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# A history of prices in Canada, 1840–1871: a new wholesale price index

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*Abstract.* We present a new monthly wholesale price index for Canada, 1840–71, comparing fluctuations in the Canadian macroeconomy with fluctuations in similar U.S. and British indexes. Canadian prices move through distinct phases: the 1840s rise in prices and the decline in the depression of 1848–49; the mid-century economic boom and the 1857 depression; U.S. Civil War inflation and apparent Canadian price insulation through a flexible exchange rate created by U.S. withdrawal from gold; and the non-inflationary boom following Confederation. After adjustment for the U.S. greenback issue, a broad coherence of Canadian, U.S., and British indexes suggests highly integrated commodity markets. JEL Classification: N20, N21, E31

*Une histoire des prix au Canada 1840–1871: un nouvel indice de prix de gros.* Ce mémoire présente un nouvel indice de prix de gros pour le Canada dans la période de 1840 à 1871. C'est un indice mensuel. À l'aide de cet indicateur, on décrit les fluctuations de la macroéconomie canadienne et on les compare avec les fluctuations d'indices similaires aux États-Unis et en Grande Bretagne. Les prix canadiens passent à travers plusieurs phases au cours de cette période. Les prix s'accroissent dans les années 1840 et chutent avec la dépression de 1848/1849; et puis il y a le grand boom victorien du milieu du siècle qui culmine en 1857; il y a de plus les périodes de l'inflation de la guerre civile américaine et l'immunisation apparente des prix canadiens par la création d'un régime de change flexible parce que les États-Unis se retirent de la monnaie étalonnée sur l'or; et enfin la période sans inflation du boom qui suit la Confédération. Si l'on ajuste pour tenir compte de l'affaire des « greenbacks », il y a cohérence des divers indices canadiens, américains et britanniques. Voilà qui suggère des marchés de biens fortement intégrés.

We wish to thank the research assistants who have worked with us over the years and our colleagues of the Economic History workshop at the University of British Columbia. We would also like to thank Louis P. Cain for helpful assistance. An earlier version of this paper was presented at the World Congress of Cliometrics, where we also received encouragement and useful advice. We would also like to thank the editor for helpful suggestions. Financial aid from the SSHRCC and UBC Small Grants funded much of this work.

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## 1. Introduction

There is little quantitative documentation of the macro-economy of Canada in the mid-nineteenth century. We previously reported estimates of the money supply in the period 1840–71 that suggest it was a period of remarkably high long-term aggregate income growth punctuated by severe instability (Paterson and Shearer 1992). In this paper we take the next step in filling the documentation gap by presenting a new price index for Canada of this period. By comparing the Canadian price index with the indexes of the United States and Britain, we identify periods in which the Canadian price level moved in harmony with those of major trading partners and periods of considerable disparity. Despite episodes of apparent disparity in price level movements we argue that the new wholesale price index provides evidence of the integration of Canadian markets for tradable goods with those of the North Atlantic economy. We also identify major external price shocks that were transmitted to the small, open Canadian economy. In this paper ‘Canada’ is defined in its pre-Confederation sense of the British ‘Province of Canada,’ essentially the southern parts of modern Ontario and Quebec.<sup>1</sup>

There has been some research on pre-1870 Canadian prices. Ouelette and Hamelin (1982) reported long annual series of agricultural prices for urban and rural Quebec, from 1760 to 1850. For the period 1843–67 William Horowitz (1967) collected September prices for 21 agricultural commodities from Montreal farmers’ markets. Michell (1931) compiled prices from Toronto farmers’ markets for 32 agricultural commodities from 1848 to 1868 and for 70 general commodity prices from newspaper sources for 1868 to 1890. These were used to construct unweighted price indexes (geometric means): an annual index of 15 agricultural prices from 1848 to 1868, a monthly index of commodity prices from 1869–1918 and an annual index of commodities from 1868–1925. Despite its narrow coverage, the Michell 15 commodity index is the standard price index for Canada in the mid-nineteenth century. It has been used, for example, by Lewis and Urquhart (1999) in their recent paper on the standard of living in Upper Canada and by Officer and Smith (1968) in their analysis of the effects of the Reciprocity Treaty of 1854–66 (see also Leacy, 1983; Urquhart and Buckley 1965). Recently, Paquet and Wallot (1998) have produced two very useful long annual prices indexes for Montreal and Quebec City. These are unweighted 13-year moving annual averages.

