Exchange Rates, Tariffs and Prices in 1930s' Britain[†]

Jagjit S. Chadha, Jason Lennard, Solomos Solomou and Ryland Thomas[*]

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Abstract

This paper investigates the degree of pass-through from import prices and tariffs to wholesale prices in interwar Britain using a new high-frequency micro data set. The main results are: (i) Pass-through from import prices and tariffs to wholesale prices was economically and statistically significant. (ii) Despite devaluation, import prices exacerbated deflation in the early 1930s because of the global slump in export prices. (iii) Rising protection, however, was a mild stimulus to prices during the shift to inflation.

We are today in the middle of the greatest economic catastrophe […] of the modern world.

– John Maynard Keynes (1931)[1]

The "economic catastrophe" of the Great Depression led to a slump in output, prices and jobs. As figure 1 shows, economic activity contracted by 5.8 per cent, retail prices dropped by 11.6 per cent and the unemployment rate doubled to more

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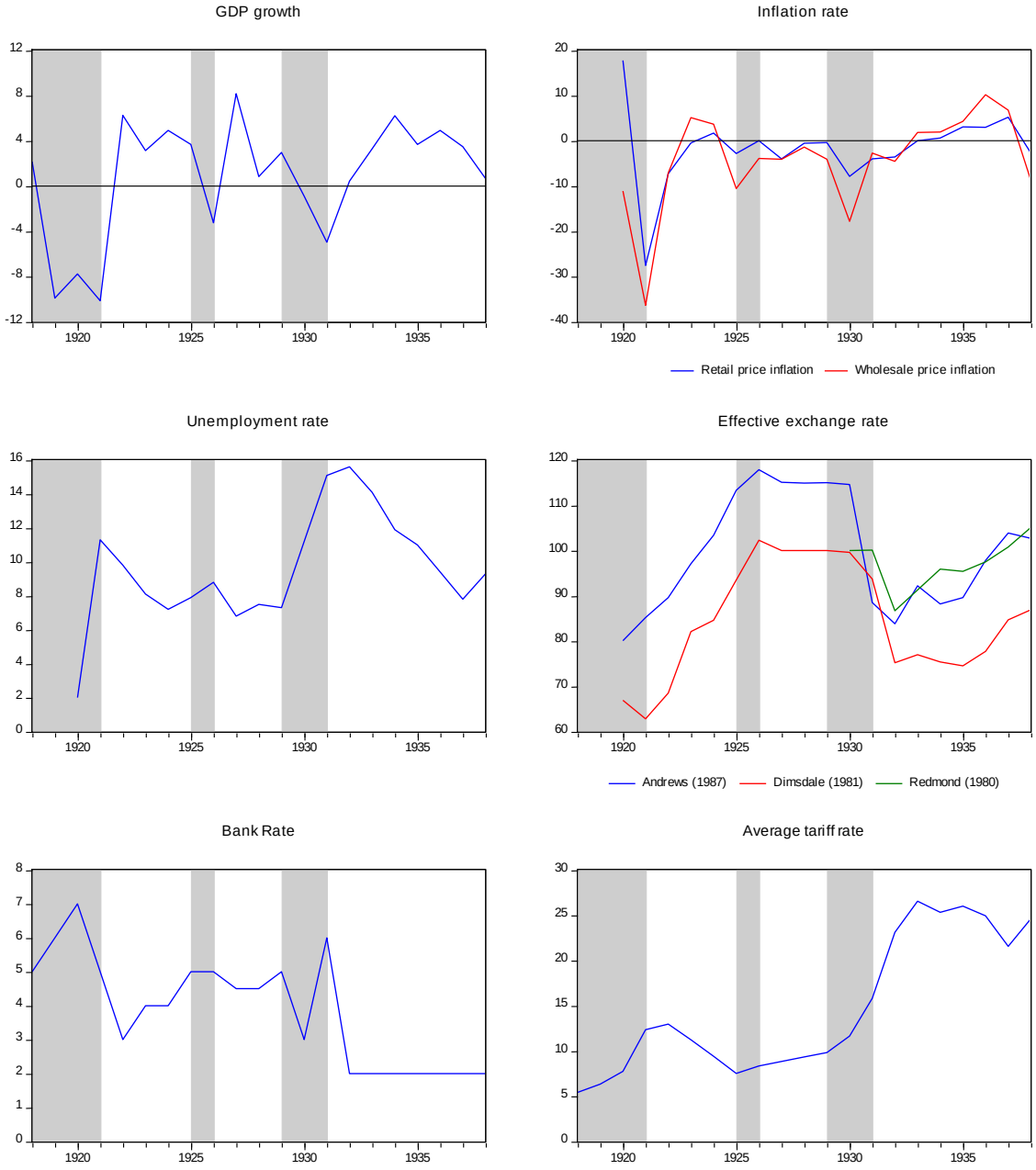
[*] Authors' Affiliations: Jagjit S. Chadha, National Institute of Economic and Social Research; Jason Lennard, Department of Economic History, London School of Economics; Solomos Solomou, Faculty of Economics, University of Cambridge; Ryland Thomas, Bank of England.

[1] Quoted in Crafts and Fearon (2013, p. 1).

than 15 per cent in the United Kingdom between 1929 and 1931. After signs of revival in 1932, growth returned, deflation ended and unemployment subsided in 1933. This expansion continued into the Second World War.

Figure 1. *Macroeconomic Indicators, 1918–38 (%)*



Notes and Sources: GDP growth is calculated from Mitchell's (1988, p. 836) compromise estimate of GDP at factor cost in constant prices and Sefton and Weale's (1995, p. 188) balanced estimate of GDP at factor cost in constant prices. The inflation rates are calculated from the retail and wholesale price indices (Capie and Collins, 1983, pp. 31-2). The unemployment rate is from Feinstein (1972, T126). The effective exchange rates are from Andrews (1987, pp. 81–4), Dimsdale (1981) and Redmond (1980). Bank Rate is from Capie and Webber (2010, p. 515–8). The average tariff rate is calculated by dividing customs revenue by imports from Mitchell (1988, pp. 453, 583–4). The shaded areas represent recessions (Broadberry et al., forthcoming).

What sparked the recovery? Central to some accounts is that raising prices was a pre-condition of the return to growth by restoring firm's markups, which had been eroded by deflation and downward nominal wage rigidity and boosting demand as a result of lower real interest rates. Internal correspondence from HM Treasury, for example, stated that "at the root of everything lies the question whether we are going to secure an increase of the wholesale price level. If we are well and good: if not the future is gloomy in the extreme" (Howson, 1975, p. 91). Dimsdale (1981) argues "a low exchange rate was a way of promoting economic recovery from the depression through raising wholesale prices." Booth (1987) writes that policymakers "sought recovery through reflation of the price level to raise profit margins." Eichengreen (2004, p. 338) states that "most observers agree that the tariff pushed up prices, which was helpful in a period when worldwide prices were collapsing. Higher prices stimulated aggregate supply and were good for profitability." Crafts (2013) suggests that "cheap money, a weak pound, tariffs, and encouraging firms to exploit their (enhanced) market power" promoted expected and actual inflation, which helped to revive growth.

To this end, there were a number of major shifts in economic policy in the early 1930s. First was the departure from the gold standard in September 1931.[2] In the following quarter, sterling depreciated by 22 per cent in effective terms (Andrews, 1987, p. 83). Second was the "cheap money policy", which saw Bank Rate cut in steps from 6 per cent in mid-February 1932 to 2 per cent by the end of June. Third was the Import Duties Act, which marked the onset of Britain's turn inward (Capie, 1981; de Bromhead et al., 2019a), levying a 10 per cent tariff on many imported goods from March 1932. Fourth was the Chancellor's declaration to raise prices at the British Empire Economic Conference that began in July 1932 (*Financial Times*, 13 August 1932, p. 5). The effective exchange rate, Bank Rate and the average tariff rate are also plotted in figure 1.

[2] The extent to which the devaluation was discretionary or enforced has been debated. See, for example, Worswick (1984).

How successful were these policies in ending deflation? In this paper, we investigate how changes in import prices – a function of world prices and exchange rates – and tariffs "passed-through" into changes in wholesale prices.[3] In order to do so, we construct a new monthly data set of item-level import prices, tariff barriers and wholesale prices for the imported items included in the official wholesale price index. The data set has more than 2,000 observations covering 27 imported varieties between January 1930 and December 1938. We use this micro data in panel regressions of wholesale prices on import prices and tariffs for each product variety. In terms of identification, we assume that import prices are set exogenously with respect to British wholesale prices but that tariffs are potentially endogenous. We therefore use narrative methods to distinguish between tariff changes that were motivated by changes in domestic wholesale prices and those for more exogenous reasons.

There are a number of interesting results. First, changes in import prices and tariffs were positively associated with changes in wholesale prices, although the degree of pass-through was not complete. Second, the deflation of the early 1930s was partly caused by falling import prices, as a result of the drop in global commodity prices. The depreciation following the break from the gold standard slowed, but did not reverse, this decline. Third, rising protection exerted upward pressure on prices, contributing to the shift from deflation to inflation in 1933.

