. of children in hh	-0.112*	-0.104	0.039
	(0.061)	(0.072)	(0.150)
Hh size	0.034	0.229***	-0.018
	(0.051)	(0.057)	(0.123)
1, if hh owns livestock	0.258	0.427*	-0.163
	(0.232)	(0.231)	(0.482)
1, if hh owns farming assets	0.159	0.182	0.503
	(0.255)	(0.203)	(0.370)
1, if hh is landless	0.085	-0.058	-0.664
	(0.220)	(0.210)	(0.426)
HH distance to market, miles	-0.002	-0.058**	0.012
	(0.017)	(0.026)	(0.025)
Village level and geographical variables			
Type of settlement, traditional village omitted			
1, if Settlement Scheme	-0.480***	-0.808***	0.232
	(0.169)	(0.287)	(321)
1, if Irrigation colony	0.231	-1.635	0.698
	(0.269)	(0.647)	(0.436)
1, if Expansion colony	-0.706**	0.144	-0.259
	(353)	(0.307)	(0.492)
1, if Plantation estate	1.168***	-1.413***	-30.55***
	(328)	(0.412)	(0.861)
1, if Urban slum	0.0211	-1.041**	-31.98***
	(0.820)	(0.478)	(1.06)
1, if Urban middle-class	0.183	-0.176	0.880
	(0.149)	(0.284)	(0.722)
Proportion of Samurdhi hhs	-2.99***	-0.563	-1.394*
	(0.376)	(0.400)	(0.856)
Province, Western Province omitted			
Central	0.141	1.023***	0.283
	(0.246)	(0.307)	(0.958)
Southern	-0.024)	-0.081	1.206**
	(0.221)	(0.270))	(0.637)
N. Western	0.367	0.509	2.306***
	(0.323)	(0.360)	(0.731)

N. Central	0.692**	0.120	3.474***
	(0.300)	(0.477)	(0.625)
Uva	0.591**	1.08***	-30.459***
	(0.287)	(0.337)	(0.686)
Sabaragamuwa	0.410	0.908***	0.489
	(0.292)	(0.334)	(1.022))
No. of observations	3275		
No. of strata	2		
No. of PSUs	238		
Population size	2206910		
F (75, 162)	312.98		
Prob > F	0.00		
	3275		

Notes to Table A3.1:

f) Robust standard errors are reported in parenthesis. We control for clustering of the data within each primary sampling unit. This allows us to estimate correct standard errors for those explanatory variables that do not vary within the clusters but only between clusters.

g) Religious heterogeneity index is calculated as follows: $1 - \sum_k s_{ki}^2$ where s represents the proportion of households who belong to the religious group k in village i. The index represents the probability that two randomly chosen household will belong to different religions. A higher index represents higher levels of religious heterogeneity with 1 being the maximum. Total homogeneity will mean an index value of zero.

h) We measure household access to Samurdhi officer using a dummy variable which takes the value 1 if a Samurdhi Bank is located in the village, and the value zero otherwise. It is assumed that having a Samurdhi Bank in the village allows for better access to officers by Samurdhi households and vice versa.

i) ***denotes statistical significance at the 1% level, ** at the 5% level, * at the 10%.

Table A3.2 The Determinants of Samurdhi Credit Groups (Base Category: Households in Spontaneous Groups)

	Base category: Households in spontaneous groups		
	Non-Samurdhi households	Samurdhi non-credit group members	Households in officer-formed group
	Coefficient	Coefficient	Coefficient
Group formation & functioning costs			
Religious heterogeneity	1.049**	1.007**	-1.347
	(0.453)	(0.429)	(1.308)
Access to loan officer	-0.433**	-0.839***	-0.083
	(0.179)	(0.207)	(0.295)
Household variables			
1, if Female-headed household	-0.296	0.265	-0.213
	(0.227)	(0.245)	(0.453)
Years of education of hh head	0.200***	0.018	-0.020
	(0.020)	(0.022)	(0.053)
Age of hh head	0.0194***	0.017***	0.005
	(0.005)	(0.006)	(0.017)
No. of elders in hh	0.043	0.140	0.0216
	(0.107)	(0.133)	(0.315)
No. of children in hh	-0.008	0.104	0.143
	(0.065)	(0.072)	(0.157)
Hh size	-0.195***	-0.229***	-0.247**
	(0.047)	(0.056)	(0.124)
1, if hh owns livestock	-0.169	-0.427*	-0.590
	(0.227)	(0.231)	(0.496)
1, if hh owns farming assets	-0.023	-0.183	0.321
	(0.221)	(0.203)	(0.363)
1, if hh is landless	0.143	0.058	-0.606
	(0.206)	(0.210)	(0.405)
HH distance to market, miles	0.056***	0.058**	0.070**
	(0.027)	(0.0257)	(0.028)
Village level and geographical variables			
Type of settlement, traditional village omitted			
1, if Settlement Scheme	0.329	0.808***	1.04***
	(0.289)	(0.287)	(0.388)
1, if Irrigation colony	1.867***	1.635***	2.333***
	(0.656)	(0.647)	(0.539)
1, if Expansion colony	-0.563	0.143	-0.116
	(0.367)	(0.307)	(0.499)
1, if Plantation estate	2.581***	1.413***	-34.135***
	(0.480)	(0.412)	(0.795)
1, if Urban slum	1.062	1.04**	-35.944***
	(0.977)	(0.478)	(0.951)
1, if Urban middle-class	0.360	0.177	1.057
	(0.243)	(0.284)	(0.696)
Proportion of Samurdhi hhs	-2.427***	0.563	-0.830
	(0.414)	(0.400)	(0.854)
Province, Western Province omitted			
Central	-0.883***	-1.023***	-0.741
	(0.285)	(0.307)	(0.886)
Southern	0.056	0.081	1.288**
	(0.229)	(0.270)	(0.646)
N. Western	-0.142	-0.509	1.797***
	(0.305)	(0.360)	(0.710)
N. Central	0.572	-0.120	3.354***
	(0.439)	(0.447)	(0.696)
Uva	-0.489	-1.08***	-36.539***

	(0.325)	(0.337)	(0.694)
Sabaragamuwa	-0.497*	-0.908***	-0.419
	(0.277)	(0.335)	(1.012)
No. of observations	No. of observations	3275	3275
No. of strata	No. of strata	2	2
No. of PSUs	No. of PSUs	238	238
Pop. size	Pop. size	2206910	2206910
F (57, 180)	F (75, 162)	408.84	408.84
Prob > F	Prob > F	0.00	0.00

Notes to Table A3.2:

j) Robust standard errors are reported in parenthesis. We control for clustering of the data within each primary sampling unit. This allows us to estimate correct standard errors for those explanatory variables that do not vary within the clusters but only between clusters.

k) Religious heterogeneity index is calculated as follows: $1 - \sum_k s_{ki}^2$ where s represents the proportion of households who belong to the religious group k in village i. The index represents the probability that two randomly chosen household will belong to different religions. A higher index represents higher levels of religious heterogeneity with 1 being the maximum. Total homogeneity will mean an index value of zero.

l) We measure household access to Samurdhi officer using a dummy variable which takes the value 1 if a Samurdhi Bank is located in the village, and the value zero otherwise. We assume having a Samurdhi Bank in the village allows for better access to officers by Samurdhi households and vice versa.

m) ***denotes statistical significance at the 1% level, ** at the 5% level, * at the 10% level.

Chapter Four

The Impact of Food Stamps and Microfinance on Household Expenditure

4.1 Introduction

Government expenditures on welfare programs have been criticised for generating disincentives to work among the beneficiaries of these programs and for their administrative inefficiencies. At a more macro-level, disincentive effects of taxes and state borrowings used to fund welfare programs are claimed to reduce private initiative and investment, and thereby employment and growth. This line of thought argues that market earnings of the beneficiaries are lower than what they would otherwise be. Whether a roll-back of welfare programs actually has a robustly positive impact on the market earnings of poor households is still an open question (Lipton and Ravallion, 1995; Van de Walle and Neade, 1995). Similarly, whether welfare programs actually generate income gains for the poor also remains a widely debated issue.

Microfinance programs, on other hand, are generally not subjected to the above criticisms of generating disincentive effects. The premise is based on the belief that rather than giving handouts to poor households (as in the case of welfare programs), microfinance programs offer small loans to foster small-scale entrepreneurial activities. However, while strong claims are made regarding the ability of microfinance programs to reduce poverty, there is a lack of sound and consistent empirical research that supports these claims.

The Samurdhi Poverty Alleviation Program gives us some scope to compare the impact of providing handouts in the form of food stamps versus microfinance services to poor households. In this chapter we assess whether participation in the Samurdhi Food Stamp Program (SFSP) and the Samurdhi Microfinance Program (SMP) has a positive impact on household expenditure, particularly for the poor. We also estimate the combined impact of having access to both food stamps and microfinance services on household expenditure. The results of this impact analysis will be able to make a

contribution to the policy debates on the benefits of welfare and microfinance programs. The analysis will also provide significant policy implications for the future of the Samurdhi Program. If the results show that access to food stamps and microfinance services significantly improve household welfare for the poor, then the Government of Sri Lanka can justify the substantial levels of public expenditure required to operate these programs (approximately 1 percent of GDP in recent years) to achieve its social equity goals. The emphasis would then be on improving the targeting process so that the budgetary resources reach a greater share of the intended beneficiaries. If on the other hand the results show that participation in these programs has marginal or no discernible impact on household welfare, the reform emphasis ought to be on improving program design or finding alternative safety net and poverty reducing options.

The chapter is organized as follows. The next section discusses the empirical issues pertinent to assessing the impact of food stamp and microfinance programs. Section 4.3 provides a detailed description of the Propensity Score Matching method and compares it to other methodologies that are used by the literature to assess program impact using cross-sectional data. Section 4.4 explains how the Propensity Score Matching method can be applied to test for welfare gains from participation in the Samurdhi food stamp and microfinance programs. Section 4.5 describes the data on household participation in these two programs. The impact estimates are given in section 4.6 while section 4.7 concludes the chapter.

4.2 The Literature on Impact Evaluation of Food Stamps and Microfinance

There are a number of reasons that make impact evaluation of anti-poverty programs empirically complex, and that are not unique to food stamp or microfinance programs. One of the main problems associated with impact assessment, as in the case of both the SFSP and SMP programs, is that we do not observe the welfare outcomes (e.g. consumption expenditure) for households had they not participated, i.e., we have a problem of missing data on the counterfactual. To identify the counterfactual it is generally recommended to use a "comparison group" of what would have been the outcome without intervention by the program. The "comparison group" must be designed to be representative of the "treatment group" of participants with one key

difference that the comparison group did not participate in the program. Most often however, data on likely comparison groups are not available.

Another key problem with impact evaluation analysis is that households self-select into these programs or are selected into these programs by program officials (or by fellow group members as in the case of microfinance programs). Hence it is likely that there are significant differences between participant and non-participant households. To the extent that such differences can be observed and measured (e.g. age, education, occupation etc.) they can be controlled for when estimating program impact. However, many differences in characteristics cannot be observed (e.g. inherent talents, risk preferences, entrepreneurship, attitudes towards hard work or to belonging to an anti-poverty program etc.) and hence a simple comparison between participants and non-participants could lead to biased estimates of impact. This "selection" bias stems from the fact that some unobservable characteristics that lead certain households to join these programs can also affect outcome measures. If selection bias is not corrected for the estimated program impact may be either over or under-estimated.

In the case of microfinance programs, the problem is compounded by the fact that given incomplete and imperfect markets in most developing countries, the structure of production and consumption may be integrally linked due to non-separability (Benjamin, 1992; Morduch, 1995). Thus a production-side variable that explains credit use, or program participation, is most likely to also explain the expenditure-related outcome of consumption. For example, if more entrepreneurial households join the microfinance program, then the unmeasured "entrepreneurship" would influence both the decision to join the program as well as the impact measures such as income and assets. In this case, a simple comparison of program participants with non-participants would be biased upwards. Endogenous program placement due to purposive targeting based on unobservables can bias results. Upward biases occur when programs are set up in relatively wealthier communities, and downward biases occur when programs favour disadvantaged areas.

Ideally, a sound program evaluation that has to address problems of selection bias due to non-random program participation and program placement requires panel data.

Panel data allows one to collect data on outcomes and their determinants both before and after the program is introduced, and on the treated and untreated comparison groups. Subtracting the difference in outcomes of the participants and the comparison group before the program started from the difference in outcomes after the program started represents the impact of the program. This is known as the "difference in difference" estimation method (Maddala, 1983). The main problem with panel data is the practical difficulty and the expense in collecting this kind of data. Unfortunately the SLIS dataset does not have a "panel module" that can be used to compare the same household with earlier surveys. The cross-sectional nature of the survey limits the number of methodologies applicable for an impact evaluation exercise. The methodology used to assess the impact of the Samurdhi food stamp and microfinance programs in this chapter is known as Propensity Score Matching (PSM) and the discussion in section 4.3 explains the rationale for using PSM. We now move to discussing some of the literature on the impact of food stamps and microfinance programs on household welfare.

4.2.1 Assessing the Impact of Food Stamps

Microeconomic theory suggests that the value of an in-kind transfer can be as good as cash but it cannot be better than the value of an equal-dollar cash transfer. For some recipients an in-kind transfer is infra-marginal (the value of the food stamp is less than the amount purchased prior to receiving the food stamp), and hence equivalent to a cash transfer. For others however, it can distort consumption in the direction of the subsidized good and constrain the recipient from consuming more of unsubsidised goods (Moffit, 1989). Large publicly funded food stamp programs for the poor however, have often been justified on nutritional grounds. One argument is that food transfers have a stronger effect on food consumption than the same real income transferred in cash (Pinstrup-Andersen, 1993).

The evidence on the effect of food stamps on the propensity to consume the subsidized good appears to be mixed. Studies of food stamp programs in Colombia (Pinstrup-Andersen, 1984), Puerto Rico (Fraker at al, 1986) and Sri Lanka (Edirisinghe, 1987) find no statistically significant differences in the marginal propensity to consume food when comparing food stamps and cash income. These

findings are in contrast to those found by studies on the US Food Stamp program, which find that the marginal propensity to consume food was significantly higher for food-related transfers than for other income (Senauer and Young, 1986). Further support for food stamps is found in a more recent study by Breunig et al (2001). Using an intra-household allocation model and experimental data the authors also find that the marginal propensity to consume out of food stamps in a multi-adult household is higher compared to that out of cash income. The study thus makes a case for continuing the US Food Stamp Program rather than providing cash. Moffit's (1989) study on the same program however, finds no difference in the marginal propensity to consume from in-kind versus cash transfers.