1 The Province of Canada was created by the Act of Union in 1840 (proclaimed in 1841), which joined the two British North American colonies of Lower Canada and Upper Canada, although culturally and for some legal and administrative purposes the old distinction remained in place. In 1867 Canada joined with two other colonies, Nova Scotia and New Brunswick, to form the new country, the Dominion of Canada. The confederation was extended in 1871 to include British Columbia, Prince Edward Island, and Manitoba.

The new wholesale price index differs from prior research in several respects. First, it is much broader in scope than other indexes for the same period. Drawing on wholesale prices reported in contemporary Montreal newspapers, it includes a wide array of manufactured goods of both domestic and foreign origin. Montreal was the commercial and financial centre of Canada and, for general trade, the most important port at this period. Second, we extend the price analysis back to 1840 albeit with diminished coverage of commodities and observations. Third, the new price index is weighted. Last, it is monthly. Given Montreal's strategic position in the Canadian economy and in the flow of Canadian trade and the increasingly effective possibilities for commodity arbitrage among internal markets, we take the new index as representative of wholesale prices in urban Canada, 1840–71. Furthermore, in the absence of a basis for computing a more comprehensive index using a more sophisticated weighting system, we argue that the new wholesale price index is the best available index of the Canadian commodity price level in this period. In the absence of data on the prices of services it is impossible to construct a comprehensive index of the price level.

## 2. The markets and the price data

Prices from two levels of markets were reported in Montreal newspapers of this period. Horovitz (1967) and Ouelette and Hamlin (1982) used prices reported for farmers' markets, large market halls managed by the city with stalls for local farmers, butchers, and fish merchants.<sup>2</sup> These markets provided local produce for local consumption on standard market days, servicing both consumers and local grocers. In contrast, the commercial wholesale market was a small network of commodity brokers and commission merchants standing as intermediaries between local producers of export goods and foreign buyers, on the one hand, and foreign suppliers of import goods and domestic buyers, on the other. The wholesale market included a much wider array of commodities than did the farmers' markets. Wholesale prices were reported in periodic circulars for the advice of clients at home and abroad and were also published in local newspapers under various headings but most commonly as 'Wholesale Prices Current' (see appendix A for information sources). The format had wide international usage at this time. Timber prices were separately reported for the export market by the firm Forsyth and Bell. These were posted prices for Quebec City. We have used them to represent Montreal prices of lumber for which we have no direct observations.

Explorations of the data for the 1840s show that prices for similar commodities in the wholesale and farmers' markets followed broadly similar paths over time, but the correlation is weak, suggesting limited trading between the markets.

2 There were two farmers' markets in Montreal. St Ann's market was in the port and Bonsecours market served the eastern parts of the city. For a description see Bosworth (1839) and Sandham (1870). Michell's prices for his pre-1868 indexes appear to have been from similar markets in Toronto.

Deficiencies in the data render precise statements about the relative behaviour of the two sets of markets problematic, but prices in the farmers' markets appear to have been less flexible and less prone to extreme fluctuations than those in the wholesale market. It is possible that the small scale of the transactions in the farmers' markets rendered them partially immune from seizure by speculators during the frenzied speculative episodes. However, the relative independence of prices in the two markets must have been rooted in significant differences in the quality of the products traded even though their labels were the same.

The price data used in this study are the low prices reported in the wholesale commodity market for the third Thursday of each month, or the quotation for the nearest available day for which we have a report. Prior to the currency reform of 1858 wholesale prices were reported in pounds currency (£1cy = \$4.00), subsequently in dollars. Timber prices were reported in pounds sterling (£1 = \$4.867) throughout. In constructing the index we expressed all prices in a common currency, the Canadian dollar converted at the official exchange rates. Some weights and measures changed during the period and appropriate adjustments have been made to the prices. The range of commodities for which there is detailed and consistent price information varied over the period (see appendix A).