This paper is organised as follows. Section I reviews the relevant literature. Second II introduces the data. Section III covers the methodology. Section IV present the results. Section V concludes.

[3] As discussed later, we are limited to wholesale prices because of a scarcity of data for consumer or retail prices. However, as demonstrated by the Treasury letter above, wholesale prices were of great interest in interwar Britain.

I. Previous Literature

Exchange rate and tariff pass-through can be split into three stages. In many studies of exchange rate pass-through the focus is on the first stage of pass-through from exchange rates to import prices, reflecting the pricing behaviour of overseas producers and whether they adjust the price of goods in foreign currency.[4] Others focus on the other end of the supply chain, looking at how retailers pass on changes in the cost of imported goods to their customers. This paper focuses on the second or intermediate stage of pass-through from sterling import prices to the price charged for imported goods by wholesalers. As we discuss later, this is in part due to data limitations. But this second stage of pass-through may more generally act as an indicator of pass-through by retailers.

Despite the importance of pass-through in the historiography, quantitative estimates are scarce for interwar Britain. Moggridge (1972, p. 110) conjectured that a "10 per cent appreciation of the exchange rate would, *ceteris paribus*, probably have no more than a 4 per cent effect on the cost of living" in 1925, which equates to a pass-through coefficient from exchange rates to consumer prices of 0.4. Broadberry (1986, p. 129) assumes that the 13 per cent depreciation of the effective exchange rate between 1931 and 1932 led to a rise in the sterling price of imports of 9 per cent, which translates into a pass-through coefficient from exchange rates to import prices of 0.69. Downs (1986, p. 15) suggests that "the domestic [wholesale] price level was rather sticky when it should have increased the most from the impact of the tariffs" in 1932, which implies a pass-through coefficient from tariffs to wholesale prices of close to zero.

Keynes speculated how a fall in the exchange rate and a rise in tariffs might affect inflation. On devaluation, he wrote (Keynes, 1931, p. 290):

> For less than a quarter of our total consumption is represented by imports; so that sterling would have to depreciate by much more than 25 per cent before I should expect the cost of living to rise by as much as 10 per cent. This would cause serious hardship to no one, for it would

[4] See, for example, Feenstra (1989) and Gopinath et al. (2010).

> only put things back where they were two years ago. Meanwhile there will be a great stimulus to employment.

On protection, he forecasted that (Keynes, 1931, p. 278):

> There might be import duties of 15 per cent on all manufactured and semi-manufactured goods without exception, and of 5 per cent on all foodstuffs and certain raw materials, whilst other raw materials would be exempt. I am prepared to maintain that the effect of such duties on the cost of living would be insignificant – no greater than the existing fluctuation between one month and another. Moreover, any conceivable remedy for unemployment will have the effect, and, indeed, will be intended, to raise prices.

These historical best guesses of incomplete pass-through are consistent with estimates for modern economies.[5] One branch of the literature is based on micro data. Nakamura and Zerom (2010), for example, find a long-run pass-through coefficient of 0.26 from costs into wholesale prices in the US coffee industry between 2000 and 2005. Hellerstein (2008) reports a short-run pass-through coefficient of 0.11 from exchanges rates to retail prices in the Chicago beer industry in the 1990s. Breinlich et al. (2019) calculate a long-run pass-through coefficient of 0.29 from exchange rates to consumer prices in the aftermath of the 2016 referendum in the United Kingdom. Another branch of the literature is based on macro data. Savoie-Chabot and Khan (2015) estimate that the long-run pass through of exchange rates to the consumer price index was 0.06 in Canada between 1995 and 2013. Forbes et al. (2017) document an average rate of pass-through from exchange rates to consumer prices of 0.05 in advanced economies between 1990 and 2015.[6]

[5] Here we focus on recent estimates of pass-through into consumer, retail and wholesale prices.
[6] For a survey of earlier work, see Goldberg and Knetter (1997).

II. Data

In order to investigate pass-through in interwar Britain, we construct a new monthly data set of good-level import prices, tariff barriers and wholesale prices for imported goods included in the official wholesale price index.

The dependent variable in the analysis is wholesale prices. Monthly micro data on wholesale prices was published in the *Board of Trade Journal* (various dates).[7] The Board of Trade collected the prices of around 200 goods, falling under the categories of cereals; meat, fish and eggs; other food and tobacco; coal; iron and steel; non-ferrous metals; cotton; wool; other textiles; chemicals and oils; and other articles. These prices were aggregated to form the Board of Trade wholesale price index. Identifying which goods in the index were imported was straightforward as the origin was included in the description. Eggs from Denmark, for example, were described as "eggs: Danish" and tea from India as "tea: Indian". These prices are inclusive of duty.

As less attention is paid to wholesale prices today than in the interwar period, it is useful to clarify what a wholesale price is. This is the price of a good in a business-to-business, as opposed to a business-to-consumer, exchange. As a first approximation, it is the price paid by retailers to producers, whereas the consumer or retail price is the price paid by consumers to retailers. For example, the Board of Trade's wholesale price index included oatmeal prices from the London Corn Exchange, fish prices from Billingsgate Market and prices from specialist trade publications such as *The Builder*, *The Grocer* and *The World's Paper Trade Review* (*Board of Trade Journal*, 24 January 1935, pp. viii–xi). The wholesale price will contain duties, wholesalers' labour and capital costs, plus any markup. So the wholesale price will reflect many elements over and above the cost of primary goods either produced domestically or overseas. If the import price it pays at the dock is not passed on to the retailer, the wholesaler must either reduce costs or absorb it in profit margins.

[7] Details of the collection of prices and the construction of the index are available in *Board of Trade Journal* (24 January 1935).

One of the main independent variables in the analysis is import prices. Monthly micro data on the price of imported goods is calculated from the *Trade and Navigation Accounts* (Parliamentary Papers, various dates). This source published the imported value and quantity of individual goods by country, from which the average price or unit value can be calculated as the ratio of the two (de Bromhead et al., 2019a). To return to the previous example, the *Trade and Navigation Accounts* include "eggs in shell […] from Denmark" and "Tea from British India". These prices are exclusive of duty, as well as the wholesaler's costs and markup (National Institute of Economic and Social Research, 1943, pp. 57–8).

Another key independent variable is tariff barriers. Monthly good-level data is constructed from the *Report of the Commissioners of His Majesty's Customs and Excise* (Parliamentary Papers, various dates). Many goods in the sample were levied an ad valorem duty. However, some goods were subject to specific duties, such as the 3/4*d*. per lb. for beef (chilled) from the Argentine Republic under the Beef and Veal Customs Duties Act 1937. In order to convert to an ad valorem equivalent, we divide the specific duty by the import price in the month prior to the tariff change to isolate changes in legislation from changes in import prices (Irwin, 1998). Appendix I details the methods and sources used.

The wholesale price of imported good g from country c was matched to the import price and tariff of good g from country c. As in de Bromhead et al. (2019a), we refer to a good from a particular country as a variety. The matched prices are shown in table 1. Prices that could not be uniquely linked are listed in appendix II. Overall, we have 27 varieties in our sample, which represent 78.2 per cent of all imported goods, and 25.8 per cent of all goods, domestic and imported, in the wholesale price index in 1935 (*Board of Trade Journal*, 24 January 1935, p. iv).

Table 1. *Matched Prices*

Good	Matched Sample	Wholesale Variety	Import Variety
Cereals			
Barley	1935:1 – 1938:12	Californian malting	United States of America
Maize	1930:1 – 1938:12	Yellow La Plata, spot	Argentine Republic
Rice	1930:1 – 1938:12	No. 2 Rangoon	Whole, British India
Wheat	1930:1 – 1938:12	No. 2 Northern Manitoba, ex ship	Canada
Wheat	1935:1 – 1936:2	Rosafé	Argentine Republic
Flour	1935:1 – 1938:12	Imported, average of Spring Patent and American Winter	United States of America
Meat, Fish and Eggs			
Bacon	1930:1 – 1938:12	Irish green, 1st	Irish Free State
Bacon	1930:1 – 1938:12	Danish green, 1st	Denmark
Hams	1935:1 – 1938:12	American green, short cut, 1st	United States of America
Beef	1930:1 – 1938:12	Argentine chilled, average of fores and hinds, 1st	Chilled, Argentine Republic
Beef	1930:1 – 1931:8	Argentine frozen, average of fores and hinds, 1st	Frozen, in quarters and sides, Argentine Republic
Beef	1931:12 – 1938:12	Australian frozen, average of crops and hinds, 1st	Frozen, in quarters and sides, Australia
Lamb	1930:1 – 1938:12	New Zealand, 1st	Frozen, New Zealand
Eggs	1935:1 – 1938:12	Danish, average	In shell, poultry, Denmark
Other Food and Tobacco			
Butter	1930:1 – 1938:12	Danish, 1st	Denmark
Butter	1930:1 – 1938:12	New Zealand, 1st	New Zealand
Cheese	1935:1 – 1938:12	New Zealand, 1st	New Zealand
Cocoa	1930:1 – 1931:12	Trinidad	British West India Islands
Cocoa	1932:1 – 1938:12	West African	British West Africa

Coffee	1930:1 – 1938:12	Costa Rica, good to fine	Costa Rica
Tea	1930:1 – 1938:12	Indian, average	British India
Tobacco	1934:12 – 1938:12	American Western, good to fine	Unmanufactured, if unstripped, United States of America
Cotton			
Cotton	1930:1 – 1938:12	American, middling	Raw (except linters), United States of America
Cotton	1930:1 – 1938:12	Egyptian, Sakellaridis, fully good fair	Raw (except linters), Egypt
Other Articles			
Goatskin	1934:12 – 1938:12	High standard selections, dry salted Patnas, 35/45/20	Dry and salted, British India
Paper-making materials	1934:12 – 1938:12	Esparto, Oran, 1st quality, c.i.f.	Esparto, including waste, from Algeria

The sample period is January 1930 to December 1938. The start date is determined by the availability of the micro data reported in the *Board of Trade Journal*. The end date represents the last full year of peace before the outbreak of war and the imposition of price controls (Mills and Rockoff, 1987). In total, we have an unbalanced sample of 2,001 variety-month observations.