Studies that estimate the impact of food stamps on household welfare also find mixed results. For example, Hoddinott et al (2000) find that participation in the Mexican food stamp program, PROGRESA, brings about an increase of 14 percent in mean household consumption. The poorest group of participants appeared to experience a larger gain in food consumption (13.5 percent) than the richest group (5 percent). The study uses panel data on 24000 households that belonged to 506 randomly assigned communities. This allowed for the creation of control and treatment groups with minimal unobserved differences. According to a study by Castaneda (2000) that reviewed food stamp programs in eight countries – Jamaica, Sri Lanka, Mexico, Honduras, the United States, Venezuela, Colombia and Romania – participation in these programs increased the disposable income of beneficiary households by 20-25 percent when first introduced. However, the report finds food stamp programs have relatively weak effects on reducing malnutrition due to low participation rates, low food and nutrient intakes among participating undernourished groups and, perhaps most importantly, the lack of accompanying nutrition education. Low participation rates in countries like Jamaica is explained to be due to the lack of information, high transportation costs, cumbersome bureaucratic procedures or ill health—problems which disproportionately affect the poor. The amount of the transfer is explained to be often too small to justify these transaction costs or to have significant effects on consumption.

A study using stochastic dominance methods by Ezemenari and Subbarao (1998) on the Jamaican food stamp program supports the results of the above report. The authors

use a panel dataset (created from nationally representative samples over three years) to study the Jamaican Food Stamp Program's impact on household consumption using information on participants before and after program participation. Using first differencing, they estimate a model of consumption in which household fixed effects (or any other potential household characteristics which may have an impact on the level of the food stamp transfer and on household consumption, but which does not vary over time) are eliminated.[63] The study estimates pre-food stamp level of household consumption using the results of their model, and thereafter use stochastic dominance tests between pre- and post-food stamp distribution of expenditure to examine whether or not participation in the food stamp program was effective in reducing poverty levels. They find that participation in the food stamp program does indeed explain increases (albeit small in magnitude) in the total expenditure of households. The impact of participation on food expenditures however, is not significant. The authors explain that because food stamps in the Jamaican program are easily fungible with cash,[64] the impact of food stamps can be mainly found on non-food consumption.

Using stochastic dominance methods for ordering poverty, Bishop et al (1995) find that the impact of the US food stamp program on the incidence of poverty is ambiguous, and that it depends on the poverty line chosen. Their results are however sensitive to the ways they measure income.

There has only been one study (Gunatilaka et al, 1997) that attempted to assess the impact of Samurdhi food stamps on consumption. The qualitative study which used focused group discussions found that "... *while the grant seems to assist people, albeit in a small way, to maintain their calorie requirements, given the proportion of total consumption covered by the Samurdhi grant and the composition of the basket of goods bought with it, it is unlikely that it is effective in raising the nutritional standards of beneficiary households*" (p. 20). The study however was conducted among 150 agricultural households in three of the poorest regions of Sri Lanka. The

[63] Even this methodology is not without its flaws as it is subject to potential biases due to time-varying unobservables (Heckman and Smith, 1995).

[64] Under the Jamaican program food stamps can be traded for a wider rage of goods rather than for those prescribed by the program. Food stamps are legal tender and are accepted at commercial grocery outlets. Retailers can use the collected stamps to purchase any commodity from wholesalers including those not covered by the program. This makes the stamps fairly liquid.

main finding of the study can be viewed as a hypothesis to be tested across a more nationally representative sample, as is done in this chapter.

4.2.2 Assessing the Impact of Microfinance

The literature on assessing the impact of microcredit on poverty is contentious partly due to the challenges of impact evaluation discussed above. The main hypothesis is that improved access and efficient provision of savings, credit, and insurance facilities can enable the poor to smoothen their consumption, build their assets gradually, raise their income, and improve their quality of life. The methodological problems associated with many evaluation exercises of microfinance programs have been summarized earlier in section 4.2. Typically, impact studies on microfinance use household consumption per head, proxying for income, as the dependent variable and individual, household, and geographical characteristics along with the use of microcredit as explanatory variables. However, evaluating the impact of credit on household consumption using simple OLS regression analysis can lead to biased estimates since the unobservable characteristics associated with joining a credit program is not observed. The only way around the problem of selection bias is to find an instrument that will affect the household's program participation but will not affect household consumption. One approach has been to exploit the idea of eligibility criteria used to lend, i.e. land ownership in the case of the Bangladesh, as a way of overcoming the problem of identification. Khandker (1998) assumes that there is perfect targeting (i.e. all program households own less than 0.5 acres of land) and finds increased welfare conditions for borrower households, a result challenged by Morduch (1998) using the same data but a different methodology. Zaman (1999) in his assessment of the impact of BRAC's credit programme – one of the largest in Bangladesh – uses the number of eligible households in each village as an instrument. Based on BRAC's policy of maintaining a ceiling on membership in each area, he argues that a larger number of potential members in a village will reduce the chance of any one eligible household from participating in the credit program but will not affect the individual borrower household's consumption. Zaman finds that a significant impact on welfare is achieved if the borrower crosses a cumulative loan threshold but that result depends on the household's initial level of poverty.

There is another set of studies that question the extent that microfinance improves household welfare. Morduch (1999) finds no increase in consumption as a result of participation in the Grameen Bank. Using the same data set as Pitt and Khandker (1998) but a different methodology, Morduch finds that Grameen Bank borrowers have per capita consumption levels that are 7 percent below those of comparable control groups. However, Morduch shows that microfinance contributes significantly to reducing household vulnerability by smoothing consumption. For example, this study finds that access to credit contributes to reducing household vulnerability in lean seasons. He shows that consumption variability is significantly lower compared to a control group. Income-smoothing, evidenced by the significantly lower labour supply variability experienced by Grameen Bank borrowers, drives this consumption-smoothing. Menon (1999) supports Morduch's results by showing that consumption differentials across seasons among Grameen Bank borrowers are inversely related to the duration of membership. These results imply that the benefits of having access to credit are not necessarily in increased consumption, but rather can be in risk reduction.

Using a unique survey designed to overcome the selection bias and endogenous program placement problem in evaluating the impact of a group-lending program in Northeast Thailand, Coleman (1999) shows that the impact of participation in the program on physical assets, savings, production, sales, productive expenses, labour time, and most measures of health and education is not significant. However, in a follow-up study, by differentiating the participants of the microfinance program studied in Coleman (1999), Coleman (2002) finds that microfinance positively impacts some measures of household welfare such as savings, income, productive expenses and labour time for the *already* wealthy members. The impact is largely insignificant for the poorer members of the program. The study also finds that wealthier villagers are twice as likely to participate in the microfinance program studied, and that some of the wealthiest villagers obtain a disproportionate share of the program loan by virtue of holding influential positions within the administrative structure of the program. The most recent evidence on the impact of microfinance can be found in Khandker (2003) where a panel data set is used to show that micro-credit does significantly contribute to reducing poverty. The impact appears to be greater for

households who start off extremely poor, which is in contrast to other studies that point to moderate poor borrowers benefiting more than extremely poor ones.

The few studies that have looked at the Samurdhi microfinance program (Gunatilaka et al, 1997; Charitonenko and de Silva, 2002; Gunatilaka and Salih, 1999) are non-academic project evaluations that are of a descriptive nature. The study by Gunatilaka and Salih (1999) attempts to evaluate Samurdhi microfinance by conducting a small survey among 200 Samurdhi households who participate in SMP. The results suggest that having access to food stamps encourage many households to join the SMP. Households tend to use Samurdhi loans for emergency and consumption purposes. The study does not assess the impact of the program on poverty but concludes that participating in the program has fostered a savings culture among households who would otherwise not save. The Samurdhi households were picked from distinct communities (e.g. metropolitan suburbs, provincial urban areas, wealthy rural areas, and poor rural areas). Given the small number of observations within each locality, the results of the study are location specific and cannot be generalized.

Using the SLIS dataset this chapter is able to use data on the non-participants of both the Samurdhi food stamp and microfinance programs to create the closest possible comparison groups and assess the impact of food stamps and microfinance on household welfare. The evaluation methodology used for the impact assessment in this chapter is known as Propensity Score Matching, and is discussed in detail in the following section.

4.3 Using Propensity Score Matching for Program Evaluation

Propensity Score Matching (PSM) is a methodology that pairs the distributions of observed covariates of a treatment group with a control group based on the similarity of their predicted probabilities of participating in a given program (their "propensity scores"). Program impact is measured by subtracting the mean outcomes of the matched comparison group from the mean outcomes of the matched program participants. Identification in PSM is based on the assumption that after conditioning on all of the observed characteristics that are known to affect program participation,

the participant and the matched control groups are comparable over the outcome variables.

In PSM two groups are identified: those households who participate in the program to be assessed (denoted as $D_i = 1$ for households who participate, and for those who do not, $D_i = 0$). Participants (the "treated" group) are matched to households who are non-participants (the "control" group) on the basis of a set of observed characteristics using the propensity score:

$$P(x_i) = Prob(D_i=1 \mid x_i) \qquad [0<P(x_i)<1] \qquad \text{Equation 4.1}$$

where x_i is a vector of pre-exposure control variables. According to Rosenbaum and Rubin (1983) (i) if D_i s are independent over all i, and (ii) outcomes are independent of participation given x_i , then outcomes are also independent of participation given $P(x_i)$, just as they would be if participation were assigned randomly.[65] PSM uses $P(x)$ to select controls for each of those treated so that exact matching on P(x) implies that the matched control and treated households have the same distribution of the covariates.[66] PSM thus eliminates bias in estimated treatment effects due to observable heterogeneity.

Assuming that the differences in the unobservables are minimal, the estimated propensity score, $Phat(x)$ can be used to assess the program impact by stratifying on the propensity score. The common practice is to estimate the propensity score for each observation in the participant and the comparison group samples by using the predicted values from standard logit models. The estimated propensity scores, $Phat(x)$ are then used to create matched-pairs on the basis of how close the scores are across the two samples. The nearest neighbour to the i'th participant is defined as the non-participant that minimizes $[p(x_i)-p(x_j)]^2$ over all j in the set of non-participants, where $p(x_k)$ is the predicted odds ratio for observation k, i.e. $p(x_k) = Phat\ (x_k)/\{1- Phat\ (x_k)\}$.

[65] Assumption (ii) is sometimes referred to in the literature as the "conditional independence" assumption, and sometimes as "strong ignorability." This is the key assumption made by all comparison-group methods of evaluation.

[66] Ideally, one would match a participant with a non-participant using the entire dimension of X, i.e., a match is only declared if there are two individuals, one in each of the two samples, for whom the value of X is identical. This is impractical since the dimension of X could be high. Assumption (ii) is therefore a powerful result since it reduces a potentially high-dimensional matching problem to a single dimensional one (Jalan and Ravallion, 2000).

The mean impact of the gain in the outcome variable for the j'th household attributable to participation in the program can be written as the following:

$$\Delta\overline{C} = \sum_{j=1}^{T} w_j(Y_{j1} - \sum_{i=1}^{N} W_{ij}Y_{ij0}) \qquad \text{Equation 4.2}$$

where Y_{j1} is the post-program intervention indicator for any increase in the outcome variable, Y_{ij0} is the outcome indicator of the i^{th} non-treated matched to the j^{th} treated household, T is the total number of treatments, N is the total number of non-treated households, w_j's are the sampling weights used to construct the mean impact estimator, and W_{ij}'s are the weights applied in calculating the average outcome indicator of the matched non-participants. Conditional mean impact estimators can be similarly defined by calculating equation 4.2 conditional on observed characteristics.

In calculating the average outcome indicator of the matched non-participants several weighting schemes can be used, ranging from "nearest neighbour" weights to non-parametric weights based on kernel functions of the differences in the propensity scores (Heckman et al, 1997). We will use the nearest neighbour estimator, which takes the outcome measure of the closest matched non-participant as the counter-factual for each participant.[67]

Since matching methods only deal with observable attributes of the control and treated groups, one can argue that there will still be a problem of latent heterogeneity, leading to possible selection bias in the estimated program impact. Heckman et al (1997) however, argue that the emphasis on the elimination of selection bias due to unobservable attributes of the control and treated groups is misplaced. According to the authors balancing the observables in the participant and the comparison group in the PSM methodology goes a long way toward producing an effective evaluation strategy. They formally show that bias due to mismatching of the data is numerically more important than bias due to selection on unobservables. An important conclusion of Heckman el al (ibid) is that failure to compare participants and controls at common

[67] Rubin and Thomas (2000) use simulations to compare bias in using the nearest five neighbours with the bias in using just the nearest neighbour and find that no clear pattern emerges.

values of matching variables is the single most important source of bias. Consequently the authors suggest using comparison groups located in the same economic environment and administering them the same questionnaire as the participants which would reduce both bias due to observable and unobservables. Thus a safe strategy to eliminate selection bias as much as possible is to ensure that we are matching only over common values of the propensity scores. It is thus important that there is a set of non-participant sample from which to choose an ideal comparison group. However, it must be noted that in this process of finding matched pairs, the total sample size shrinks as some non-participant households do not have characteristics that are similar to participant households, and are dropped from the final matched sample.

4.3.1 Comparing PSM with Other Non-experimental Methods

Existing studies on the impact of food stamps have primarily used panel data. Given that most of these studies evaluate the U.S Food Stamp Program it is not altogether surprising that panel data is available for such impact analysis. The U.S Census Bureau has been systematically collecting data on the benefits of the food stamps since 1980. As discussed earlier, the benefits of having panel data are widely recognized in the impact evaluation literature. Having a baseline survey one is able to control for both non-random participation and non-random placement as long as unobserved variables do not vary over time (Heckman and Smith, 1995). However, panel data especially on welfare programs in developing countries are difficult to find.

In terms of the microfinance literature, evaluation studies based on panel data are also sparse. A recent example is the study by Khandker (2003), as discussed earlier. Program impact assessments using cross-sectional data are far more prevalent. A commonly used methodology based on cross-sectional data is to do simple treatment and control comparisons, i.e. compare average outcome indicators between villages (or households) that have access to the program and those that do not. However, as Morduch (1999) points out that often the control groups are not adequately matched with the treated groups. Morduch (1998) attempts a thorough matching of the control and treated groups, paying particular attention to taking into account the various sources of selection bias. He compares households eligible to borrow from the Grameen Bank in a village that has a Bank branch with households who would be

eligible but live in a village that does not have a Grameen Bank branch. PSM is similar to commonly used matching estimates but has the added advantage of being able to optimally balance the observed covariates between the control and the treated groups through the process of creating "matched pairs" described earlier.