### **3. The Canadian wholesale price index**

#### *3.1. Weights*

The problem of weights for a Canadian price index is perplexing, since there are no detailed aggregate consumption or production statistics for Canada during the period 1840–71 to provide guidance. With some reluctance, our starting point in developing the index is the weights from the widely cited Warren-Pearson wholesale price index for the United States for broad categories of goods (1933, 13). For detailed commodity weights we have used the recent Hanes (1998) extension of Warren-Pearson. Quite apart from the fact that they are for the United States rather than Canada, the Warren-Pearson weights are less than satisfactory. Their starting point was the 1890 weights developed for the U.S. Bureau of Labor Statistics wholesale price index. These weights were based on judgments about the relative importance of commodities in the general trade of the United States (U.S. 1925). Warren and Pearson made similar judgments for 1789, then made a linear interpolation to produce variable weights for the years in between.<sup>3</sup> The weights that this interpolation implies for 1855, the mid-point of our period, are used as the basic weights of the Canadian wholesale price index. Despite the arbitrary nature of the weights, the Warren-Pearson index has been widely used as a wholesale price

3 The primary difference was in the weight assigned to farm products: 35 in 1879 vs. 25 in 1889. The offsetting changes were spread among several categories, particularly fuel and light and metals (from 4 to 10 in each case) (Warren and Pearson 1933, 13).

index for the United States.<sup>4</sup> If the index is suitable for this purpose, and particularly if it can be used to reflect the price history of upper New York state, we believe that its weights can be applied to Canada at that time. In any case, experimentation shows that minor changes in weights do not alter the story told by the new price index.

The Warren-Pearson index includes 11 major commodity groups. We do not have Canadian prices for all eleven groups and have adjusted the weights accordingly. Canadian prices for textiles and clothing and house furnishings are not available for any part of the period. At most, there are prices for 9 of the 11 groups and for some years in the 1850s, when there is a particular data gap, fewer. For these years the index is possibly less reflective of the true movement of the price level than for the other years. However, experimentation shows that when the less comprehensive indexes are extended through the 1860s, they track the more comprehensive index using the 1860 weights quite closely. Within each commodity group the individual commodities for which there are prices varies over time and frequently differs slightly from those included in the Warren-Pearson index, requiring appropriate adjustments in the subcategory weights.<sup>5</sup> As a result, the new wholesale price index is actually a series of linked indexes, each for a shorter period. The Warren-Pearson major category weights for 1855 and the corresponding weights used here for various subperiods are shown in table 1 (see appendix A for subcategory weights). The average for the year 1860 is the base. All other indexes used in this paper are also converted to an 1860 base.

Perhaps the most important gap is the lack of Canadian prices for textiles, particularly for cotton and woollen products.<sup>6</sup> To correct for this gap we sought prices in Britain, Canada's main supplier of textiles in this period. British monthly data are available for prices of raw cotton, but data for the 1840s showed that prices of raw cotton fluctuated much more widely than prices of cotton manufactures, and in this period Canada did not import significant amounts of raw cotton. For part of the period, from January 1858 onward, the British price of linen yarn is available. Although linen directly accounted for a small portion of Canadian imports of textiles, there is some qualitative evidence that the price of linen products fluctuated in sympathy with the prices of cotton and woollen goods, which were, to some degree, substitutes. Thus, for example, the *Belfast Linen Trade Circular*

4 Warren-Pearson prices are reported to have come primarily from New York City (U.S. 1925).

5 For instance, in the food products category the beef entry is exactly the same as the Warren-Pearson commodity: the price of salt beef (mess) in barrels. On the other hand, for Canada we do not have separate prices for hams, mess salt pork, and prime salt pork, and we use the price of Canadian mess salt pork to cover all three. In practice, given the overall importance of agricultural commodities and processed foodstuffs to the index, minor variation in the weights does not produce significant differences in the overall pattern.