An interesting extension would be to include consumer or retail prices as dependent variables to assess the degree of pass-through further up the supply chain. However, we were not able to uncover micro data on consumer or retail prices that was as rich in the cross-sectional or time-series dimensions as that for wholesale prices. There is some evidence in modern data that suggests retail prices adjust immediately and fully to changes in wholesale prices, but that wholesale prices respond less than proportionately to changes in costs, which suggests that incomplete pass-through occurs at the wholesale level (Nakamura and Zerom, 2010). However, whether that applies to interwar Britain is an open question for future research.

III. Methodology

In order to estimate the degree of pass-through, we estimate two models. One is a model in log levels:

$$\log p_{i,t} = \alpha_i + \sum_{k=0}^{4} \beta_k \log m_{i,t-k} + \sum_{k=0}^{4} \gamma_k \tau_{i,t-k} + \sum_{k=1}^{4} \varphi_k q_k + \varepsilon_{i,t} \quad (1)$$

where $\log p_{i,t}$ is the log wholesale price of imported variety i at time t, α_i is a variety fixed effect, $\log m_{i,t-k}$ is the log import price, $\tau_{i,t-k}$ is the ad valorem equivalent tariff rate and q_k is a quarter of the year dummy.

The other is a model in log differences. Following the convention in the literature (Gopinath et al., 2010; Nakamura and Zerom, 2010; Savoie-Chabot and Khan, 2015), we estimate this standard pass-through regression as the baseline model:

$$\Delta \log p_{i,t} = \sum_{k=0}^{4} \beta_k \Delta \log m_{i,t-k} + \sum_{k=0}^{4} \gamma_k \Delta \tau_{i,t-k} + \sum_{k=1}^{4} \varphi_k q_k + \varepsilon_{i,t} \quad (2)$$

where Δ is the difference operator. As a result of differencing, the variety fixed effect cancels out.

In these models, β_k measures the approximate percentage change in wholesale prices associated with a 1 per cent change in import prices at $t-k$. γ_k can be interpreted as the approximate percentage change in wholesale prices associated with a 1 percentage point change in the ad valorem equivalent tariff rate at $t-k$. The standard errors are clustered by variety.

Notice that both models include the import price as opposed to the relevant bilateral exchange rate. As the import price can be expressed as $m_{i,t-k} =$

$m^*_{i,t-k}/e_{t-k}$, where $m^*_{i,t-k}$ is the import price in foreign currency and e_{t-k} is the relevant bilateral nominal exchange rate (foreign currency per pound), β_k therefore measures the pass-through of world prices *and* exchange rates to wholesale prices of imported goods.

For each variety, the import price, $m_{i,t-k}$, is calculated as the imported value divided by the imported quantity. As the unit value is quite volatile, perhaps because of differentiation within varieties, we use quarterly averages of the monthly data for $p_{i,t}$, $m_{i,t-k}$ and $\tau_{i,t-k}$.

The quarter of the year dummies are included to model the seasonality in prices (Nakamura and Zerom, 2010). As the Board of Trade recognised, there was significant variation in wholesale prices from month to month:

> For all articles the variation in prices through-out the year is from 0.8 per cent. below the average in May to 1.1 per cent. above the average in November. Prices as a whole are shown as falling steadily by an aggregate of 1.5 per cent. between January and May, rising slightly in June and July, falling in August and then rising by 1.75 per cent. in the course of the next three months, with a fall of 0.5 per cent. in December to about the January level (*Board of Trade Journal*, 24 January 1935, p. vii).

In section IV.B, we investigate the sensitivity of the results to variations of the baseline model, such as changing the number of lags included, using an alternative measure of the ad valorem equivalent tariff rate and including time fixed effects.

III A. Identification

The identification of β_k and γ_k depends on some assumptions. In the case of β_k, there are two identifying assumptions. Recall that $m_{i,t-k} = m^*_{i,t-k}/e_{t-k}$, where $m^*_{i,t-k}$ is the import price in foreign currency and e_{t-k} is the relevant exchange rate. The first assumption is that the domestic wholesale price does not affect the foreign price, which is determined globally. This standard assumption is also used by de Bromhead et al. (2019a), who provide supporting evidence that the United

Kingdom did not have sufficient market power to influence world prices in the interwar period. The second identifying assumption is that the domestic wholesale price does not affect the exchange rate at the level of the individual good. Using micro-level outcomes to identify the causal impact of macroeconomic shocks has been used by Boneva et al. (2016). In the case of γ_k, the identifying assumption is that the domestic wholesale price does not affect tariffs.

The assumptions behind identification of β_k are not controversial. However, the assumption underpinning γ_k is more contestable because tariffs might be implemented to affect domestic wholesale prices. For example, if the domestic price of a British product has fallen due to foreign competition, a tariff might be imposed on the competing import to raise British prices. Fortunately, this assumption can be verified using narrative evidence.

III B. Narrative Analysis

"Narrative methods involve constructing a series from historical documents to identify the reason and/or the quantities associated with a particular change in a variable" (Ramey, 2016, p. 78). The narrative approach has been used to estimate the causal effects of monetary policy (Romer and Romer, 2004; Cloyne and Hürtgen, 2016; Lennard, 2018), fiscal policy (Romer and Romer, 2010; Ramey, 2011; Cloyne, 2013; Crafts and Mills, 2013, 2015; Ramey and Zubairy, 2018) and financial crises (Jalil, 2015; Esteves et al., 2021; Kenny et al., 2021). However, narrative methods have not been used to estimate the economic effects of tariffs. In order to do so, we read the parliamentary debates and legislation related to the changes in tariff policy that affected our sample of imported goods to determine the principal motivation. We define an endogenous tariff as one that is motivated by domestic prices and an exogenous tariff as one that is implemented for other reasons.

Table 2 summarises the tariffs and classifications. Appendix III contains supporting evidence. The narrative analysis suggests that of the 8 tariffs that affected the 27 varieties in our sample, 7 were exogenous, while 1 was endogenous,

which could bias γ_k if ignored. We repeated this exercise for non-tariff barriers but found that all changes were endogenous. This suggests that non-tariff barriers, such as licenses, were used to manipulate prices whereas tariff barriers were used to achieve other objectives. As a result, we exclude non-tariff barriers from the analysis.

Table 2. *Classifying Tariffs*

Tariff	Classification
Import Duties Act 1932	Exogenous
Irish Free State (Special Duties) Act 1932	Exogenous
Ottawa Agreements Act 1932	Exogenous
Beef and Veal Customs Duties Act 1937	Endogenous
Tea 1932, 1936 and 1938	Exogenous
Tobacco 1931	Exogenous

An example of a tariff that we classify as endogenous is the Beef and Veal Customs Duties Act 1937:

> The Government are of opinion that if adequate provision is to be made in one form or another for the needs of the United Kingdom cattle industry, the aggregate financial assistance now given to it must be increased until such time as the conditions prevailing in the industry improve. They propose to seek the authority of Parliament to apply to the assistance of the industry such sums not exceeding £5,000,000 per annum as may from time to time be needed. Parliament will be asked annually to make provision for a sum not exceeding this amount. As an offset to this liability, the Exchequer will benefit to the extent of the revenue from the import duties to which I have referred.[8]

The principal reason was to fund a subsidy to the ailing British cattle industry. An example of a tariff that we classify as exogenous is the change in tea duty in 1938. The Chancellor of the Exchequer, John Simon, explained in the budget speech to the House of Commons:

> I propose to raise the duty on all tea, Empire and foreign, by 2*d*. per pound […] I well understand that even an extra halfpenny per week is a

[8] Hansard, HC Deb 6 July 1936, vol 314 c842.