The second method found in the microfinance literature, and in the program evaluation literature more broadly, is the instrumental variables estimator (IVE), which treats program participation and placement as endogenous. This method, like the PSM, does not avoid an untestable conditional independence assumption – in the case of IVE this is the exclusion restriction that the instrumental variable is independent of outcomes given participation in the program. The validity of the instruments is always questionable in the case of cross-sectional data, and the literature does not offer any credible identification strategy (Morduch, 1999).

A third method for estimating program impact is to use quasi-experimental surveys that allow for straightforward estimation techniques. Coleman (1999, 2002) for example, collect data from treatment villages that already had the microfinance program, as well as from control villages which had the program but had not yet received any services from the program, and non-members from both types of villages. Given the design of this survey, simple regression estimation is used to estimate the impact of program participation on a set of welfare outcomes.[68]

As discussed, PSM differs from regression methods in that it confines its assessment to the matched sub-samples and unmatched comparison groups are dropped. By contrast, regression methods use the full sample. Simulations by Rubin and Thomas (2000) indicate that compared to impact estimates based on matched samples, estimates based on full (unmatched) samples are generally more biased, and less robust to mis-specification of the regression function. Another difference between PSM and regression methods is that control variables are required to be exogenous to outcomes when we use standard regression methods. However, in PSM, all covariates

[68] The survey was conducted for 445 households in 14 villages. The unique properties of this survey is in the way it identified the control villages. The survey took advantage of the fact that the program studied had an expansion plan in four pre-identified villages (based on whatever criteria the program uses to extend coverage). Upon identification, the program staff allowed villagers to self-select into the program knowing fully well that lending will only begin in a year's time. Hence, through this process, a control group of would-be participants was identified (i.e. the counterfactual).

of participation can be included, even those who are poor predictors of the outcome variables.

There are other advantages to using PSM. The matching method does not require a parametric model linking program participation to outcomes, and thus allows the estimation of mean impacts without arbitrary assumptions about functional forms and error distributions (Jalan and Ravallion, 2001). Finally, PSM allows us to assess any heterogeneity in the program impact by disaggregating the average impact, for instance, by income quintiles. This disaggregation is important in order to test whether the gains from a program intervention accrue to the poor or whether the non-poor benefits more. Such analysis is crucial for anti-poverty programs such as Samurdhi. Recent program evaluations based on cross-sectional data that have used PSM include Jalan and Ravallion (2000 and 2001). The following discussion explains how the PSM method can be used to evaluate the Samurdhi food stamp and microfinance programs.

4.4 Identifying Samurdhi's Impact on Welfare using PSM

In this chapter we want to estimate the causal effects of participation in the Samurdhi food stamp and microfinance programs in a cross-sectional sample with non-random participation. Two issues we need to pay attention to in our evaluation are: (i) using quantifiable household outcome measures that truly reflect the impact of program participation, and (ii) isolating impacts due to household participation in these programs as opposed to the myriad of other changes that affect these household outcome measures.

4.4.1 Household Consumption Expenditure as a Measure of Welfare

It is generally agreed in the literature that expenditure-based or consumption-based standard-of-living measures are preferable to income-based measures, especially in developing countries. According to Deaton and Zaidi (1999) this is true for both practical and theoretical reasons. The main practical reason is the difficulty in collecting reliable income data. Income sources are varied, the flows are often irregular, and households often under-report income. The main theoretical reason is that according to the permanent income theory of consumption, estimates of current

consumption are likely to provide a more reliable estimate of the household's permanent income (sustainable standard of living) than estimates of current income. Current income is generally much more volatile and can be subject to shocks, especially if the household is engaged in agricultural or self-employment activities. There is empirical evidence that consumption on the other hand can be smoothed, at least partially, in the face of these shocks by saving and borrowing (Paxson, 1992). Consequently, even if current income is well measured, it is not a particularly good measure of the household's general or longer-term standard-of-living.

However, there are limitations to using levels of household expenditure as a proxy for welfare in the context of the Samurdhi program. First, an increase in household food expenditure does not necessarily result in an increase in the nutritional intakes of the household members. For instance, households may give away the food stamps to other households, or purchase more expensive food items. The lack of data on such household activity however, makes it difficult to adjust consumption measures for these transfers. Household expenditure levels also do not take into account the non-income aspects of poverty. According to Sen (1982), poverty is a multi-dimensional phenomenon determined by both material and non-material well-being. Thus, welfare should be measured in terms of a "capabilities approach" where goods such as health, food, education, water and shelter to name a few, are not an end in themselves but are determinants of people's capabilities to function. For instance, having adequate food intake (via participating in the Samurdhi Food Stamp Program) may not necessarily mean that a person is in good health. It is only when the person is able to prepare the food well that we can consider her to be nutritiously fed. A person's welfare thus constitutes of interrelated functionings (e.g. access to food and education). These non-income aspects of welfare however, are difficult to quantify and measure.

Second, it is possible that households make transfers to one another as a coping mechanism against risks in order to smooth consumption (Dercon and De Weerdt, 2005). For example, food stamp recipients might exchange food for other non-food items, thus lowering their recorded non-food purchases. Such behaviour will affect our outcome measures, and therefore has to be taken into account when interpreting our results.

Third, household consumption-smoothing ability in itself is considered to be a component of household welfare. Changes in the levels of expenditure do not necessarily reflect the household ability to smooth consumption. Measuring consumption-smoothing mechanisms however, is difficult without panel data. Given that we expect microfinance in particular, to have an impact on the consumption-smoothing ability of households (Morduch, 1998), using levels of household expenditure as our outcome measure represents a limitation of the impact assessment of microfinance presented in this chapter.

Taking the above caveats into account, this chapter assesses the impact of the Samurdhi food stamp and microfinance programs on monthly per capita total household consumption expenditure. This variable includes all expenditure on food, non-durables, the imputed value of non-durables received as gifts or produced in the household, the imputed value of owner-occupied housing, and the value of Samurdhi transfers; it excludes expenditures on durable goods and assets.[69] We are especially interested to identify the path through which participation in Samurdhi affects household expenditure. Thus we also assess the impact of participation on monthly per capita food consumption and on monthly per capita non-food consumption. The following discussion explains theoretically how one expects access to food stamps and microfinance to affect household consumption expenditure.

4.4.2 How do Food Stamps and Microfinance Affect Household Expenditure?

Food stamps are pieces of secure paper issued for the purchase of a fairly wide range of specified foods. Food stamps are generally provided for basic food items that tend to be part of a staple diet. The premise is that food stamps will help to ensure minimum nutritional needs for poor people. In the case of the Samurdhi program, the food items offered in exchange of the food stamps include lentils, rice, flour, sugar, oil and fish. Food stamp recipients are usually free to use food stamps to buy any quantity of foods they wish at market prices. A third of the food stamps can be cashed and used to purchase more of the available food or other non-food items. Six months

[69] The consumption expenditure aggregate should include imputed value of flow of services from durable goods. However, in practice this is very hard to calculate. Thus the convention followed here, as in the case of data from other countries, is to exclude all expenditures on durable goods.

worth of food stamps are issued to a household, and the stamps are validated for use at multipurpose cooperative stores at the beginning of each month.

The impact of food stamps on food and non-food consumption depends on whether recipients spend more or less on food prior to receiving the food stamps than the face value of the stamps. If the consumers purchase more food than the face value of the stamps, they are said to be "unconstrained" in their choices and are expected to spend more on food (including the value of the stamps) and non-food items (due to the additional income saved on the food budget) as a result of the food stamps. Such a transfer is infra-marginal. The transfer is extra-marginal in the case that consumer pre-transfer purchases of food are less than the face value of the food stamps. In this case consumers are considered to be "constrained" in their food/non-food choices since they are forced to purchase more of the food than they would optimally consume but not the non-food items that they would have been able to purchase had the extra food stamps been redeemable for cash. Most food stamp programs, including the Samurdhi Food Stamp Program, provide transfers that are generally less than the target population's pre-transfer food consumption, and thus are infra-marginal. For instance, in the case of SFSP, the value of the food stamp is only 9 percent of the average pre-transfer household food expenditure (see Table 4.3). However, given the behavioural responses to receiving food stamps (i.e. whether the household spends an equivalent value of the food stamps on additional purchases of food items or on non-food items such as leisure, or whether it saves the amount), it is hard to predict *a priori* how Samurdhi food stamps will affect total household expenditure. For instance, if the marginal propensity to consume leisure is high, than one could even find participation in the food stamp program has a negative overall impact on household expenditure.[70] Similarly, if households engage in transferring food stamps to non-Samurdhi households in exchange for non-food items, we would also see lower recorded non-food purchases, which in turn would show that participation has a negative impact on non-food expenditure. The impact of Samurdhi food stamps on household consumption expenditure thus remains an open-ended empirical question.

[70] For example, Sahn and Alderman (1996) find empirical evidence of increased demand for leisure as a result of participation in Sri Lanka's food subsidy programs that operated in the 80s. This resulted in the reduction of labour supply by both men and women. Such modelling of behavioural response to participation in SFSP is beyond the scope of this thesis but nevertheless is an important topic of further research.

As discussed in section 4.2.2 access to microfinance services can offer similar benefits as in the case of food stamps. Studies have assessed the impact of microfinance services on poverty via two main channels. One, they have tried to measure whether access to microfinance increases levels of consumption and household income. Two, given that the role of microfinance in consumption-smoothing is important in terms of protecting a household from falling deeper into poverty, studies have looked at changes in household assets, and their related impact on income levels. Holding all else constant therefore, we expect participation in microfinance programs to bring about an income effect, pushing up total household consumption expenditure. Due to the cross-sectional nature of our data set, we are not able to assess the impact of microfinance on consumption smoothing.

4.4.3 Isolating the Impact of SFSP and SMP on Household Expenditure

As discussed earlier, one concern when assessing the impact of the Samurdhi program emanates from the fact that both SFSP and SMP are targeted programs, which means that participation in these two programs is not random. The following discussion explains why it is possible to use propensity score matching (PSM) techniques to identify the impact of food stamps and microfinance on household consumption expenditure.

The fact that participation is not random suggests that there could be a problem of selection bias as discussed in the literature review. We need to therefore, control for the factors that jointly influence household consumption expenditure and participation in the two programs. The SLIS survey provides information on both participants of the food stamp and microfinance programs, as well as on households who are eligible but do not participate in these programs. This particular feature of SLIS makes it possible to create control groups that are comparable to treatment groups. As noted in the literature and discussed in detail in section 4.4, comparison households in the Propensity Score Matching process should ideally be picked from the same area and should answer the same questions as the treatment households. This ensures that comparison households differ from the treatment group only in so far as they do not receive an intervention. Equally important, the SLIS offers a sufficient number of observations on both participants and non-participants for us to conduct a robust

propensity score matching of the data[71] that ensures close matches and a respectable final matched sample size.

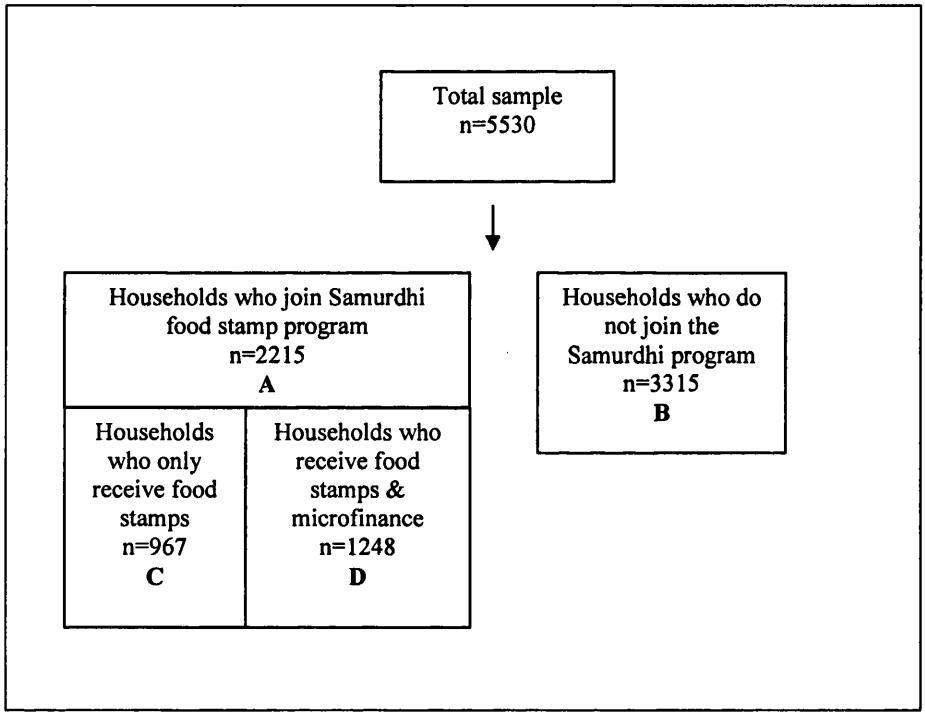
A second reason why PSM is applicable in assessing the impact of SFSP and SMP has to do with the structure of the Samurdhi Poverty Alleviation Program. Households are first selected to receive Samurdhi food stamps. Only those households who are provided food stamps are eligible to participate in the Samurdhi microfinance program. This poses a double selection bias problem for any conventional impact evaluation methodology, thereby further complicating the existing evaluation problem. For example, out of the total sample of 5530 households in SLIS (excluding the North-east), 2215 households participate in the Samurdhi food stamp program. Out of these food stamp recipients, 1248 households participate in the Samurdhi microfinance program. Using OLS to assess the impact of microfinance on household consumption would suffer from the possibility that unobservables that affect both the household ability to participate in the food stamp program as well as in the microfinance program are correlated with the error term. PSM on the other hand allows the formation of comparable groups for the evaluation of both the SFSP and SMP separately, and the transparent estimation of differences in household welfare that can be attributed to program participation.

Chart 4.1 helps to explain the different comparison groups the SLIS data allows, and how we use PSM to assess the impact of Samurdhi food stamps and microfinance on household welfare. Group A includes all of those households who join the Samurdhi food stamp program, and thus are eligible to join the Samurdhi microfinance program. Those who do not join the Samurdhi program at all are included in group B. Households who choose to only receive food stamps and not microfinance services are included in group C, and those households who receive both food stamps and microfinance constitute group D. To assess the impact of Samurdhi food stamps, propensity score matching is used to compare "matched households" in group C with group B. This involves straightforward PSM estimation where there are a sizeable number of non-participants (n=3315) from which to choose the best possible match

[71] Matches are only accepted if the difference in the propensity scores for participation for participants and non-participants is less than 0.001. This ensures the closest possible match for the treated, and thus minimizes selection bias. Other studies that have used PSM have used a similar tolerance limit of 0.001 (Jalan and Ravallion, 2001; Cratty and Van de Walle, 2002).

for participant households (n=967). The sample of non-participants is very likely to include households who would like to participate in SFSP but were unable to do so due to say the unwillingness of program officials to include them. For example, there is qualitative evidence that pro-UNP supporters were denied Samurdhi benefits even though they were eligible to participate in the program (Parker and Silva, 2000). Thus, we expect "matched households" in B (who are non-participants) to be similar to households in A (who are participants) except for the fact that the latter group received Samurdhi food stamps.