6 The domestic manufacture of textiles (excluding clothing) accounted for 4.5% of the Gross Value of Product of all Canadian manufacturing in 1870 – post-Confederation definition. Urquhart (1993, 242–3). This required substantial imports of cotton, woollen, and linen cloth and yarn.

TABLE 1  
Major category weights

	Warren-Pearson	Paterson-Shearer				
	1855	1840–49	1850–55*	1855*–57	1858–59	1860–71
Farm Products	28.78	32.06	44.59	41.16	36.36	29.07
Processed Foodstuff	25.75	28.70	39.91	36.84	32.53	26.01
Leather Products	4.38	4.88	0.00	0.00	0.00	4.42
Fuel & Light	7.73	8.62	0.00	0.00	0.00	7.81
Metal Products	7.73	8.62	0.00	0.00	0.00	7.81
Building Materials	10.00	11.14	15.50	14.30	12.63	10.10
Drugs & Chemicals	0.81	0.90	0.00	1.16	1.02	0.82
Alcohol (Spirits)	3.76	4.18	0.00	5.37	4.75	3.80
Miscellaneous	0.81	0.90	0.00	1.16	1.02	0.82
Textiles and Clothing	79.24	0.00	0.00	0.00	11.67	9.33
House Furnishings	1.00	0.00	0.00	0.00	0.00	0.00
Total	99.99	100.00	100.00	99.99	100.00	100.00

\* Weights change in June 1855.

(22 Oct. 1867) noted that ‘The “cotton famine” has now forced many to use linen who previously used cotton; and these, I hope we have secured as permanent customers for our linen manufactures.’ Furthermore, on an annual basis, movements of the British price of linen yarn match, almost exactly, the unit value of Canadian imports of raw wool. Thus, while the price of cotton goods would be desirable, the use of the price of linen as a proxy seems reasonable.<sup>7</sup>

### 3.2. The Canadian wholesale price index

The new wholesale price index for Canada (see appendix B for estimates), as presented in figure 1, stands about 12% higher in 1871 than in 1840. This suggests a modest long-run average rate of inflation, but that inflation rate was not stable. Indeed the most striking feature of the index is its extreme volatility. However, it must be emphasized that the range of available prices is very narrow, which may accentuate this volatility. The price index covers the period of the reorientation of the Canadian economy from extreme dependence on Britain to virtual integration with the United States. The fluctuations of the price index are generally coincident with deviations from trend in the money

<sup>7</sup> The inclusion of the price of linen as a proxy for textile prices causes very little change to the wholesale price index for most of the period. The exception is a few months late in the war period and in its immediate aftermath when it raises the index about 4 to 5%. A high proportion of all textiles imported came from Britain. Of imported cotton textile goods 90% were from Britain in 1860 and varied little over the period. Similarly most wool cloth and woollen goods also came from Britain. Together these two classes made up 82.9% of all clothing and textile goods imported. Linen accounted for most of the remainder of approximately 17.1%, which was also mainly from Britain. Canada (various years) *Trade and Navigation Reports*.