> material and appreciable addition to the expenses of those with the smallest incomes. Why do I do it? I believe that there is a willingness and even a pride in the humblest homes to take a share in this rearmament outlay, for defending those homes from peril, just as much as in the homes of more comfortable and wealthy people.[9]

The main motivation was to not to increase the wholesale price of tea but to raise government revenue in order to fund defence spending.

A potential concern is that by conducting the narrative analysis at the level of the legislation, as opposed to the variety, our results may be biased if there was endogenous selection of varieties to receive a tariff change, despite the overarching legislation being plausibly exogenous. We focus on the legislation as it was debated openly in the House of Parliament. How individual varieties were selected to receive legislated tariff changes, however, was a more private matter settled by civil servants and ministers. Therefore, we have more qualitative information to determine the motivation for tariff changes at the level of the legislation than we do at the level of the variety.

IV. Results

IV A. Baseline Results

The degree of import price and tariff pass-through is shown in table 3. The first and second columns are based on a model in first differences. The first column shows the pass-through from import prices to wholesale prices. The impact coefficient suggests that a 1 per cent change in import prices was associated with a rise of approximately 0.62 per cent in wholesale prices. This effect is highly significant with a t-statistic in excess of 9. Thereafter, there are minor gyrations that bump the long-run pass-through (LRPT) coefficient ($\sum_{k=0}^{4}\beta_k$) down to 0.61. The second column shows the extent of pass-through from tariffs to wholesale prices. The impact multiplier implies that a 1 percentage point change in the ad valorem equivalent tariff rate was associated with an increase in wholesale prices

[9] Hansard, HC Deb 26 April 1938, vol 335 c66.

of roughly 0.31 per cent. This estimate is statistically significant at the 1 per cent level. At more distant horizons, pass-through continues, raising the LRPT coefficient ($\sum_{k=0}^{4} \gamma_k$) to 0.79. The third and fourth columns are based on a model in levels. The stylised facts remain but the economic and statistical significance is greater.

Table 3. *Exchange Rate and Tariff Pass-through*

	Differences		Levels	
k	β_k	γ_k	β_k	γ_k
0	0.62 (0.06)***	0.31 (0.11)***	0.81 (0.07)***	0.49 (0.07)***
1	0.00 (0.03)	0.13 (0.03)***	-0.01 (0.04)	0.24 (0.04)***
2	-0.03 (0.04)	-0.01 (0.13)	0.02 (0.04)	-0.05 (0.16)
3	0.04 (0.02)	0.43 (0.11)***	0.03 (0.03)	0.34 (0.20)
4	-0.02 (0.04)	-0.08 (0.10)	-0.05 (0.04)	-0.06 (0.17)
LRPT	0.61 (0.06)***	0.79 (0.20)***	0.82 (0.05)***	0.95 (0.13)***
Observations	587		615	
R^2	0.52		0.28	

Notes: This table shows the approximate response of wholesale prices to a 1 per cent change in import prices and a 1 percentage point change in the ad valorem equivalent tariff rate based on estimation of equations (1) and (2). $\tau_{i,t-k}$ includes exogenous tariff changes only. Standard errors are clustered by variety and are shown in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level respectively.

How do the results compare to estimates in the literature? As reported in section I, previous studies estimate pass-through coefficients from exchange rates to consumer, retail or wholesale prices of approximately zero to 0.4. Therefore, our results are consistent with existing evidence of incomplete pass-through. However, our estimates are somewhat higher than those found in the literature. Why? One important reason is that we are focusing on imported goods in the wholesale price index, whereas most other studies focus on all goods, domestic and imported, in an index. As pass-through is known to be higher for imported goods (with high import shares) than for domestic goods (with low import shares) (Breinlich et al., 2019), it is unsurprising that we find higher pass-through. Differences in pass-through may also be indicative of variations in the curvature of demand and market structure or price rigidities (Corsetti et al., 2008; Nakamura and Zerom, 2010).

IV B. Robustness

We now turn to the robustness of our estimates. We consider five alternative specifications of the baseline model. The first specification is a more parsimonious model that includes 2, as opposed to 4, lags of import price and tariff changes. The second is a richer model that allows for a longer pass-through by including 6 lags of these terms. The third includes all tariff changes, whereas the baseline model only included exogenous variation. The fourth includes year fixed effects to account for omitted variables that vary over time but are constant across varieties. The fifth specification excludes observations with extreme import price changes, defined as changes below the 10^{th} and above the 90^{th} percentile, to assess the importance of potential measurement error.

The results are shown in table 4. The long-run pass-through from a change in import prices is in the interval of 0.41 and 0.63, which includes the baseline coefficient of 0.61. The long-run pass-through from a change in the ad valorem equivalent tariff rate ranges from 0.58 to 0.87, which includes the baseline estimate of 0.79. The standard errors of the LRPT coefficients are not constant across specifications but the effects remain statistically significant at the 5 per cent level. In summary, alternative econometric specifications consistently suggest an economically and statistically significant degree of pass-through in interwar Britain.

Table 4. *Robustness*

	2 Lags (1)		6 Lags (2)		All Tariff Changes (3)		Time Fixed Effects (4)		Outliers Excluded (5)	
k	β_k	γ_k	β_k	γ_k	β_k	γ_k	β_k	γ_k	β_k	γ_k
0	0.64	0.34	0.59	0.29	0.62	0.25	0.61	0.33	0.64	0.18
	(0.06)***	(0.11)***	(0.06)***	(0.12)**	(0.06)***	(0.12)**	(0.06)***	(0.10)***	(0.04)***	(0.20)
1	0.00	0.14	-0.02	0.04	-0.00	0.20	-0.01	0.13	-0.06	0.24
	(0.03)	(0.03)***	(0.04)	(0.04)	(0.03)	(0.05)***	(0.03)	(0.04)***	(0.03)*	(0.22)
2	-0.01	0.11	-0.04	-0.03	-0.03	-0.05	-0.04	0.01	0.01	0.00
	(0.04)	(0.14)***	(0.03)	(0.14)	(0.04)	(0.10)	(0.04)	(0.13)	(0.03)	(0.21)
3			0.01	0.40	0.04	0.27	0.03	0.46	0.05	0.49
			(0.03)	(0.09)***	(0.02)	(0.12)**	(0.02)	(0.12)***	(0.03)*	(0.29)*
4			-0.06	-0.05	-0.02	-0.00	-0.03	-0.07	-0.07	-0.04
			(0.04)	(0.14)	(0.04)	(0.11)	(0.04)	(0.12)	(0.03)**	(0.23)
5			0.01	-0.25						
			(0.03)	(0.07)***						
6			-0.07	0.47						
			(0.03)**	(0.12)***						
LRPT	0.63	0.58	0.41	0.86	0.61	0.66	0.56	0.87	0.57	0.87
	(0.05)***	(0.06)***	(0.10)***	(0.18)***	(0.06)***	(0.18)***	(0.07)***	(0.24)***	(0.07)***	(0.39)**
Observations	617		557		587		587		490	
R^2	0.52		0.52		0.52		0.52		0.37	

Notes: This table shows the approximate response of wholesale prices to a 1 per cent change in import prices and a 1 percentage point change in the ad valorem equivalent tariff rate based on estimation of variants of equation (2). Standard errors are clustered by variety and are shown in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level respectively.

IV C. Pass-through Heterogeneity

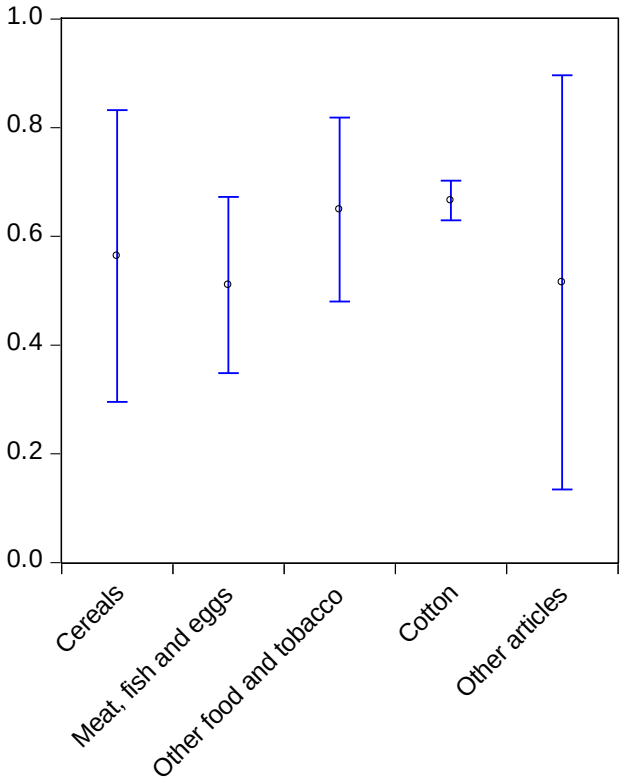
An interesting question is whether there is heterogeneity in the degree of pass-through across varieties. In theory, this may be due to product- or industry-level differences in the curvature of demand and market structure, local costs or price rigidities. To investigate this possibility, we interact import price changes, $\Delta \log m_{i,t-k}$, and ad valorem equivalent tariff rate changes, $\Delta\tau_{i,t-k}$, with dummies. The dummies are for the groups included in the Board of Trade's wholesale price index that apply to our sample: cereals; meat, fish and eggs; other food and tobacco; cotton; and other articles. To be clear, we estimate the following model:

$$\Delta \log p_{i,t} = \sum_{j=1}^{5}\sum_{k=0}^{4} \beta_{j,k}(d_j \Delta \log m_{i,t-k}) + \sum_{j=1}^{5}\sum_{k=0}^{4} \gamma_{j,k}(d_j \Delta\tau_{i,t-k}) + \sum_{k=1}^{4} \varphi_k q_k + \varepsilon_{i,t} \quad (3)$$

where each of the d_js represent one of the five groups.