Chart 4.1 Sample Sizes of Participants and Non-participants of SFSP and SMP



To estimate the impact of the microfinance program, we compare group C with group D (n=1248). The fact that we are comparing participants and non-participants of SMP out of an eligible population (i.e. both groups are participants of SFSP) goes a long way in fulfilling one of the key conditions of PSM which is to collect data from a pool of similar households. The pre-matching estimated propensity scores (discussed later) of these two groups lend support to this claim. The identifying assumption is that conditional on certain household characteristics that make some food stamp recipient households more likely to participate in SMP (e.g. having a Samurdhi Bank in the

village), total expenditure of households in group C and D are independent of participation in the microfinance program.

Finally, we want to estimate the impact of having access to both food stamps and microfinance services. Households in group D are the only ones who receive both services. Thus to conduct PSM, we need to create a comparison group of households who receive neither food stamps nor microfinance services but nevertheless are similar to households in group D. By matching households in group B (who are non-participants) with households in group D, we are able to estimate the *joint* impact of participating in SFSP and SMP on household expenditure. We are able to do this analysis since there are households in group B who are eligible to join SFSP, and by definition, would also have been eligible to join SMP.

The joint impact assessment methodology differs from the methodology used to assess the impact of microfinance in the way we define the sample size and the assumptions we make. In the microfinance impact assessment methodology, we want to create comparison groups such that the only difference between them is that the control group does not receive any microfinance services. The only way we can do this is by including only the Samurdhi participants (those who receive food stamps only and those who receive food stamps and microfinance services) in our sample. Our assumption is that certain characteristics make some Samurdhi food stamp recipient more likely to join the SMP program. PSM requires identifying those characteristics to create close matches between households in groups C and D, and thereby allows us to assess the impact of microfinance. In the case of the joint impact methodology, we want to create comparison groups such that the control group does not receive food stamps or microfinance services. We assume that certain characteristics make some household more likely to want both food stamps and microfinance. Identifying those characteristics allows us to match households who receive both food stamps and microfinance (group D) with households who receive neither (group B). Using PSM to match households in group D with those in group B, we are then able to assess the joint impact of having access to food stamps and microfinance on household expenditure.

The SLIS provides substantial information on household characteristics and community characteristics in which households reside for both participants and non-participant of SFSP and SMP. Chapters two and three used this data to identify the significant determinants of SFSP and SMP participation to test specific hypothesis with regards to the targeting of these programs. Thus our logistic models used to predict program participation are not arbitrary but are based on specific theoretical considerations. We expect this to considerably improve our matching estimates based on propensity scores.

4.5 Data and Descriptive Statistics

As with the previous two chapters, the data used in this chapter are from a nationally representative Sri Lankan Integrated Household Survey 1999/2000 (SLIS). Conducted between October 1999 and July 2000, the SLIS includes 7500 Sri Lankan households, and was undertaken by the Ministry of Finance of the Government of Sri Lanka with technical and financial assistance from the World Bank. However, as with the previous two chapters, the analysis in the present chapter does not include the North-eastern region because data collection was disrupted by the prevailing conflict conditions, and we expect sampling problems associated with the data on the North-East. This is not a weakness of SLIS per se but all other surveys in Sri Lanka have not been able to collect data in this region. The SLIS includes household-level questions on participation in the Samurdhi food stamp program, along with other detailed questions on the exact amount of benefits.[72] These data allow us to identify the various household and community level determinants of participation in SFSP and SMP in order to calculate propensity scores and to create control groups.

Out of the total sample of 5530 households (once the North-east has been excluded) 40 percent participate in the food stamp program (2215 households), and 56 percent of the food stamp recipient households participate in the microfinance program (1248 households). Table 4.1 looks at the distribution of the total SLIS sample across these two programs according to their pre-transfer per capita expenditure levels. As expected, the proportion of households with access to food stamps varies with per

[72] Section 1.4 in chapter one provides a more detailed description of the survey instrument.

capita household expenditure. Over 60 percent of the total population belonging to the bottom quintile receives food stamps while 14 percent of the total population in the top quintile also receive Samurdhi food stamps. Almost half of the food stamp households in the richest quintile also join the microfinance program, though this represents only 3 percent of the total population. Table 4.1 also shows that a large proportion of poor Samurdhi households join the microfinance program relative to the better-off Samurdhi households. This suggests that the poor are keen on accessing both welfare and financial services in order to bring them out of poverty. However, more than 40 percent of Samurdhi households in the bottom two quintiles do not borrow from SMP. This can be explained by both demand and supply side factors. On the demand side, extremely poor households are reluctant to get into debt. Moreover, better-off households are likely to not want to form peer groups with the poorest. These better-off households may also want to exclude the poorest to ensure higher levels of group savings which help to leverage larger loans for each credit group member from the Samurdhi Bank. On the supply side, Samurdhi officials are also likely to avoid the poorest due to doubts over their ability to repay loans.

Table 4.1 Participation in SFSP and SMP across per capita Expenditure Quintiles

Per capita expenditure quintiles	N=total sample	n=SFSP participants	% of N who participate only in SFSP	% of n who also participate in SMP
Full sample	*5524**	*2213***	*44*	*56*
Bottom 20th percentile	1043	659	42	58
20th - 40th percentile	1058	581	43	57
40th - 60th percentile	1020	457	42	58
60th – 80th percentile	1077	339	46	54
Top 20th percentile	1326	177	53	47

Notes to Table 4.1: (a)* Six observations were dropped by stata since these households lacked expenditure data; (b)** Two observations in the Samurdhi sample lacked expenditure data.

Table 4.2 looks at the *distribution of the participants* of the SFSP and SMP across the different expenditure quintiles. Both the programs appear to have very similar distributions of participants: around 30 percent of the participants in SFSP and SMP belong to the bottom quintile while around 7-9 percent belong to the top quintile. Table 4.2 suggests that when assessing the mean impact of food stamps and microfinance on household consumption expenditure, we need to be mindful of the potential heterogeneity of this impact across the different quintiles.

Table 4.2 Distribution of Participation in SFSP and SMP across per capita Expenditure Quintiles

	SFSP participants only (Group C)		SFSP and SMP participants (Group D)	
Per capita expenditure quintiles	N	% of participants	N	% of participants
Full sample	*967*	*100*	*1248*	*100*
Bottom 20th percentile	277	29	381	30
20th - 40th percentile	248	26	333	27
40th - 60th percentile	191	20	266	21
60th – 80th percentile	154	16	184	15
Top 20th percentile	93	9	84	7

The average amount of monthly per capita food stamps received by households who only receive food stamps is Rs. 84, which represents around 9 percent of the total per capita food expenditure (see Table 4.3). As expected, poorer households are more dependent on food stamps than their richer counterparts: food stamps for households in the bottom quintile constitute 14 percent of their total per capita food consumption while the same figure for the top quintile is 6 percent. Households in the top quintile receive relatively greater amounts of monthly per capita food stamps compared to those households who are in the bottom quintile. This is likely to be due to the fact that poorer households tend to be larger in size and hence, the difference in the per capita transfer value.

According to the SLIS data over 70 percent of the poor population in Sri Lanka has access to some form of savings services while around 26 percent of them borrow from different sources. According to Table 1.7 in chapter one, out of those households that borrow, there is little variation in the sources of loans across per capita expenditure quintiles. Formal sources of loans are the largest among all groups, followed by informal sources and then the semi-formal institutions such as the Samurdhi microfinance program. Around ten percent of the credit borrowed by the poorest quintile was from Samurdhi, while this share was two percent for households in the richest quintile.

Table 4.3 Average Food Stamp Benefits, Savings and Loans of Samurdhi Participants

	SFSP participants only (Group C)		SFSP and SMP participants (Group D)			
Per capita expenditure quintiles	Monthly per capita food stamps (Rs.)	Share of food stamps in household food expenditure (%)	Amount of total SMP loans per annum (Rs.)	Per capita SMP loan (Rs.)	Amount of monthly savings with SMP group (Rs.)	Per capita monthly savings with SMP group (Rs.)
Full sample	*83.81*	*9.28*	*7705.68*	*1659.74*	*85.57*	*20.78*
	(50.0)		*(7530.33)*	*(1553.52)*	*(619.15)*	*(189.99)*
Bottom 20th percentile	72.32	14.13	6187.50	1228.46	74.44	15.68
	(39.63)		(5305.40)	(888.71)	(387.80)	(87.97)
20th - 40th percentile	84.01	10.76	5639.13	1051.86	106.81	29.48
	(47.63)		(4649.51)	(792.22)	(1036.21)	(344.07)
40th - 60th percentile	87.10	9.18	8695.0	2031.31	75.91	16.53
	(50.55)		(10283.74)	(2115.99)	(376.58)	(74.93)
60th – 80th percentile	86.47	7.35	10733.33	2394.76	60.16	16.26
	(59.03)		(8497.62)	(1730.94)	(144.48)	(34.31)
Top 20th percentile	101.67	6.01	10833.33	2638.89	135.90	32.35
	(56.72)		(9174.24)	(2068.73)	(506.20)	(104.97)

Note to Table 4.3: Standard deviations are reported in parentheses.

Table 4.3 shows that the average SMP loan size is Rs. 7705.68, while the average monthly savings with a Samurdhi credit group is Rs. 85.57. The amount of loan varies positively with socio-economic status with the top quintile borrowing almost twice the amount borrowed by the households in the second quintile. It is interesting to note that bottom quintile borrows a significantly greater amount than the less poor households in the second quintile. However, the average monthly savings data show that households in the second quintile save a significantly higher amount than the households in the bottom quintile. We now turn to the individual and joint impact estimates of the Samurdhi food stamp and microfinance programs.

4.6 Impact Estimates

4.6.1 Estimated Impact of Participating in SFSP

Table A4.1 in Appendix four reports the estimates of the logit regression where the binary outcome variable takes the value one if the household participates in the food stamp program only (i.e. in group C) and zero if it does not join Samurdhi at all (i.e. in group B). Food stamp recipient households who participate in the Samurdhi

microfinance program are dropped (i.e. group D) from this estimation in order to quantify the net impact of only the food stamp intervention. This results in a reduction of our total sample size from 5530 to 4282. The objective of this logit regression is solely to *identify* participants of SFSP and not to explain the *reasons* for participation as in equation 2.1 in chapter two. In order to maximize the number of matches for the participants, and at the same time to minimize differences in the observable characteristics, we include those variables that were significant determinants of participation in SFSP as shown by equation 2.1 in chapter two. Consequently, the logit regression used to calculate propensity scores includes variables representing the following household characteristics: household size; number of children aged between 0 to 17 years; number of elderly household members above the age 65; the presence of a disabled household member; the presence of a household member in the military; age, sex, ethnicity and education of the household head; ownership of land and productive assets; household migration status; and pre-transfer expenditure. We also include village level dummy variables for the various types of settlements where households reside and dummy variables that represent the provinces of Sri Lanka. Finally, we include the percent of PA votes received in each division in the 1994 general election to control for the fact that a higher level of support for the PA party in a division is likely to increase the propensity to participate in the food stamp program by a household in that division.

The logit estimates are used to calculate the predicted probabilities of participation and non-participation in SFSP, which are then referred to as the propensity scores in the PSM methodology. The logit estimates of the equation 2.1 in Chapter two on the other hand, focused on the extent to which the probability of being a core PA supporter affected the probability of participation in SFSP, holding all else constant. As expected most of the variables that were significant in explaining household participation in SFSP in equation 2.1 are also highly significant in this logit regression. The logit estimates used to calculate propensity scores are presented in Table A4.1 in Appendix four. Overall the results of the logit regression show that the variables that are associated with low welfare in Sri Lanka are also significant determinants of participation in SFSP.

Prior to matching, the estimated propensity scores for participants and non-participants were 0.416 (standard error of 0.003) and 0.170 (standard error of 0.007) respectively. As expected, the mean score for non-participants is much lower than the mean score of SFSP participants. However, there is considerable overlap in the range of propensity scores: only about 1.5 percent of non-participants had a propensity score less than the lowest value for participants. Figure A4.1 in Appendix four gives the histograms of the estimated propensity scores for participants and non-participants. We also use a stringent tolerance limit of 0.001 to create comparison groups. This results in the loss of 284 treatment households due to our inability to find a sufficiently good match. The final sample of matched households is 1222 where the treated group had 683 observations and the control group had 539 matched observations. After matching there was negligible difference in the mean propensity scores of the two groups: 0.310 (standard error of 0.007) for participants and 0.320 (standard error of 0.007) for the non-participant matched control group. Estimated impacts are reported in Table 4.4.

Table 4.4 Impact of Participation in SFSP

	Mean for participants (Rs.) (std. dev.)	Impact of participation (Rs.) (std. error)	Net gain/loss as a % of pre-intervention expenditure
Per capita total monthly expenditure	1587.58 (1117.56)	31.02 (56.46)	1.99
Per capita monthly food expenditure	943.85 (456.31)	50.94** (25.23)	5.70
Per capita monthly non-food expenditure	643.73 (969.69)	-19.92 (46.19)	3.00

Note to Table 4.9: ** indicates significant at 5% level

The estimated mean impact suggests that participation in the Samurdhi food stamp program has a positive impact on total monthly consumption expenditure levels in per capita terms. However, the result is not significant. Participation in SFSP appears to significantly increase per capita food consumption levels. The mean per capita monthly food consumption among the treatment households is Rs. 944, whereas the same for the matched comparison group of households is Rs. 893, implying a 5.7 percent gain from the food stamp program. The impact of non-food consumption is negative but not significant. The results suggest that participation in the Samurdhi food stamp program has the desired effect of increasing household food consumption. However, it appears as though the value of the food stamps is not significantly high

enough to bring about an increase in the consumption of other non-food items. In other words, the substitution effect on non-food expenditures from food stamps is negligible. Consequently, the net effect of food stamps on total household expenditure is positive but not significant for the average household.

A somewhat more interesting aspect of the impact of participation in SFSP is to explore how participation in the program affects different income groups, especially the bottom quintile. Accordingly in Table 4.5 we stratify the sample by quintiles based on pre-transfer per capita expenditure, and estimate the impacts. Given that food stamps constitute a larger share of the food budget of poorer households, we expect participation to have a larger positive impact on food consumption of the bottom quintile relative to the top quintiles. The results however do not support this hypothesis. We find that participation in the food stamp program has a significant positive impact on the per capita food consumption of households belonging to the second quintile (significant at 1 percent level) but has no significant effect on the per capita food consumption of the poorest households. On the other hand this bottom quintile experiences a gain in total expenditure of about 5.5 percent (significant at 5 percent level) that appears to be mainly driven by the purchase of non-food items using Samurdhi food stamps (i.e. using the cash component of the stamps). Table 4.5 shows a 10 percent increase in the non-food expenditure of households in the bottom quintile, though the result is only significant at the 10 percent level.

These results are consistent with those found by Ezemenari and Subbarao (1998) in their impact evaluation of the Jamaican food stamp program. The authors find food stamp transfers between 1989 and 1991 significantly increased total expenditures but had no significant impact on food expenditures. They suggest that since food stamps in the Jamaican program are easily fungible with cash, the impact of food stamps is found mainly on the non-food consumption. In the case of Samurdhi only about a third of the total value of stamps can be cashed but nevertheless the value appears to be large enough to positively affect non-food expenditures of the poor. The results in Table 4.5 are also consistent with a study (Edirisinghe, 1987) that assessed Sri Lanka's food stamp program that was instituted in the 1980s. According to this study, participation in the food stamp program enabled the bottom 40 percent of the households to increase their calorie consumption. The study also finds that the impact

of food stamps on total calories for higher income groups was not significant, a result that is consistent with the results in Table 4.5.

Table 4.5 Impact of Participation in SFSP across per capita Expenditure Quintiles

Per capita expenditure quintiles	Number of treated (T) & control (C) households	Impact on monthly per capita total expenditure (std. error)	% net gain	Impact on monthly per capita food expenditure (std. error)	% net gain	Impact on monthly per capita non-food expenditure (std. error)	% net gain/loss
Bottom 20th percentile	*T=132* *C=127*	44.00** (18.82)	5.46	15.55 (18.17)	2.98	28.45* (16.91)	10.00
20th - 40th percentile	*T=174* *C=136*	8.00 (10.72)	0.67	46.07*** (18.93)	6.28	-38.07** (18.35)	8.25
40th - 60th percentile	*T=166* *C=109*	-18.43 (12.22)	1.20	5.56 (25.95)	0.60	-23.99 (25.26)	3.98
60th – 80th percentile	*T=130* *C=97*	-20.43 (22.98)	1.04	33.71 (38.49)	2.98	-54.13 (39.56)	6.53
Top 20th percentile	*T=81* *C=70*	101.04 (315.88)	3.26	132.55 (110.50)	8.92	-31.51 (314.81)	1.96

Note to Table 4.5: *** indicates significance at the 1% level; ** indicates significance at the 5% level; * indicates significance at the 10% level.

Finally, we find that except for the bottom quintile, having access to Samurdhi food stamps has a negative impact on household non-food consumption of all the upper quintiles. However, this is only significant, at the 5 percent level, for households in the second per capita expenditure quintile who experience an apparent decline in per capita non-food consumption by 8 percent (a larger reduction than the gain in per capita food consumption). This result is consistent with theoretical considerations that suggest that in response to government grants, a household may change its behaviour with respect to labour supply, investment, and consumption decisions, as well as with respect to its efforts to seek private transfers within and across households or time (Cox and Jimenez, 1992; Van de Walle, 2003). For instance, Samurdhi households may be transferring some of the food stamps to non-Samurdhi households in exchange for non-food items. This would mean that their recorded non-food purchases go down, and thus explain the negative result.

The reduction in non-food consumption is also consistent with existing empirical studies, which have found that incorporating behavioural responses into incidence analysis significantly alters the poverty impact of programs (Ravallion, M. et al, 1994;

Ezemenari and Subbarao, 1998). Sahn and Aldermann (1995, 1996) find direct evidence of this in the case of the food subsidy program of the late 1970s in Sri Lanka. They show that explicitly incorporating labour supply into their analysis of the poverty impact of the program leads to a large and significant reduction in work effort, and as a result in household income. In an earlier paper (Sahn and Aldermann, 1993), the authors explain this negative impact on labour supply by showing that the marginal propensity to consume leisure among welfare recipients in Sri Lanka is high.

There are a number of other reasons as to why the impact of Samurdhi food stamps is somewhat limited. Gunatilaka et al (1997) point out that the cooperative stores that redeem food coupons often charge higher than market prices for the food items exchanged with Samurdhi food stamps. Recipients complain that these stores tamper with the quality and quantity of food received in exchange of food stamps as well. Transportation costs are exacerbated due to unpredictable delivery of goods – the cooperatives often run out of the stock of food, and that food stamps sometimes have to be redeemed for other non-food but unnecessary items such as plastic knives and forks or lottery tickets (op. cit. p.24). All of the above reduces the effective value of these food stamps. These problems are certainly not unique to the Samurdhi program. The Jamaican food stamp program also appears to have similar problems that result in high transaction costs (Castenada, 2000). However, what these problems highlight is that if the management of the program improves food stamps may well result in a larger positive impact on household welfare.

4.6.2 Estimated Impact of Participating in SMP

Table A4.2 in Appendix five presents the estimates of the logit regression where the binary outcome variable takes the value one if the household participates in the food stamp program and in the microfinance program (i.e. it belongs to group D) and zero if the household only receives food stamps and does not join the Samurdhi microfinance program (i.e. it belongs to group C). Households who do not participate in the Samurdhi program altogether are dropped (i.e. group B). This reduces our total sample size from 5530 to 2215. It is ideal to compare groups C and D for assessing the impact of the Samurdhi microfinance program since they already share those characteristics that lead them to participate in SFSP.

Table A4.2 in Appendix four presents the estimates from a logit model of participation in SMP. The objective of the logit regression is to maximize the number of matches for the participants, and at the same to minimize differences in the observable characteristics. Thus the model tries to *identify* participants of SMP, and not to explain the *reasons* for group formation as in chapter three. The assumption we make to identify the impact of participation in SMP is that conditional on the characteristics that make a household more likely to participate in SMP, the household expenditure variables of groups C and D are independent of participation in SMP.

The logit regression used to identify the closest match for SMP participants includes the independent variables that were significant determinants of credit group formation in the multinomial model estimated in chapter three. These variables include the village level religious diversity index; a dummy variable that takes the value 1 if a Samurdhi Bank branch is present in the village, and zero otherwise; age of the household head, household size; ownership of productive assets; household distance from the village market; and dummy variables that represent the type of village and province where the household resides. The logit estimates are consistent with the results presented in chapter three. Thus, we do not provide a detailed discussion of the logit estimates here. We are more interested in finding out how well the propensity score matching method is able to assess the impact of participation in SMP.

Prior to matching, the estimated propensity scores for those who participate in SMP and those who do not are 0.602 (standard error of 0.005) and 0.500 (0.006) respectively. After matching the mean propensity scores of the two groups were: 0.569 (standard error of 0.005) for participants (the "treated group"), and 0.554 (0.007) for non-participants (the "matched control group"). Such high mean scores for non-participants imply considerable overlap of the propensity scores between the two groups. Figure A4.2 in Appendix four gives the histograms of the estimated propensity scores for participants and non-participants of SMP. Once again we use a tolerance limit of 0.001 to create comparison groups. This results in the loss of 310

treatment households[73] due to our inability to find a sufficiently good match. The final matched sample is 1092 where the treated group had 691 households and the control group had 401 households.

Table 4.6 provides the impact estimates of participation in the Samurdhi microfinance program. Under PSM assumptions, these estimates reflect positive causal effects of participation in SMP on all of the welfare measures: household monthly per capita food consumption (significant at 10 percent level), non-food consumption (significant at 11 percent level) and total expenditure (significant at 5 percent level). The mean per capita monthly food consumption among the treatment households is Rs. 855, whereas the same for the matched comparison group of households is Rs. 815, which represents an increase of about 5 percent. Unlike food stamp recipients, non-food expenditures increase by 7 percent for micro-credit borrowers. The result is only significant at the 11 percent level. Nevertheless, the net effect is an increase of 6 percent in the total household per capita expenditure that can be attributed to household participation in the Samurdhi microfinance program, and this is significant at the 5 percent level. The results are consistent with the strand of literature discussed in section 4.2.2 that find a positive impact of microfinance on household expenditure (Pitt and Khandker, 1998; Zaman, (1999).

Table 4.6 Impact of Participation in SMP

	Mean for participants (std. Dev.)	Impact of participation (std. error)	Net gain as a % of pre-intervention expenditure
Per capita monthly total expenditure	1376.57 (561.87)	74.07** (35.24)	5.69
Per capita monthly food expenditure	854.68 (349.69)	39.94* (22.47)	4.90
Per capita monthly non-food expenditure	521.88 (354.16)	34.13 (21.53)	6.99

Note to Table 4.6: ** denotes significance at the 5 %level, * denotes significance at the 10 % level.

Once we stratify the matched sample of households we find significant positive effects of participation in the microfinance program on the food consumption of the poorest twenty percent of the SMP participants. Table 4.7 shows that participation in

[73] We lose 247 observations of treated households from our total sample due to some missing data on some of the village level explanatory variables used to calculate the propensity scores. The total sample was reduced to 1781 (780 non-participants, and 1001 participants).

SMP increases per capita total expenditure by Rs. 38 (significant at the 5 percent level) and food consumption by Rs. 57 (significant at the 1 percent level). Participation in the Samurdhi microfinance program has a large and a highly significant increase in the food consumption of the poorest households. Households in the upper expenditure quintiles do not appear to significantly benefit from participating in SMP.

Table 4.7 Impact of Participation in SMP across per capita Expenditure Quintiles

Per capita expenditure quintiles	Number of treated (T) and control (C) households	Impact on per capita monthly total expenditure (std. error)	% net gain	Impact on per capita monthly food expenditure (std. error)	% net gain	Impact on per capita monthly non-food expenditure (std. error)	% net gain/loss
Bottom 20thpercentile	*T=209* *C=135*	37.93** (19.19)	4.82	57.32*** (16.17)	11.55	-19.39 (13.42)	6.66
20th - 40th percentile	*T=183* *C=114*	9.84 (10.91)	0.82	5.96 (18.44)	0.76	15.80 (17.57)	3.8
40th - 60th percentile	*T=147* *C=80*	-2.97 (13.92)	0.20	-27.46 (27.14)	2.80	24.49 (26.87)	4.5
60th – 80th percentile	*T=106* *C=46*	8.58 (27.79)	0.44	10.37 (53.40)	0.88	-1.79 (48.93)	0.24
Top 20th percentile	*T=46* *C=25*	95.52 (117.45)	3.52	-31.89 (125.52)	2.1	127.42 (146.23)	10.63

Note to Table 4.7: *** indicates significance at the 1% level; ** indicates significance at the 5% level

These results are consistent with those found by Khandker (2003) which shows that the poorer households who are Grameen Bank borrowers experienced an 18 percentage point drop in poverty while less poor household had a 8.5 percentage point drop. These results differ from earlier evidence that showed the less poor benefiting more than the extreme poor households due to the constraints faced by the poorer households in terms of fewer income sources, worse health and education, etc. (Wood and Sharif, 1998).

A closer look at the Sri Lankan context reveal some possible explanation for the results in Table 4.7. For example, one explanation has to do with the fact that poor people in Sri Lanka use loans for mostly consumption and not for investment purposes. According to SLIS, 74 percentage of the loans received by households in the bottom per capita expenditure quintile were used to meet household food and non-food consumption needs while only 26 percent of the loans were used for investment

activity. The most popular use for credit is food consumption and the second most popular use is to improve their housing conditions.

Table 4.8 Uses of Loans Across the Population (%)

Per capita Expenditure Quintile	1 (lowest)	2	3	4	5 (highest)	Total
N	282	281	355	401	447	1766
Business or farm use						
Purchase of raw materials	8.87	8.54	8.45	9.23	11.86	9.57
Purchase of equipment	1.77	3.91	3.66	6.73	5.82	4.64
Purchase of land	0.00	0.36	0.28	2.74	2.24	1.30
Purchase of animals	3.55	3.20	1.69	1.25	1.34	2.04
Building improvement	2.13	4.98	5.07	3.74	7.61	4.93
Other business/farm use	9.57	15.30	13.52	13.47	14.32	13.36
To pay workers	0.00	0.00	0.28	0.00	0.45	0.17
Total	*25.89*	*36.29*	*32.95*	*37.16*	*43.64*	*36.0*
Personal Use						
HH consumption	30.50	26.33	29.01	19.20	13.87	22.76
Purchase/improvement of housing	26.60	28.11	21.97	29.43	28.86	27.12
Marriage/family event	1.42	2.14	1.69	2.24	2.91	2.15
Consumer durables	0.71	1.78	3.66	2.74	4.47	2.89
To settle another loan	1.42	1.07	1.41	2.00	5.15	1.42
Other personal use	13.48	4.27	9.30	7.23	1.12	7.64
Total	*74.11*	*63.71*	*67.05*	*62.84*	*56.36*	*64.0*

This tendency of households to use loans for food consumption purposes is consistent with some of the observations made by the author via focused group discussions that were carried out with five Samurdhi credit groups in the Kalpitiya division of the Puttalam district located in the North-Western Province. The discussions also reflect some of the short-comings of the Samurdhi food stamp program (see Box 4.1).

Box 4.1. Meeting with Samurdhi Group Members, Kalpitiya, Puttalam District

The Kalpitiya area is predominantly a supporter of the opposition party, United Nationalist Party, in Sri Lanka. Given that it is a fishing village, the villagers can be expected to be among the poorer members of the population. Whilst most of the villagers were Sinhalese, there was a smattering of Tamil households in the community. However, all the members of the Samurdhi group the author met were Sinhalese.

Members appeared to have many grievances towards the Samurdhi programme. They alleged that the selection of Samurdhi beneficiaries to Samurdhi was based on people's political affiliation. Accordingly a large numbers of ineligible households are included in the program as a reward for political loyalty to the governing party. Villagers reported large-scale malpractices with the allocation of food stamps by Samurdhi officers. One Samurdhi officer was reported to have physically tampered with the food stamps allocated to one member. People complained that often after walking miles to get to the cooperative shop, they are unable to cash in their food stamps due to the lack of supply of the food stock. They also reported fraud on the part of shop-keepers of the cooperative shops where the food stamps are

expected to be cashed.