Figure 2 plots the long-run pass-through coefficients on import price changes for the various groups. The estimates for cereals; meat, fish and eggs; and other articles (goatskin and paper-making materials) are very similar, between 0.51 and 0.56. The coefficients for the more manufactured goods (cotton and other articles) are somewhat higher, between 0.65 and 0.67. However, the confidence intervals overlap and the only difference that is statistically significant at the 10 per cent level is between meat, fish and eggs and cotton.

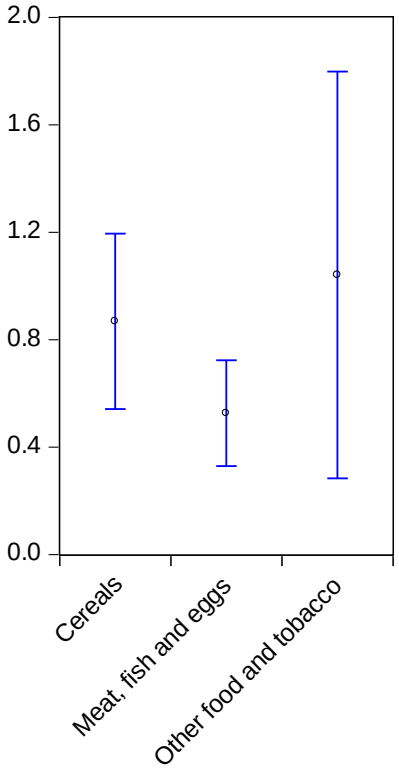
Figure 2. *Exchange Rate Pass-through by Group*



Notes: This figure shows the approximate long-run response of wholesale prices to a 1 per cent change in import prices by group based on estimation of equation (3). The 95 per cent confidence intervals are shown by the blue bars.

Figure 3 shows the long-run pass-through coefficients on ad valorem equivalent tariff rate changes for three groups: cereals; meat, fish and eggs; and other food and tobacco. Cotton and other articles are omitted because there were no tariff changes on the varieties that are included in our sample for these groups. The pass-through estimates range from 0.53 for meat, fish and eggs to 0.87 for cereals and 1.04 for other food and tobacco. However, the confidence bands overlap and the differences are not statistically significant at conventional levels.

Figure 3. *Tariff Pass-through by Group*



Notes: This figure shows the approximate long-run response of wholesale prices to a 1 percentage point change in the ad valorem equivalent tariff rate by group based on estimation of equation (3). The 95 per cent confidence intervals are shown by the blue bars.

Overall, there is not compelling evidence that there was significant heterogeneity in import price or tariff pass-through across groups, although a larger sample may help to reduce some of the uncertainty around the point estimates.

IV D. Qualitative Evidence

Fluctuations in the Board of Trade's wholesale price index were newsworthy in 1930s' Britain. If, as our results suggest, pass-through was substantial (albeit incomplete), then one would expect to see references to the impact of depreciation and protection in contemporary accounts. We therefore turn from quantitative to qualitative evidence relating to exchange rate and tariff pass-through to wholesale prices.

On the subject of exchange rate pass-through, there were numerous references in the aftermath of the devaluation. In October, the *Financial Times* (8 October 1931, p. 4) reported that "prices of imported commodities reacted at once to the

depreciation of sterling, while those of home-produced commodities were only indirectly affected […] even prices of imported goods have not yet fully adjusted themselves to the depreciation of sterling." The *FT* (9 November 1931, p. 4) reiterated this in November:

> The immediate effect of the suspension of the gold standard has been to bring about a moderate rise in sterling prices [...] confined mainly to imported commodities [...] So far the depreciation of the pound sterling against gold currencies has not exercised its full effect upon home prices. At the same time, there is already some tendency for prices even of home-produced goods to rise in sympathy with the depreciation of sterling and the enhanced price of equivalent foreign goods […] As stocks of goods imported before the suspension of the gold standard are exhausted, it is natural to look for a further increase in sterling prices, but in the absence of any increase in home production costs or further depreciation of sterling this upward movement should not go very far.

The *Financial Times* referred to this pattern time and again in the autumn of 1931.[10]

The Board of Trade Journal (24 January 1935, p. vi), reflecting on changes in its wholesale price index, also attributed a causal effect to devaluation: "following the suspension of the gold standard in September, 1931, a recovery in prices took place in the last quarter of 1931, prices of basic materials rising by 14 per cent., of intermediate products by 5 per cent., and of manufactured articles by 3 per cent."

On the topic of tariff pass-through, the Chancellor, Phillip Snowden forecasted that the increase in tobacco duty in 1931 would lead to a less-than-proportionate change in prices: "I have no reason to anticipate that the whole of this increase will be passed on to the consumer."[11] Similarly, the *Guardian* (22 August 1932, p. 9) expected a moderate increase in prices in the wake of the Ottawa Agreements Act:

> Sober consideration indicates that the rise should be small, since on certain articles such as butter and cheese, the proportion of imports from

[10] See, for example, *Financial Times* (22 September 1931, p. 5; 28 September 1931, p. 4; 1 October 1931, p. 4; 2 November 1931, p. 4).
[11] Hansard, HC Deb 10 September 1931, vol 256 c308.

> the Empire is already so high that the preservation of free entry for Empire produce is an adequate guarantee that the price will not rise by anything like the full extent of duty.

Some of these statements are covering broader aspects of the supply chain pass-through from exchange rates through to retail prices but are in line with our findings of pass-through that is greater than zero but less than one.

In summary, the quantitative and qualitative evidence are consistent and point to pass-through from exchange rates and tariffs to prices.

IV E. Aggregate Implications

We now investigate the macroeconomic implications of our microeconomic results. As inflation is ultimately pinned down by monetary policy, upward pressure on the price level arising from import prices or tariffs can be accommodated by monetary policy and allowed to work its way through the supply chain, or policy can attempt to weigh down on domestic prices and costs and offset the influences of import prices and tariffs on the general price level. However, much depends on the policy regime. Under the gold standard up to September 1931, policy was geared to maintaining the sterling exchange rate so downward pressure on world prices reflecting world monetary conditions would need to be met with tight monetary policy that exerted downward pressure on domestic wages and prices to maintain competitiveness. Once Britain left the gold standard, monetary policy was free to follow domestic growth and inflation objectives. As a result, policymakers could choose whether to accommodate factors that shifted relative prices in the economy such as import prices and tariffs.

To shed light on these issues, we consider a very simple accounting decomposition of inflation (Downs, 1986, p. 49):

$$\pi_t = \omega^m \Delta \log p_t^m + \varepsilon_t \quad (4)$$

where π_t is the log difference of the wholesale price index, ω^m is the share of imported goods in the wholesale price index, $\Delta \log p_t^m$ is the average log difference in the wholesale price of imported goods and ε_t is a residual. The first term, $\omega^m \Delta \log p_t^m$, accounts for the contribution of imported goods to aggregate inflation, while the second term, ε_t, is a residual that measures the contribution of domestic goods, including domestic goods that: use imported inputs, are substitutes for imports, are exported and are non-tradable. The residual will therefore capture all the factors affecting inflation including the effects of monetary policy on domestic wages and prices.

A macro pass-through decomposition for the wholesale price of imported goods can be expressed as:

$$\Delta \log p_t^m = \beta \Delta \log m_t + \gamma \Delta \tau_t \tag{5}$$

where $\Delta \log m_t$ is the average log difference in the import price of imported goods included in the wholesale price index, β is the pass-through coefficient on $\Delta \log m_t$, $\Delta \tau_t$ is the average difference in the average tariff rate and γ is the pass-through coefficient on $\Delta \tau_t$.

Inserting (5) into (4):

$$\pi_t = \omega^m (\beta \Delta \log m_t + \gamma \Delta \tau_t) + \varepsilon_t \tag{6}$$

which can be re-written as:

$$\pi_t = \omega^m \beta \Delta \log m_t + \omega^m \gamma \Delta \tau_t + \varepsilon_t \tag{7}$$

The first term, $\omega^m \beta \Delta \log m_t$, is the direct effect of changes in import prices on aggregate wholesale price inflation. The second term, $\omega^m \gamma \Delta \tau_t$, is the direct effect of changes in the average tariff rate on aggregate wholesale price inflation. The third term, ε_t, is a residual that captures all other influences on inflation.