With regards to the savings and credit programme, members were generally happy to get loans for housing, and expressed their preference to access quick, short-term loans to meet day-to-day household needs. They were keen to use credit rather than their savings for consumption-smoothing purposes. Savings are generally seen as a long-term investment for their children's education. Most of the members also belonged to other informal savings group such as ROSCAs and burial societies. When asked as to why they do not exclusively participate in Samurdhi, they responded that they view Samurdhi as a short-term association, which is totally dependent on the longevity of the government. They preferred to continue their membership in the local, indigenous groups as they were viewed as long-term relationships.

Source: Focused Group Discussions, November 27, 2000, Kalpitiya

4.6.3 Estimated Joint Impact of SFSP and SMP

By matching households who do not join the Samurdhi program (group B) and households who participate in both the food stamp program and microfinance programs (group D), we are able to estimate the joint impact of receiving food stamps and microfinance on household welfare. Accordingly, to calculate the relevant propensity scores, we estimate a logit regression that tries to identify households in the total SLIS sample who are likely to join SFSP *and* SMP. By definition, this requires us to drop those households who only participate in SFSP. In terms of the explanatory variables, we include all the household, village and geographical variables that are significant determinants of participation in SFSP and SMP. As expected, we find that most of the variables that are significant in Tables A4.1 and A4.2 are also significant in this case.[74] Therefore, we do not discuss these results, and move on to discuss the propensity scores and the impact estimates.

Prior to matching, the estimated propensity score for those who participate in SFSP and SMP was 0.497 (standard error of 0.007), and 0.201 (0.004) for those who do not participate. After matching, the mean propensity scores of the two groups were: 0.384 (standard error of 0.008) for the "treated group" and 0.360 (0.009) for the "matched control group." Figure A4.3 in Appendix four gives the histograms of the estimated propensity scores for the participant and non-participant groups. As in the previous

[74] For example, the results show that participants of these two programs are likely to be worse off than non-participants, and are likely to be Sinhalese relative to being Tamils. Households residing in villages with Samurdhi Banks, and in expansion colonies are more likely to participate in both SFSP and SMP. All of these variables are associated with the participation in SFSP and SMP, as discussed in chapter two and three.

two impact estimations, we use a tolerance limit of 0.001 to create a matched comparison group. This results in the loss of 387 treated households.[75] The final matched sample is 1083 where the treated group had 614 households and the control group had 469 households.

Table 4.9 provides the joint impact of participating in Samurdhi food stamp and microfinance programs. We find participating in both the programs has a substantial positive and a highly significant impact on per capita food consumption. The results show that if a household participates in both SFSP and SMP, per capita food consumption increases by 8 percent – a much larger gain than if the household participated only in the food stamp program, or only in the microfinance program. The result is significant at the one percent level. The impacts on household non-food and total expenditure are not significant for the average household.

Table 4.9 Joint Impact of Participation in SFSP and SMP

	Mean for participants (std. dev.)	Impact of participation (std. error)	Net gain/loss as a % of pre-intervention expenditure
Per capita monthly total expenditure	1533.05 (578.98)	56.80 (37.92)	3.84
Per capita monthly food expenditure	932.20 (362.6)	69.61*** (22.79)	8.07
Per capita monthly non-food expenditure	600.85 (394.95)	-12.81 (25.61)	2.09

Note to Table 4.9: *** denotes significance at the 1 percent level.

As in the previous case, we disaggregate the data to estimate the joint impact of participation in both SFSP and SMP across the pre-transfer per capita expenditure quintiles. Table 4.10 shows that both per capita total household expenditure and food consumption increase significantly for households in the bottom quintile as a result of receiving both food stamps and microfinance. Simultaneous participation in SFSP and SMP increases total household expenditure by 5 percent (significant at 5 percent level) and food consumption by 10 percent (significant at 1 percent level).

[75] As in the case of SMP impact estimation, we lose 247 observations from our total sample due to missing data on some of the village level explanatory variables in the logit regression. The total sample was reduced to 3328 (2327 non-participants and 1001 participants).

Table 4.10 Joint Impact of Participation in SFSP and SMP across per capita Expenditure Quintiles

Per capita expenditure quintiles	Number of treated (T) and control (C) households	Impact on per capita monthly total expenditure (std. error)	% net gain	Impact on per capita monthly food expenditure (std. error)	% net gain	Impact on per capita monthly non-food expenditure (std. error)	% net gain/loss
Bottom 20thpercentile	*T=105* *C=125*	42.11** (20.12)	5.08	53.51*** (18.99)	10.10	-11.40 (16.47)	3.81
20th - 40th percentile	*T=161* *C=111*	16.98 (11.21)	1.42	26.56 (19.89)	3.54	-9.58 (19.10)	2.14
40th - 60th percentile	*T=175* *C=109*	10.54 (11.93)	0.70	14.84 (25.99)	1.59	-4.30 (25.12)	0.74
60th – 80th percentile	*T=120* *C=75*	12.37 (25.54)	0.64	95.78** (44.04)	8.76	-83.41** (42.87)	9.89
Top 20th percentile	*T=53* *C=50*	-31.08 (115.05)	1.06	21.95 (111.56)	1.53	-53.03 (119.81)	3.56

Note to Table 4.10: *** indicates significance at the 1% level; ** indicates significance at the 5% level

Table 4.10 also shows that the joint impact of participation in SFSP and SMP for households in the fourth quintile is significant in increasing their per capita food consumption but that the gain is offset by a significant negative impact on non-food consumption. We are not sure why this is the case. It could be partly reflecting the disincentive effect or exchanges of transfers discussed earlier, and partly indicating a negative impact of borrowing from SMP. Since none of the other quintiles show a similar result, we do not explore this any further.

4.7. Conclusion

In this chapter we assessed the impact of Samurdhi food stamps and microfinance services on household consumption expenditure. The impact estimates presented in this chapter are consistent with the existing literature on food stamp and microfinance programs.

Existing work on impact evaluation points out that non-random participation in targeted anti-poverty programs, such as food stamp and microfinance programs, introduces the problem of selection bias in impact estimates. The literature accordingly suggests a few methodologies that can be used to correct for selection bias, one of which is the Propensity Score Matching (PSM) methodology. PSM essentially helps to create the closest possible control groups with whom to compare

treated groups on the basis of observable characteristics. Using PSM this chapter has shown that food stamps have a positive and significant impact on the typical food stamp recipient household's monthly per capita food consumption. However, the impact on non-food consumption is not positive nor is it significant. The net impact on monthly total per capita expenditure is also minimal and insignificant. The "net impact" of the Samurdhi microfinance program shows significant gains in both household food consumption and total expenditure. The joint impact of participating in both the food stamp and microfinance programs is mainly found on household food consumption.

Exploring these results further, we find that poor households appear to benefit from both these programs, more than the relatively wealthy households who manage to participate in these programs despite being ineligible. Upon stratifying the sample based on expenditure quintiles, we find that both interventions have a significant positive impact on household total expenditure for poor households. We also find that participation in the Samurdhi microfinance program leads to a larger gain in food consumption than participation in the Samurdhi food stamp program for the poorest quintile.

Impact estimates also show that for households in the second expenditure quintiles, participation in the food stamp program has a significant negative impact on per capita non-food consumption. The results are consistent with the possibility of private exchanges of food stamps for non-food items as well as other empirical evidence on the negative labour supply response among welfare recipients in Sri Lanka. However, since this result is only significant for one quintile, and not for the "typical" participant, we refrain from making any conclusive statements on the disincentive effect of the Samurdhi Food Stamp Program.

Targeted food stamp and microfinance programs belong to the family of anti-poverty programs that are widely favoured by government and non-government development agencies in developing countries. These programs are expected to improve the living standards of poor people, and have been shown to do so in some countries (e.g. the food stamp program in Jamaica, microfinance programs in Bangladesh). However, it is also true that a host of issues such as targeting inefficiency, program mis-

management, personal preferences etc. could prevent these programs from maximizing their impact. The results here suggest that the impact on poverty by these programs may increase significantly if they are better targeted towards the bottom twenty percent of the population, and if various administrative weaknesses are overcome. In the following final chapter, we discuss some of the specific reform measures that could help the Samurdhi program increase its impact on poverty in Sri Lanka.

Appendix Four

Table A4.1. Logit Regression to Estimate Participation in SFP

	Coefficient (standard error)	Z-statistic
Political variable		
% vote for PA in 1994	0.011	0.95
	(0.012)	
Household variables		
Household pre-transfer expenditure, log	-1.864***	-14.29
	(0.130)	
Years of education of household head	-0.120***	-7.49
	(0.016)	
Age of household head (years)	-0.006	-1.32
	(0.004)	
No. of children aged 0 to 17 years	0.126***	2.59
	(0.049)	
No. of elderly (60+ years)	-0.004	-0.05
	(0.086)	
1, if no men in the household	0.154	1.06
	(0.146)	
Household size	0.191***	4.28
	(0.045)	
1, if there is disabled household member	0.284***	2.88
	(0.098)	
Ethnicity of the household head, Sinhalese omitted		
1, if Sri Lankan Tamil	-0.822***	-3.53
	(0.233)	
1, if Indian Tamil	-1.631***	-3.10
	(0.526)	
1, if Moor	-0.004	-0.01
	(0.368)	
1, if Other	-0.063	-0.11
	(0.595)	
1, if household is landless	0.457***	2.72
	(0.168)	
1, if household owns livestock	0.085	0.45
	(0.190)	
1, if household owns farming assets	-0.356**	-2.08
	(0.171)	
1, if household member in military	0.291	1.36
	(0.215)	
Migration status, never moved omitted		
1, if household moved before 1950	0.049	0.18
	(0.275)	
1, if household moved between 1950-70	0.048	0.33
	(0.145)	
1, if household moved between 1970-90	-0.077	-0.55
	(0.141)	
1, if household moved between 1990-95	-0.488	-1.38
	(0.355)	
1, if household moved between 1995-99	-0.399	-0.75

	(0.534)	
Village level and geographical variables		
Type of community, traditional village omitted		
1, if irrigation colony	-0.590**	-2.07
	(0.285)	
1, if expansion colony	0.717**	2.31
	(0.310)	
1, if settlement scheme	0.283	1.08
	(0.262)	
1, if plantation estate	-1.025***	-2.65
	(0.387)	
1, if urban low income neighbourhood	0.228	0.52
	(0.439)	
1, if urban middle income neighbourhood	-0.304	-1.45
	(0.209)	
Province, Western omitted		
1, if Central	0.104	0.42
	(0.245)	
1, if Southern	0.269	1.47
	(0.183)	
1, if North Western	0.616***	2.64
	(0.233)	
1, if North Central	-0.011	-0.04
	(0.249)	
1, if Uva	0.474**	2.19
	(0.216)	
1, if Sabaragamuwa	0.664***	3.28
	(0.202)	
Constant	14.272***	11.37
	(1.255)	
Number of observations	4268	
Pseudo R^2	0.2313	
Wald chi^2 (34)	686.05	
Prob > chi^2	0	

Notes to Table A4.1

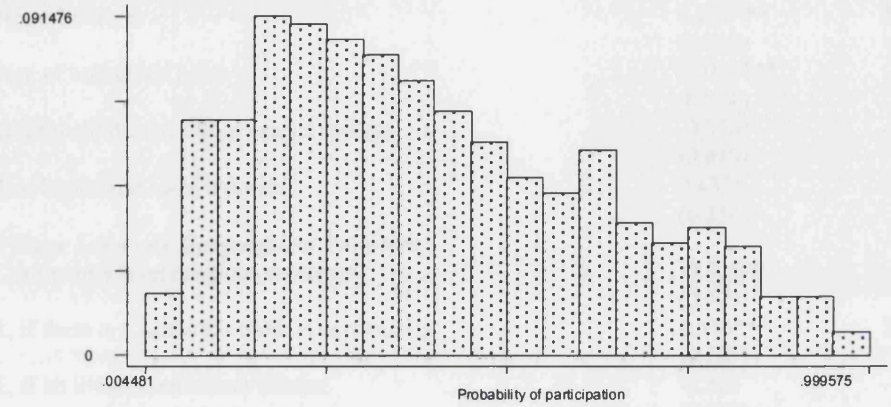
p) Robust standard errors, adjusted for clustering, are used in all cases

q) Standard errors are reported in parentheses

r) ***denotes statistical significance at the 1% level, ** at the 5% level, * at the 10% level using two-tailed tests.

Figure A4.2 Histograms of Propensity Scores of Participating in SFSP

Histogram of propensity score for participants



Histogram of propensity score for non-participants

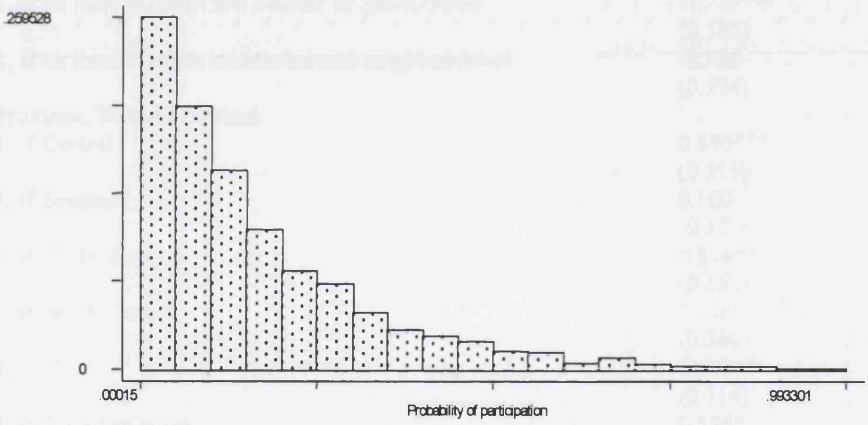


Table A4.2. Logit Regression to Estimate Participation in SMP

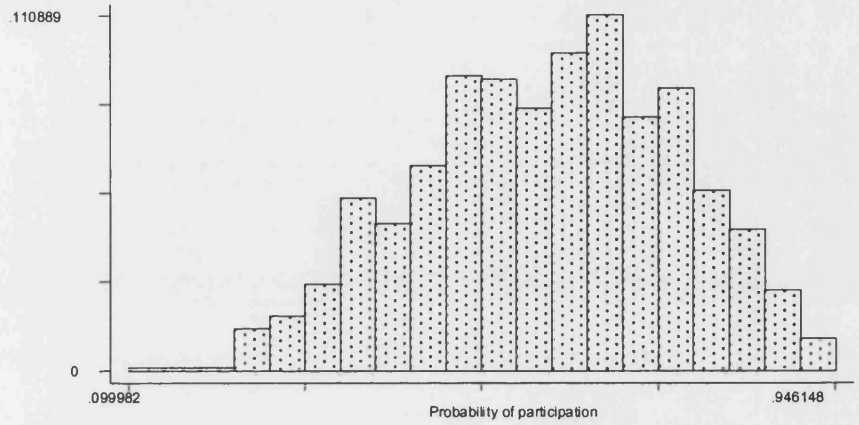
	Co-efficient (standard error)	Z-statistic
Household Variables		
Household size	0.211*** (0.039)	5.45
Age of household head	-0.013*** (0.004)	-2.79
Household distance from market (miles)	-0.034* (0.019)	-1.78
1, if household owns livestock	0.432* (0.234)	1.84
Village Level and Geographical Variables		
Community level religious diversity	-0.875** (0.429)	-2.04
1, if there is a Samurdhi Bank in community	0.613*** (0.205)	2.99
1, if hh lives in settlement scheme	-0.386 (0.283)	-1.36
1, if hh lives in irrigation colony	-0.366 (0.366)	-0.65
1, if hh lives in plantation estate	-1.163*** (0.364)	-3.19
1, if hh lives in urban low income neighbourhood	-1.727*** (0.580)	-2.98
1, if hh lives in urban middle income neighbourhood	-0.395 (0.524)	-0.75
Province, Western omitted		
1, if Central	0.890*** (0.259)	3.44
1, if Southern	0.100 (0.273)	0.35
1, if North Western	0.814** (0.352)	2.31
1, if North Central	1.316 (0.340)	3.87
1, if Uva	0.689** (0.314)	2.20
1, if Sabaragamuwa	0.586* (0.320)	1.83
Constant	-0.615 (0.400)	-1.54
Number of observations	1781	
Psuedo R^2	0.09	
Wald $chi^2(17)$	136.24	
Prob > chi^2	0.0	

Notes to Table A4.2

(a) Robust standard errors, adjusted for clustering, are used in all cases
(b) Standard errors are reported in parentheses.
(c) ***denotes statistical significance at the 1% level, ** at the 5% level, * at the 10% level using two-tailed tests.

Figure A4.2 Histograms of Propensity Scores of Participating in SMP

Histogram of propensity score for participants



Histogram of propensity score for non-participants

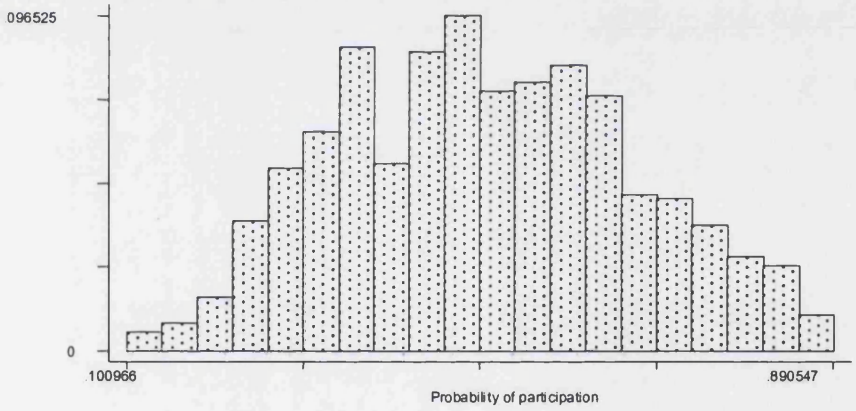
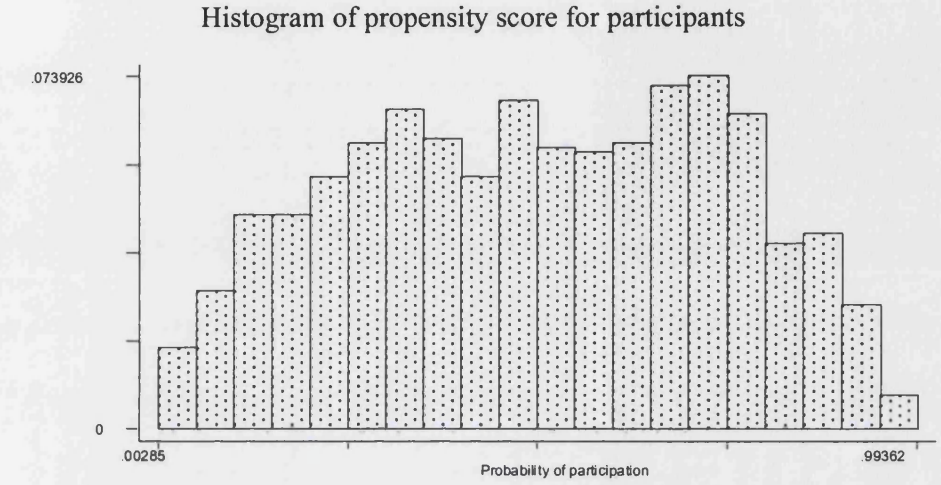
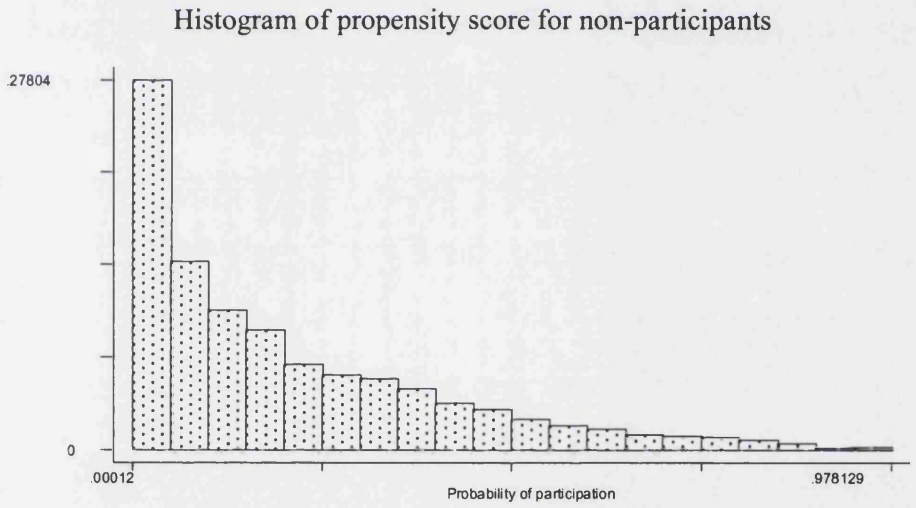


Figure A4.3 Histograms of Propensity Scores of Participating in both SFSP and SMP





Chapter Five

Summary and Policy Conclusions

5.1 Introduction

This thesis examines the targeting performance of the Samurdhi food stamp and microfinance programs in Sri Lanka, and the extent of their impact on various household welfare measures. The analysis presented in this thesis is based on a national household survey conducted over the period from July 1999 to August 2000, and on data gathered by the author on the 1994 general election from the Election Secretariat in Colombo.

A summary of the main findings from this thesis is presented in this final chapter. The chapter then proceeds to discuss the findings with a view to highlighting topical issues that are at the heart of much of the policy debates on poverty alleviation in Sri Lanka. The chapter ends by laying out further areas for research.

5.2 Targeting of Samurdhi Food Stamps

The first core empirical chapter attempts to test the effect household political affiliation has on the targeting of Samurdhi food stamps. On average, 30 percent of the households in the program belonged to the bottom per capita expenditure quintile (and constituted 60 percent of the total population in the bottom expenditure quintile) while 7 percent of the program participants belonged to the top per capita expenditure quintile (and constituted 13 percent of the total population in this quintile). We find that even though poorer districts are allocated higher amounts of Samurdhi funds for food stamp distribution, these districts do not necessarily allocate a higher share of the funds to their poor. The chapter argues that these within district allocation of funds are driven to a some extent by political considerations.

The chapter places these arguments in context by reviewing the literature on pork barrel politics. The studies reviewed provide both theoretical and empirical analysis

that suggest that when faced with electoral competition political parties often resort to using welfare transfers to win political loyalty from their core supporters and those who are considered swing voters. Accordingly the chapter estimates a "targeting" and a "mis-targeting" model to look for evidence of such politically motivated allocation of Samurdhi food stamps. In the first targeting model, the relationship between the percentage of votes received by the Peoples' Alliance (PA) party in the general elections of 1994 and the probability of being selected into the food stamp program that was subsequently established by the PA government is estimated controlling for other household and geographical variables that are likely to affect household participation in the program. The model essentially tests whether the division-level voting patterns for the PA can explain the within division selection of Samurdhi beneficiaries. The results show that there is a positive, significant and robust relationship between the percentage of votes for the PA party at the divisional level and household participation in the Samurdhi food stamp program in that division. Given the literature on pork barrel politics, this result can be extended to suggest that a higher probability of a household being a PA supporter is associated with a higher probability of being selected to receive Samurdhi food stamps. The model also tests whether a higher probability of participation is associated with being a swing voter, where the level of "swingness" is measured by the absolute difference between the percentage of votes received by the PA in a particular division and 50. The hypothesis is that the closer the race – i.e. the higher the probability of being a swing voter - the higher will be the probability of being selected by Samurdhi officials and be given food stamps. However, we find no significant relationship between the probability of being selected by the food stamp program and the probability of being a swing voter.

In a second "mis-targeting model" the chapter shows that such politically motivated allocation of Samurdhi food stamps is one of the causes of targeting errors reported in all studies on Samurdhi. The probability that a non-poor household receives food stamps is estimated to assess the extent to which political competition affects the mis-targeting of Samurdhi food stamps. The results show that non-poor households who live in core PA areas are also more likely to receive food stamps. These results are consistent with existing qualitative analysis and anecdotes which point out that the supporters of PA irrespective of their poverty status were promised Samurdhi food

stamps in return for their votes for the PA in the general elections of 2000, which the PA won.

5.3 Credit Group Formation in Samurdhi's Microfinance Program

The second core empirical chapter assesses the determinants of two methods of credit group formation – voluntarily self-selected ("spontaneously-formed") credit groups and credit groups that are formed through the facilitation of Samurdhi loan officers ("officer groups"). Both these groups are used by the Samurdhi microfinance program to deliver small-scale savings and credit to Samurdhi food stamp recipient households. A little over half of the Samurdhi households who receive food stamps are members of either spontaneous or officer-formed credit groups, while the remaining members are not members of any Samurdhi credit group. The chapter argues that high levels of household social cohesion increases the probability that a household joins a spontaneous group, and that households with low levels of social connectedness are likely to join officer-formed credit groups because they have access to Samurdhi loan officers.

To illustrate its argument, the chapter reviews the literature on the theory of group lending contracts with joint liability, which emphasizes the role of social capital that enables households to signal their creditworthiness and monitor their peers, thereby facilitating the formation and the functioning of credit groups. The chapter uses a village level religious heterogeneity index as a proxy measure of social cohesion within the village. The use of this variable is justified given the literature on social capital, which associates a higher level of religious, ethnic or economic heterogeneity within the community with lower social cohesion compared to a more homogeneous community. Using a multinomial logit regression model, the chapter shows that village level religious diversity significantly reduces the probability that a Samurdhi household joins a Samurdhi credit group (both spontaneous and officer-formed) controlling for other factors. The results suggest that as in the case of spontaneous groups, village level homogeneity also facilitates the work of a loan officer in forming a credit group. Being in close proximity to Samurdhi loan officers is also a significant determinant of the formation of a Samurdhi credit group (both spontaneous and officer-formed). The results are suggestive of the important role Samurdhi loan

officers can play in motivating households, who would otherwise not be in a credit group, to form spontaneous groups and help in the functioning of the group. The result is also consistent with the fact that Samurdhi loan officers are under pressure to ensure that as many Samurdhi credit groups as possible are formed, and therefore they will also actively select households and directly form credit groups. Both the results are robust to the inclusion of a host of household, community and geographical control variables.

In areas far away from markets and in migrant villages such as settlement and irrigation schemes however, the results show that Samurdhi members are significantly more likely to join loan officer-formed credit groups relative to spontaneous credit group. The results imply that extending microfinance to households who are economically and geographically isolated will require the intervention of loan officers to form credit groups, and that SMP does not have the luxury of using spontaneous groups as their credit delivery vehicle in these areas.

5.4 Program Impact on Household Expenditure

The third core empirical chapter assesses the impact of having access to Samurdhi food stamps and microfinance on per capita total household expenditure, household food expenditure and non-food expenditure. A review of the literature shows that the evidence on both the impact of food stamps and microfinance on poverty is mixed. There are methodological complexities associated with impact assessment using cross-sectional data, in part due to the lack of data on the counterfactual and in part due to the fact that households self-select into these programs. The chapter uses the propensity score matching method to assess the impact of Samurdhi. This methodology involves the matching of each observation on the program participant with that of a non-participant, and in the process it creates the best possible counterfactual for each participant. We use this method to look separately at the individual impact of the food-stamp and micro-finance interventions and then to assess the combined impact of the two programs.

The results show that participation in the food stamp program has a significant positive impact on per capita household food consumption for the "average"

household relative to non-food stamp recipients with comparable household characteristics. However, the average impact on non-food and on total per capita consumption is not significant. Participation in the Samurdhi microfinance program appears to have a significant impact on per capita food and total expenditures for the "average household", relative to households who only receive food stamps. The joint impact of participating in both the food stamp and micro-finance programs is highly significant for food consumption relative to similar households who do not receive either intervention. However, the joint impact is not significant for non-food and total consumption.

After disaggregating the sample based on per capita expenditure quintiles, we find that the bottom twenty percent of Samurdhi food stamp recipients experience a significant gain in monthly per capita total consumption expenditure, while households in the second per capita expenditure quintile have a significant gain in monthly per capita food consumption but not in total consumption. The impact estimates for the households in the upper quintiles are not significant.

The same is true in the case of the microfinance program, where Samurdhi households who are in the bottom quintile experience a significant increase in their monthly per capita food and total consumption expenditure. The gain in per capita food and total consumption for the higher quintiles are not significant. Another interesting point is that the gain in food consumption for the bottom twenty percent of the Samurdhi participants is greater in the microfinance program compared with the food stamp program. This result is supported by the fact that the poorest use the bulk of Samurdhi loans for consumption needs while the wealthy use a greater share for investment purposes. The joint impact of food stamps and microfinance for the poorest twenty percent of the households is positive and significant for both per capita food and total consumption.

5.5 Policy Implications

The Sri Lankan government has been committed to the delivery of social welfare to its citizens since the country's independence in 1948. The universal welfare schemes of the 1950s through to the 1970s gave way in the late 1970s to targeted programs

under the weight of burgeoning budget deficits. These targeted interventions have been criticised over the years for being highly politicised and for the large scale of targeting errors. Studies showed that despite being targeted these programs covered the same percentage of the population that was covered by the universal schemes (see section 1.3.1 in chapter one). The analysis in chapter two in this thesis shows that the Samurdhi program suffers from the same symptoms of politicization and extensive targeting errors. According to the annual reports of the Samurdhi Program, the program covered around 50 percent of the population in 2002 when only 22.7 percent of the population were below the poverty line in that particular year. Hence, a large part of the public resources devoted to this program – around 1 percent of GDP – is spent on the non-poor while missing some of the most needy.