The calibration of the model is shown in table 5. The log difference of the wholesale price index, π_t, is from Capie and Collins (1983, p. 32). The share of imported goods in the wholesale price index, $\omega^m = 0.26$, is gathered from the Board of Trade's description of how the index was constructed (*Board of Trade Journal*, 24 January 1935, p. iv). The pass-through coefficients, β and γ, are estimated from equation (2). As we are focusing on annual data, we use the long-run coefficients, $\sum_{k=0}^{4} \beta_k = 0.61$ and $\sum_{k=0}^{4} \gamma_k = 0.79$ respectively. The average log annual difference in the import price of imported goods included in the wholesale price index, $\Delta \log m_t$, is approximated by the log annual difference in the import price index, which is measured as the ratio of imports at current and constant prices (Sefton and Weale, 1995, pp. 184, 188). The annual difference in the average tariff rate, $\Delta \tau_t$, is proxied by the annual difference in the ratio of customs revenue to imports (Mitchell, 1988, pp. 453, 583-4).

Table 5. *Calibration*

Parameters	Value	Source
ω^m	0.26	*Board of Trade Journal* (24 January 1935, p. iv)
β	0.61	$\sum_{k=0}^{4} \beta_k$ in table 3
γ	0.79	$\sum_{k=0}^{4} \gamma_k$ in table 3
Variables		Source
π_t		Capie and Collins (1983, p. 32)
$\Delta \log m_t$		Sefton and Weale (1995, pp. 184, 188)
$\Delta \tau_t$		Mitchell (1988, pp. 453, 583-4)
ε_t		$\pi_t - \omega^m \beta \Delta m_t - \omega^m \gamma \Delta \tau_t$

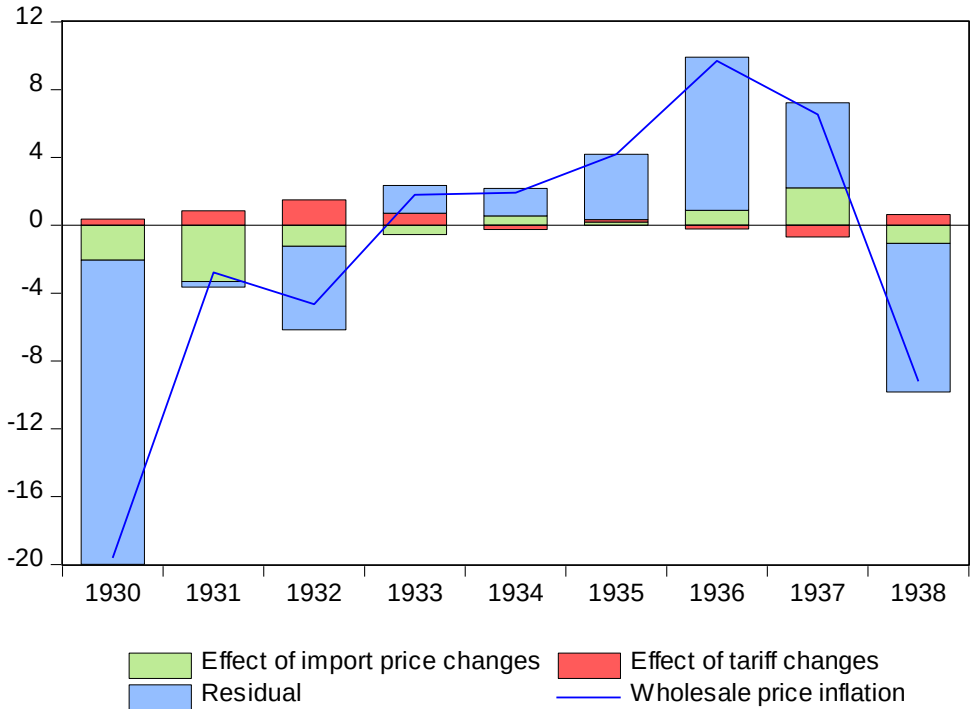
Figure 4 plots the results of the decomposition. A number of interesting results stand out. The first is that cheaper import prices were passed through into lower wholesale prices during the global slump in commodity prices in the early 1930s (Jacks, 2019; Jacks and Stuermer, 2020), which added to deflationary pressure. The downward spiral of global commodity prices meant that despite the departure

from the gold standard, which caused a large devaluation, import prices *fell* by 19 per cent in 1931, reducing the aggregate inflation rate by 3.3 percentage points. Import prices decreased by another 8 per cent in 1932, lowering inflation by 1.2 percentage points. This is consistent with Howson's (1975, p. 109) interpretation:

> In the case of the 1931 'devaluation', U.K. food and materials wholesale prices rose in the last quarter of 1931 and then declined through the rest of the first post-'devaluation' year, so that by the fourth quarter of 1932 they were back to the pre-depreciation levels. The initial rise in the price of imported manufacturers was also to a certain extent undone by the continuing depression in the exporting countries.

However, when considering the impact of devaluation, the correct counterfactual is what would have happened in the absence of the break from the gold standard. In this case, import prices in sterling would have slumped to a greater degree, which would have surely led to an even larger bout of deflation.

Figure 4. *Decomposing Inflation, 1930–8 (%)*



Notes: This figure shows a decomposition of wholesale price inflation based on equation (7).

The second is that the rise of protection contributed to inflation. Following the implementation of multiple duties, tariff changes were associated with an increase in aggregate inflation of 1.5 percentage points in 1932, which is consistent with Downs (1986, p. 15). The return to inflation in 1933 was partly driven by a further increase in protection, contributing 0.7 percentage points to the inflation rate of 1.8 per cent.

The third result is that when the United States devalued in 1933 (Bernanke and James, 1991), the sterling effective exchange rate appreciated by roughly 5 per cent (Redmond, 1980; Dimsdale, 1981; Andrews, 1987), which was associated with lower import prices of 3.4 per cent and overall deflation of 0.6 percentage points, despite a recovery in world commodity prices (Jacks, 2019; Jacks and Stuermer, 2020).

The final result is what the decomposition implies about other influences on inflation. It shows that the reflation from 1933 onwards is largely due to the residual, suggesting cheap money may well have been the main influence working to push up prices. In both 1931 and 1932, however, the residual is negative, which is suggestive of the deflationary influence of the immediate tightening of monetary policy after the devaluation in September 1931 and the double dip recession it created in 1932, although our crude decomposition cannot be anything other than suggestive of this. The fact that the residual is correlated with what is currently known about the stance of monetary policy in the period is supportive of the results on import price pass-through from the micro data.

Our simple decomposition can be used to summarise the determinants of inflation volatility in the 1930s. The variance of wholesale price inflation is the sum of the variances and covariances of the terms in equation (7):

$$\begin{aligned} Var(\pi_t) = {} & Var(\omega^m \beta \Delta \log m_t) + Var(\omega^m \gamma \Delta \tau_t) + Var(\varepsilon_t) \\ & + 2Cov(\omega^m \beta \Delta \log m_t, \omega^m \gamma \Delta \tau_t) + 2Cov(\omega^m \beta \Delta \log m_t, \varepsilon_t) \\ & + 2Cov(\omega^m \gamma \Delta \tau_t, \varepsilon_t) \end{aligned} \tag{8}$$

The results are shown in table 6. The residual accounted for 83.4 per cent of the total variance, import price changes accounted for 3.4 per cent, tariffs changes added 0.6 per cent and the covariance terms explained the remaining 12.6 per cent.

Table 6. *Decomposing Inflation Variance*

	Share of Variance (%)
Import price changes	3.4
Tariff changes	0.6
Residual	83.4
Covariances	12.6
Wholesale price inflation	100.0

Notes: This table shows a decomposition of the variance of wholesale price inflation based on equation (8) and dividing by $Var(\pi_t)$.

Our extrapolation from the micro to the macro level is, however, subject to a number of significant caveats. On one hand, there could have been a greater impact on aggregate wholesale price inflation for three reasons. One, the wholesale price of domestic goods that used imported inputs may have been affected. Two, the wholesale price of domestic goods that were substitutes for imports or domestic goods that were exported may have changed in response to variations in demand. Downs (1986, pp. 100-1) finds that the price of domestic substitutes rose in line with that of competing imports following the General Tariff. Three, the share of imported goods included in the wholesale price index is from 1935, after the depreciation and turn to protection. As these events might have lowered imports (de Bromhead et al., 2019b), the share of imported goods in the wholesale price index in the early 1930s may have been higher. These channels, which would strengthen the effect of the exchange rate and tariffs on wholesale prices, are not accounted for in our analysis.

On the other hand, we have only focused on one link in the supply chain, from import prices to wholesale prices. However, there is a link down the chain from exchange rates to import prices and a link up from wholesale prices to consumer or retail prices. If there was less-than-complete pass-through at the other stages

in the supply chain, then this would diminish the impact of exchange rates and tariffs on the pound in people's pockets.

V. Conclusion

How Britain escaped from deflation and contraction to inflation and expansion during the 1930s is poorly understood. An important strand of literature emphasises two major macroeconomic shifts: the break from the gold standard in 1931 and the turn to protection in 1932, which led to a drop in the exchange rate and a spike in the average tariff rate. In this paper, we explore how import prices and tariffs passed-through to wholesale prices. Our results suggest that pass-through was relatively high, albeit incomplete. In terms of import prices – a combination of world export prices and exchange rates – significant pass-through meant that deflation was intensified as devaluation did not overturn the slump of world export prices. In terms of tariffs, high pass-through meant that deflation was weaker than the counterfactual of constant protection. However, given the degree of duties and the share of imported goods in the wholesale price index, the direct effect of tariffs was relatively mild. Overall, our simple model suggests that price fluctuations in the United Kingdom during the 1930s remain largely unexplained.

Beyond the direct effects of pass-through from import prices and tariffs to wholesale prices, there are many interesting avenues for future research. First, there may have been indirect effects of pass-through from import prices and tariffs to wholesale prices. One indirect effect could be on the prices of domestic goods that used imported inputs, that were substitutes for imports or that were exported. Another indirect effect could be on inflation expectations. It could be that devaluation and protection raised expected inflation, which in turn, stimulated actual inflation. Second, pass-through from exchange rates to import prices and from wholesale prices to consumer or retail prices may have been other important channels through which devaluation and protection affected the macroeconomy.

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Appendix I: Tariff Barriers

To identify the tariff barriers that applied during the interwar period, we consult Parliamentary Papers (1938, pp. 208–15) that summarised the specific and general tariffs that prevailed in 1914 and subsequent changes up to 1937 and Parliamentary Papers (1938, pp. 8–9, 187–91; 1939, pp. 8–9, 185–90) that outlined changes between 1937 and 1939.

Import Duties Act 1932
Effective from: 1 March 1932
Tariff: 10 per cent
Applies to: Barley from the United States of America, butter from Denmark, eggs from Denmark, flour from the United States of America
Source: Parliamentary Papers (1932, p. 189)

Irish Free State (Special Duties) Act 1932
Effective from: 15 July 1932, 9 November 1932, 13 November 1933, 19 February 1936, 19 May 1938
Tariff: 20 per cent, 30 per cent, 40 per cent, 30 per cent, 0 per cent
Applies to: Bacon from the Irish Free State
Sources: Parliamentary Papers (1939, p. 153), Parliamentary Papers (1938, pp. 157–8), National Institute of Economic and Social Research (1943, pp. 27–8)

Ottawa Agreements Act 1932
Effective from: 17 November 1932
Tariff: 15*s*. per cwt., 1s./1*s*. 6*d*./ 1*s*. 9*d* per 120, 10 per cent, 2*s*. per qtr.
Applies to: Butter from Denmark, Eggs from Denmark, maize from the Argentine Republic, wheat from the Argentine Republic
Source: Parliamentary Papers (1933, pp. 150–3)

Beef and Veal Customs Duties Act 1937
Effective from: 16 December 1936
Tariff: 3/4*d*. per lb., 2/3*d*. per lb.
Applies to: Beef (chilled) from Argentine Republic, Beef (frozen) from Argentine Republic
Source: Parliamentary Papers (1938, p. 152)

Other
Effective from: 1924
Tariff: 11*s*. 8*d*. per cwt.
Applies to: Cocoa from British West Africa and British West India Islands
Source: Parliamentary Papers (1939, p. 57)

Effective from: 1924
Tariff: 14*s*. per cwt.
Applies to: Coffee from Costa Rica
Source: Parliamentary Papers (1939, p. 59)
Effective from: 20 April 1932, 22 April 1936, 27 April 1938

Tariff: 2*d*. per lb., 4*d*. per lb., 6*d*. per lb.
Applies to: Tea from British India
Sources: Parliamentary Papers (1936, p. 58), Parliamentary Papers (1939, p. 55)

Effective from: 1927, 11 September 1931
Tariff: 8*s*. 10*d*. per lb., 9*s*. 6*d*. per lb.
Applies to: Tobacco from the United States of America
Sources: Parliamentary Papers (1938, p. 209), Parliamentary Papers (1939, p. 77)

Notes

There were other legislative changes, such as to the Key Industry Duty and to the McKenna Duty, Abnormal Importations Duty and Horticultural Products Duty, but these did not apply to the goods in the sample.

The Import Duties Act 1932 laid the ground for an:

> "Import Duties Advisory Committee" to advise and assist the Treasury in the discharge of their functions under the Act, and empowered the Committee to recommend (a) additions to the free list, and (b) the imposition of "additional duties," over and above the general ad valorem duty, in respect of any goods which are "either articles of luxury or articles of a kind which are being produced or are likely within a reasonable time to be produced in the United Kingdom in quantities which are substantial in relation to United Kingdom consumption" (Parliamentary Papers, 1932, p. 121).

In order to identify which additional duties applied to the varieties of goods in our sample, we follow Albers (2020) and search the House of Commons Parliamentary Papers for "Import duties recommendations of the Import Duties Advisory Committee" and "Order". However, while hundreds of additional duties were recommended in the 1930s, none were identifiably applicable to the goods in the sample.

When tariff barriers were changed within the month, we apply the barrier that prevailed at the end of the month.

The Ottawa Agreements Act 1932 levied tariffs on eggs proportional to weight. The duty on eggs in shell were: 1*s*. not exceeding 14 lbs. in weight per great hundred, 1*s*. 6*d*. over 14 lbs. but not exceeding 17 lbs. in weight per great hundred and 1*s*. 9*d*. over 17lbs. in weight per great hundred. As the *Trade and Navigation Accounts* did not distinguish the quantity and value of eggs in shell by weight, we use the middle tariff of 1*s*. 6*d*.

The Ottawa Agreements Act 1932 applied to butter and eggs from Denmark, which were already subject to duty under the Import Duties Act 1932. As the National Institute of Economic and Social Research (1943, p. 47) explain, "General ad valorem duty [Import Duties Act 1932] is not chargeable on goods chargeable

under this part [Ottawa Agreements Act 1932]." Therefore, the Ottawa Duties were instead of, not in addition to, the Import Duties.

Appendix II: Unmatched Prices

The wholesale prices of several imported goods were reported in the *Board of Trade Journal* but could not be uniquely matched to the relevant import prices in the *Trade and Navigation Accounts*. The goods and the explanations are:

The *Board of Trade Journal* reported prices for "Iron Ore: Best Bilbao rubio 50 per cent". However, this couldn't be matched to the *Trade and Navigation Accounts* as only values, and not quantities, of iron ore were reported.

The *Board of Trade Journal* reported prices for "Tin: Straits". However, this couldn't be matched to the *Trade and Navigation Accounts* as imported quantities and values of tin from British Malaya were not separately reported.

The *Board of Trade Journal* reported prices for cotton "Yarns: American, 32's twist", "Yarns: American, 42's weft" and "Yarns: Egyptian, 80's weft". However, these couldn't be matched to the *Trade and Navigation Accounts* as imported quantities from the United States of America and Egypt were not separately reported.

The *Board of Trade Journal* reported prices for wool "Noils: Botany, noble combed, 64's average, clear". However, this couldn't be matched to the *Trade and Navigation Accounts* as imported quantities and values from Australia were not separately reported.

The *Board of Trade Journal* reported prices for "Hemp: Raw, Manila fair". However, this couldn't be matched to the *Trade and Navigation Accounts* as imported quantities and values from the Philippine Islands were not separately reported.

The *Board of Trade Journal* reported prices for "Timber: American figured oak". However, this couldn't be matched to the *Trade and Navigation Accounts* as imported quantities from the United States of America were not separately reported.

Appendix III: A Narrative Analysis of Changes to Tariff Barriers

Import Duties Act 1932

Motivation: On the introduction of the bill in the House of Commons on 4 February 1932, the Chancellor of the Exchequer, Neville Chamberlain, summarized the aims of the Import Duties Act:

> Before I come to the details of the Government's intended Measures, I think perhaps it would be convenient if I were to try to give to the Committee a very brief summary of the objects at which we are aiming, in order that they may perhaps get a better picture of the general scope and range of our intentions. First of all, we desire to correct the balance of payments by diminishing our imports and stimulating our exports. Then we desire to fortify the finances of the country by raising fresh revenue by methods which will put no undue burden upon any section of the community. We wish to affect an insurance against a rise in the cost of living which might easily follow upon an unchecked depreciation of our currency. We propose, by a system of moderate Protection, scientifically adjusted to the needs of industry and agriculture, to transfer to our own factories and our own fields work which is now done elsewhere, and thereby decrease unemployment in the only satisfactory way in which it can be diminished.[12]

Classification: As the primary aims of the Import Duties Act were to correct a balance of payments deficit and to improve the fiscal position, and because the tariff was relatively general, it is unlikely that changes in the wholesale prices of individual imported goods were a factor in the legislation. As a result, we classify this Act as *exogenous*.