The Government of Sri Lanka recently committed itself to a new strategy for poverty reduction in a policy document titled *"Regaining Sri Lanka: Vision and Strategy for Accelerated Development," December, 2002* in which the inefficiencies of the Samurdhi program is acknowledged and the intent to reform the program is expressed. This document is the synthesis of two parallel processes: (i) the Government's Economic Reform Process (ERP) developed over a six month process in 2002 and the outcome of 19 working groups under the Policy Development Committee chaired by the Prime Minister, and (ii) the Poverty Reduction Framework, which began in 1998 and culminated in the Poverty Reduction Strategy (PRS) in 2001. The parts of the strategy presented in the 2002 policy document that are directly related to the issues analysed in this thesis are (i) "tighten social welfare programmes, mainly the Samurdhi programme through improved targeting," and (ii) "link-up micro-credit operations to larger financial institutions to deepen and widen the micro-finance market." In what follows we discuss the merits of these policies given some of the findings of this thesis, and the subsequent implications for the implementation of these policies.

5.5.1 Improving the Targeting of Samurdhi Food Stamps

The two fundamental problems with the Samurdhi program is that (i) it is a politicised program, and (ii) that it is a means-tested program, and thus by definition is bound to have targeting errors. The results in chapter two shows that the politicization of the

program partly explains why a significant portion of Samurdhi benefits, both food stamps and microcredit, goes to the non-poor.

The Government has started to implement certain measures to improve Samurdhi's targeting performance. For example, in 2002, the program reduced all district level allocations by 25 percent; it cancelled benefits to families of security personnel in active service in the North-East (presumably due to the expectation that the conflict in the North-East was going to end with peace talks being held in February 2002); and it reduced the value of the food stamps that were worth Rs. 700 to Rs. 600. These measures resulted in the reduction of the number of beneficiaries by 24 percent, to 1.5 million households. However such across the board cuts in allocations, and cancellations of benefits affect both eligible and ineligible households alike. Poor households are more likely to be adversely affected by the cuts given that Samurdhi food stamps constitute a larger share of their total food expenditure (14%) than for the non-poor (6%), and have a significant impact on the per capita total expenditure of the poor. What is required is the weeding out of the ineligible households as much as possible so that the bulk of the benefits go to the eligible poor households.

In this regard, the Government has enacted the Welfare Benefits Act No. 24 of 2002, which provides the necessary legal framework for introducing a new eligibility criteria by which welfare beneficiaries will participate as well as exit from the program. The idea is that the new selection criteria will be based on variables that are known to be highly correlated with poverty in Sri Lanka. The Act provides for the establishment of a body called the Welfare Benefits Board which will oversee the administration of the Samurdhi program, as well as review the beneficiary selection process to ensure that it is complying with a new eligibility criteria. Potential beneficiaries are required to provide all information related to their income and asset status to the District Secretary, Divisional Secretary or *Grama Niladari* (village-level government administrative officer). The names of the eligible people will then be published for ten days to allow for any objection to the selection process. This information will have to be provided every 1-3 years for periodic monitoring of the beneficiaries and their eligibility status. Any person or public official found to be declaring false information would face penalties under the legal code of the country.

The above set up is clearly an improvement over the previous selection process as it uses easily observable characteristics to determine household eligibility and attempts to make the targeting process more transparent. If implemented well, this has the potential to improve the targeting of the Samurdhi food stamp program. However, the application process for Samurdhi benefits appears somewhat cumbersome given the amount of information applicants will have to reveal on a periodic basis, which may act as a deterrent to the poor. Furthermore, improving the eligibility criteria on paper does not alter the fact that Samurdhi officials often have to respond to elected officials who will want to use Samurdhi benefits for their political purposes. Instead the Government could consider changing the nature of the benefits such that it reduces the incentives for the wealthy to participate. For example, instead of offering lentils, rice, flour, sugar, oil and fish, the program could offer coarse grains or other "inferior" goods that the non-poor usually do not consume. Moreover, subsidizing coarse grains through food stamps is generally preferable to public procurement and distribution since the government does not have to be involved in the purchase, transport, and storage of the commodities (Bardhan, 1996).

Given the long history of universal welfare programs in Sri Lanka, it will be difficult for any government to implement reforms to an existing welfare program that benefits almost half of the total population without losing some political capital. Therefore, the timing of implementing reforms to Samurdhi will be critical, and as with many other politically costly reforms the window of opportunity could be soon after an election. To gain back some of the forgone political capital, the government could consider focussing on other specific programs to address the lack of clean water, sanitation and electricity. Moreover, the resources saved from better targeting of Samurdhi could be used to tackle poverty pockets in the conflict-ridden North-eastern and Uva Provinces, rural and coastal areas, and plantation estates where the incidence of poverty is high. Targeted programs for disadvantaged ethnic groups (such as the Indian Tamils who constitute the poorest of the poor), and specific occupations (such as agricultural households and unemployed youth) could also prove to be political winners as well as optimal uses of public resources.

5.5.2 Widening and Deepening of Microfinance

As discussed at the beginning of this section, the Government's 2002 anti-poverty policy document (Government of Sri Lanka, 2002) discussed the need for the widening and deepening of microfinance by linking microfinance institutions with the formal financial sector. This strategy is consistent with the current discourse in the microfinance literature, which promotes the scaling up of "profit-driven" microfinance operations. The terms widening and deepening basically refer to increasing the outreach of microfinance programs, where loans and other financial services are extended to an ever-wider clientele (widening outreach), especially to the poorest of the poor (deepening outreach). However, there are short-term trade-offs between increasing program outreach and program sustainability at a given point in time since program expansion is costly, and it takes several years typically for a microfinance branch to be profitable (Conning, 1999).

As one of the largest microfinance programs in Sri Lanka, the Samurdhi microfinance program can help to widen and deepen the microfinance market in Sri Lanka. The results in chapter three suggest that the Samurdhi microfinance program can achieve greater outreach and improve the cost-effectiveness of its approach. We find that Samurdhi engages its loan officers to form credit groups in homogeneous areas where households eligible to join Samurdhi's microfinance program can themselves form these groups. These officers could be reallocated to areas where the role of external agents in forming groups is more needed such as areas where there is greater religious or ethnic heterogeneity, or areas that are remote and isolated. This strategy would save staff costs.

However, there is a fundamental problem with the Samurdhi microfinance program, which has to do with its ideology. Both research and experience in the microfinance industry over the last twenty years or so show the importance of moving away from subsidized credit programs implemented by governments towards a market-based provision of financial services to poor people by semi-formal institutions such as NGOs. This shift in views is due to the fact that: (i) government-sponsored subsidized credit undermines the performance of the financial intermediary as well as the credit discipline of the borrower; (ii) poor people value timely and adequate access to credit

and their savings, and are even willing to pay high interest rates to cover transaction costs; and (iii) well-performing and well-managed institutions which allow long-term access to financial services by the poor are important. However, in the case of the Samurdhi microfinance program, not only is it run by the government, but it is linked to a welfare program. Being associated with the Samurdhi food stamp program there is no guarantee that over time borrowers will not view Samurdhi loans as government transfers that need not be repaid, therefore inviting complete capture by "wilful" defaulters as is the case in many state-run banks world-wide (Besley, 1995). Further, people are aware of the cycles of debt-forgiveness associated with any government-subsidized credit programmes, and therefore face little incentive to repay to build any credit history. Years of experience in other countries are a testament to the weaknesses of credit institutions associated with governments (see Box 5.1).

Box 5.1. Political Capture of Credit Institutions: Debt Forgiveness in India

India's government-appointed Agricultural Credit Review Committee reported in 1989:

"During the election years, and even at other times, there is considerable propaganda from political platforms for postponement of loan recovery or pressure on the credit institution to grant extensions to avoid or delay the enforcement process of recovery. In the course of our field visits, it was often reported that political factors were responsible for widespread defaults on the ostensible plea of crop failures in various regions. The "wilful" defaulters are, in general, socially and politically important people whose example others are likely to follow; and in the present democratic set-up, the credit agencies' bureaucracy is reluctant to touch the influential rural elite who wields much formal and informal influence and considerable power. Farmers' agitation in many parts of the country can take a virulent form, and banners are put up in many villages declaring no bank officer should enter the village for loan recovery purposes. This dampens the enthusiasm of even the conscientious members of the bank staff working in rural areas in recovery efforts. The general climate, therefore, is becoming increasingly hostile to recoveries."

Source: Yaron, Benjamin, and Piprek 1997, p102.

Another fundamental problem with Samurdhi Banks is that it is difficult to assess their financial performance. The largest portion of the costs is in the form of staff salaries of some 25,000 staff that is borne by the Government budget. Some of these costs can be attributed to the Samurdhi food stamp program since some of the staff work for both the SFSP and SMP, making calculations of program cost very difficult. We were unable to obtain a financial statement for the Banks and there are no publicly disclosed data sources. Even though the recovery rate of Samurdhi Bank

loans is reported to be 104 percent, it is not clear whether it is indicative of the quality of loan performance or the manner by which this rate is calculated.

A further cause for concern is the rate of expansion of the Samurdhi microfinance program. Samurdhi Banks have been in operation since 1997 but had increased their portfolio size by 600 percent over period 1997-2000. Such a high level of expansion in itself raises concern about the institutional base of Samurdhi Banks and their capacity to maintain the same level of performance, especially in terms of assessing credit risks and of monitoring investments. There are already some indications of stress on the system. For example, we find that the loan recovery rate can vary substantially across district, especially those who are in the conflict areas. In Ampara district, the recovery rate was 50% at the end of 1999 (UNDP, 2000). Thus, under the current Samurdhi set-up, widening and deepening of Samurdhi microfinance appears to be premature and unwarranted.

A more prudent option would be to scale-down the microfinance program alongside the food stamp program to make it more targeted towards the proposed smaller number of beneficiaries of the Samurdhi food stamp program. For example, those households who are selected under the food stamp program could form small savings groups and receive training and other business development services over a period before they receive loans. Such waiting periods for loans will help in deterring wealthier households from participating in Samurdhi, but encourage poor households who are unable to access credit from other affordable sources to participate. This will greatly enhance the value of the Samurdhi program since no other microfinance institution in Sri Lanka appears to serve this segment of the market (see Table 1.7 in chapter one).

A potential problem the Samurdhi Banks face in terms of their financial sustainability is a situation where a future government decides to eliminate the Samurdhi food stamp program. Such a situation is plausible given Sri Lanka's long history of welfare programs linked to specific governments (e.g. Samurdhi with the current government; the Janasaviya program with the UNP government). Abolishing the food stamp program would imply that the compulsory savings required by the Samurdhi food stamp program that are deposited with Samurdhi Banks will have to be withdrawn. A

prudent option therefore is to de-link the Samurdhi Banks from the Samurdhi food stamp program and make it an autonomous, non-profit entity, possibly with an initial government budget transfer as start-up capital. The program can eventually focus on developing its capital base using alternate means such as private capital markets. Such de-linking will also address some of the problems associated with government-run credit programs that were discussed above. The specific modalities of how this de-linking could be done so that continued access to Samurdhi microfinance by the poor is not jeopardized would need to be worked out in detail. This is particularly important given the results in chapter four which show that the poorest SMP members experience a significant positive gain in per capita food and total consumption. This gain in per capita food and total consumption is considerably greater and significant compared to that experienced by less poor groups. Thus ensuring that the poorest of the poor households has access to microfinance is critical to the poverty reduction strategy of the Government of Sri Lanka. This will mean that the reformed Samurdhi microfinance program maintains a mandate to deliver financial services to the poor.

Finally, the tough question that the Government will need to address in light of the proposed down-sizing of the Samurdhi program is what to do with the 25,000 or so Samurdhi staff. A significant number of them will have to be laid off and given the costs of retrenchment programs in Sri Lanka, the Government will have to consider the economic and political implications of this down-sizing.

5.6 Areas for Further Research

The results of this thesis leave many avenues open for further research. For example, further work can be done to explore the extent that political affiliation determines benefits from the Samurdhi food stamp and microfinance programs. Ideally this would involve collecting household level voting data that can be merged with SLIS. Such a dataset will also allow us to estimate whether household political affiliation affects access to other social services.

Second, a further area of research that would extend the work presented in this thesis and have significant policy implications for the way the Samurdhi credit groups are formed is to assess the extent to which repayment rates on Samurdhi loans can be

explained by the way credit groups are formed. The research would answer the question as to whether borrowers who belong to spontaneous groups are better or worse in terms of loan repayments relative to borrowers who belong to officer-formed credit groups. The results will fill an important void in the group lending literature by providing empirical evidence of the extent to which predictions of existing theories on group lending with joint liability hold.

Third, it would be important to assess the impact of participation in the Samurdhi food stamp program on the nutritional status of households. This would extend the work done in this thesis where we assessed whether food stamp programs are increasing household food consumption. During times of food shortage, working adults in Sri Lanka get priority during meal times. Children and other non-working adults in the household such as the elderly and the disabled therefore may not be benefit from Samurdhi food stamps even though these household members are receiving specific allocations. A related issue to explore, if the impact on nutritional outcomes is minimal, is whether there is a "black market" in food stamps that operates and allows food stamp holders to use their stamps for other purposes, in addition to the portion that can be redeemed for cash.

Fourth, an important area for further research on impact issues in the context of the Samurdhi microfinance program is the effect of participation in the program on reducing vulnerability to seasonal shocks and other forms of crisis. Evidence in other contexts show that microfinance is able to smooth consumption for poor households over the lean seasons, and thus provides a crucial service to the poor, especially the poorest of the poor. Such analysis would be particularly useful in order to comment comprehensively about the effectiveness of SMP in helping the poor.

A fifth area of research is to examine the efficacy of having one organization provide both a safety net service, such as food, and microfinance. There is one school of thought that prefers separating these functions given the different approaches to providing grants compared to collecting loans. On the other hand, there are also examples such as the Income Generation for Vulnerable Group Development Programme in Bangladesh where food aid, training and micro-credit are being

successfully provided to the poorest.[76] Hence a review of these various "combined programs," as well as "stand-alone" programs could shed some light on the best possible way to reform the Samurdhi program.

[76] Under the program, poor destitute women receive a monthly ration of wheat or rice, and in addition, they form small savings groups and receive training on income generating activities. Credit is then provided to set up these activities (e.g. poultry rearing, sericulture, livestock raising).

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