Irish Free State (Special Duties) Act 1932

Motivation: Reflecting on the Irish Free State (Special Duties) Act 1932, the Secretary of State for Dominion Affairs, James Thomas, explained to the House of Commons:

> When it was necessary some few months ago to ask Parliament to give us the necessary powers and authority to impose these restrictions, I said, speaking on behalf of the Government, that we would welcome any and every opportunity that might present itself for discussion or negotiation that would bring this unfortunate dispute to an end. […] Therefore, having entered into that agreement, and the British Government being entitled to a sum of about £5,000,000 per annum, which was due to the British taxpayer, it was, as I have indicated, somewhat of a shock to find the Irish Free State repudiating their obligation.

[12] Hansard, HC Deb 4 February 1932, vol 261 c287.

> The Government faced the situation quite frankly. They said, "If there are any just or valid reasons why this money should be withheld, we are prepared to consider them." We examined every aspect of the question; we turned up every agreement that was made; we examined every document; and we came to the conclusion that this money was due. The money was withheld, and Mr. de Valera said quite frankly, without any attempt either to disguise his feelings or his intentions, "So far as we are concerned, we not only intend to withhold this money, but we believe that there is money due to us." That was a quite clear and straightforward explanation of his side of the case, and, having said that, he did not hesitate to express his views and give his reasons. We examined his side of the case, and we came to the conclusion that he could not justify that position. Therefore, having decided that we were entitled to this sum of money, having budgeted in our own national balance sheet for this money, and having ourselves undertaken the responsibility and liability of paying those who had loaned the money, we said, "We intend to take all the steps that are open to us to obtain what we believe is due to us."
>
> We were then faced with [the] question of the ways and means of doing it, and we came, very reluctantly, I repeat, to the conclusion that the only means open to us was to impose a tax upon certain imports coming into this country. When I introduced the Bill to the House, I explained that it was not intended as a vindictive policy. I explained to the House that, the moment we secured the amounts due to us, we would take off the duty. But I also made it perfectly clear that we would shirk no task, however unpleasant it might be, in obtaining the money. I made that absolutely clear to the House when introducing the Bill. As a result of the Order of the 12th July, we imposed a 20 per cent. duty on live animals for food, animals not for food, butter, eggs, cream, bacon, pork, poultry and game, and other meat of all kinds.[13]

Classification: As the Irish Free State (Special Duties) Act 1932 was a response to a dispute over debt, we classify this Act as *exogenous*.

Ottawa Agreements Act 1932

Motivation: On the third reading of the Ottawa Agreements Bill in the House of Commons on 3 November 1932, the Financial Secretary to the Treasury, Leslie Hore-Belisha, clearly explained the motivation for the legislation:

> What does the Bill do? It endeavours to complete the superstructure, the foundations of which were laid in the Import Duties Act. It was necessary to lay these foundations, not in order to satisfy any political nostrums, but in order to meet a practical necessity; in other words, to

[13] Hansard, HC Deb 8 November 1932, vol 270 c266-8.

> fulfil the mandate which had been imposed upon us by the electorate – to secure the Budget, and redress the adverse balance of trade.[14]

Classification: As the key motivations for the act were to strengthen the trade and budget balances, we classify this legislation as *exogenous*.

Beef and Veal Customs Duties Act 1937

Motivation: The legislation was drafted based on the policy set out by the Minister of Agriculture, Walter Elliot, in the House of Commons on 6 July 1936:

> As the House will be aware, my right hon. Friend the President of the Board of Trade is at present in negotiation with the Argentine Government on the terms of a trade agreement to take the place of that now in force. I cannot forecast the terms of any settlement that may be reached, but I am able to say that in any event Parliament will be invited, immediately after the Summer Recess, to pass legislation providing for the collection of Customs duties on imports of chilled, frozen and other descriptions of beef and veal from foreign countries.
>
> The Government are of opinion that if adequate provision is to be made in one form or another for the needs of the United Kingdom cattle industry, the aggregate financial assistance now given to it must be increased until such time as the conditions prevailing in the industry improve. They propose to seek the authority of Parliament to apply to the assistance of the industry such sums not exceeding £5,000,000 per annum as may from time to time be needed. Parliament will be asked annually to make provision for a sum not exceeding this amount. As an offset to this liability, the Exchequer will benefit to the extent of the revenue from the import duties to which I have referred.[15]

Classification: The legislation levied a tariff on non-Empire meat to finance a subsidy to the British livestock industry, which was subject to intense competition from overseas. As a result, we classify this Act as *endogenous*.

Other

Tea 1932, 1936 and 1938

Motivation: In the budget of 1932 the Chancellor of the Exchequer, Neville Chamberlain, re-imposed the tariff on tea, explaining:

> I propose to revive the duty upon foreign tea at the old rate, but the old preference of two-thirds of a penny per lb. seems to me to be totally inadequate to the present circumstances, and I propose to increase that to 50 per cent. making the duty on Empire tea 2*d*. a lb. This new preference will be the same as the preference originally was in the first years after the introduction of the system of preference, and it is notable

[14] Hansard, HC Deb 3 November 1932, vol 269 c1991.
[15] Hansard, HC Deb 6 July 1936, vol 314 c842.

> that, whilst the preference was subsequently reduced in 1922 to 1⅓ pence, and then again in 1924 to two-thirds of a penny, the proportion of Empire tea to the total consumption of the country fell, first from 90 per cent. to 84 per cent., and since the preference was abolished with the removal of the duty it has gone down to 81 per cent. I am hoping that with a 50 per cent. preference we shall see the proportion of Empire tea regain its former figure in the process of time, and that meanwhile some help may be afforded to the hard-pressed tea industries of India and Ceylon.[16]

The principal objective of the Chancellor in the budget of 1936 was to raise revenue to finance the additional costs of rearmament. On the increase in tea duty, Chamberlain simply stated that:

> I propose, also, to raise the duty on tea by 2*d*. a pound. That increase in the tea duty, which will operate as from tomorrow, will apply both to Empire and to foreign tea, thus preserving the existing preferential margin of 2*d*. a pound. I anticipate that the increased duty will give me this year £3,500,000.[17]

Under similar pressures in 1938, Chamberlain's successor, John Simon, also turned to the Tea Duty to raise revenue:

> I still have nearly £3,000,000 to find and a small contribution drawn from practically every home in the land will produce what is needed. I propose to raise the duty on all tea, Empire and foreign, by 2*d*. per pound. This will maintain intact the existing margin of preference of 2*d*. per pound and it is estimated that the extra yield this year will be £2,750,000, and in a full year £3,250,000. I well understand that even an extra halfpenny per week is a material and appreciable addition to the expenses of those with the smallest incomes. Why do I do it? I believe that there is a willingness and even a pride in the humblest homes to take a share in this rearmament outlay, for defending those homes from peril, just as much as in the homes of more comfortable and wealthy people.[18]

Classification: As the main reasons for raising the duty on tea were to raise the share of tea from the British Empire and to finance rearmament, we classify these tariff changes as *exogenous*.

[16] Hansard, HC Deb 19 April 1932, vol 264 c1437.
[17] Hansard, HC Deb 21 April 1936, vol 311 c56.
[18] Hansard, HC Deb 26 April 1938, vol 335 c66.

Tobacco 1931

Motivation: Phillip Snowden summarised the grave economic situation in the second budget of 1931:

> It is undoubtedly a fact that nationally we have, for some time past, been living beyond our means, and living to a considerable extent upon our capital. The trade depression of the last 10 years has reduced the yield of taxes and at the same time increased expenditure. Seven years ago the Unemployment Insurance Fund was paying its way. It was paying off debt. This year it is costing the Exchequer about £100,000,000. The national income has been falling rapidly. There are something like 3,000,000 persons, one-time producers, now inactive. Profits, upon which national revenue must largely depend, have fallen 20 per cent during the last two years, and in many industries wages are being paid out of capital. Now this is the problem that I have to solve, and it can be solved only in two ways, either by reducing expenditure or by increasing taxation – or by a combination of both. We have been under the delusion during the last few years, in these times of unparalleled depression, that we can maintain the expenditure of prosperous times. Our total national and local taxation is now very nearly one-third of the total national income. Now whatever measures you may take to restore solvency in our national finances, the country must face up to the position, and I am going to do it this afternoon.[19]

One of the goods to receive an increase in taxation was tobacco. The Chancellor explained:

> I have also selected tobacco as a suitable article to bear an increased duty in the present circumstances, and I propose that as from tomorrow the Customs Duty on imported leaf, that is the unmanufactured form of tobacco, shall be raised from 8*s*. 10*d*. per lb. to 9*s*. 6*d*. per lb. That is an increase of 8*d*. The rates of duty on other forms of tobacco will be increased in the same proportion. I estimate this addition will yield £4,000,000 in a full year, and £2,100,000 this year. I have no reason to anticipate that the whole of this increase will be passed on to the consumer.[20]

Classification: As the increase in tobacco duty was not influenced by changes in the wholesale price of tobacco but as a means of raising revenue, we classify this tariff change as *exogenous*.

[19] Hansard, HC Deb 10 September 1931, vol 256 c298.
[20] Hansard, HC Deb 10 September 1931, vol 256 c308.

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