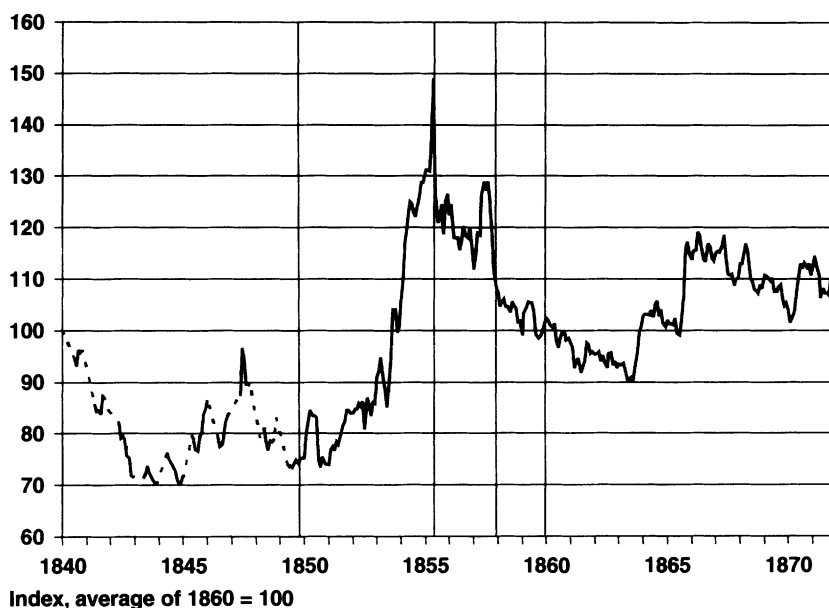


FIGURE 1 Canadian wholesale price index, monthly, 1840–71

NOTES: Vertical lines indicate changes of weights. Broken lines indicate interpolations, 1840–49.

supply. These fluctuations etch out pronounced cycles, the dominant episodes of which are as follows:

- the economic boom of the mid-1840s, which is followed by severe depression;
- wild price fluctuations during the great Victorian boom and bust of the 1850s;
- the disturbances brought about in the first half of the 1860s by the spillover effects of the U.S. Civil War; and
- the non-inflationary economic boom of the late 1860s, which was also marked by short-run price instability.

These four episodes are examined in section 5 and presented in the figures by period.

#### 4. International channels for the flow of price information

Canada was a small open economy on a metallic monetary standard. It was a price taker in world markets both for export goods and for import goods, so fluctuations in the price levels of trading partners were transmitted to Canada through international trade. In this important sense Canadian markets were integrated with others of the North Atlantic economy (Paterson and Shearer 2001a; Lower 1973).



Markets respond to news: the flow of information about commodity prices. Basic to the setting of wholesale prices in Montreal was the transmission of information from central markets to peripheral ones such as those of Canada. At the beginning of the period, the responsiveness of Canadian markets to U.S. and, particularly, British markets were sluggish because of the time required for the flow of information. Canada's export and import trade was predominantly with Great Britain, and that trade was carried in sailing vessels. However, the development of the ocean-going steamship had separated the flow of information from the flow of goods. Fast steamer to Boston or New York sent important information, perhaps in 11–14 days plus the variable time between the event's being reported and the mail steamer's departure. The information was then carried overland by express routes to Montreal, perhaps an additional 2–4 days. In the summer, steamers were fortnightly; in the winter, monthly. The time elapsed in the flow of market information in the mid 1840s can be inferred by comparing the dates at which price information was published in Montreal and the dates that it left Liverpool.<sup>8</sup> During the shipping season the average lag was about 19 days; in the winter it would have been much longer. For this reason, in the early 1840s we expect Canadian prices adjustments to lag behind the British prices during the shipping season in the neighbourhood of two to three weeks, a lag that is difficult to observe systematically in monthly data but that would have given Canadian markets a small measure of independence.<sup>9</sup>

The situation changed in the late 1840s as railways crept inland from Atlantic ports and southward from Montreal, gradually shortening the distance for mail and express shipments by slower, older, overland methods. More important, the telegraph reached Montreal by way of Buffalo and Toronto in early August 1847. Thus, by late 1847 the transmission of valuable commercial information, such as the changes in prices, was virtually instantaneous between the Atlantic coast and Montreal. There was now a communications basis for a high degree of integration of Montreal markets with corresponding American ones, although there were still formidable barriers in British, Canadian, and U.S. trade policies. The frequency of mail steamers from Great Britain increased, particularly as competitive shipping lines emerged, reducing the trans-Atlantic information lag. Finally, in 1866 the Atlantic cable was successfully laid. Then there was a virtually instantaneous flow of valuable commercial information from Britain to Canada; Canadian markets should then have been more closely integrated with British ones.

8 This information is from various Montreal and British newspapers. Private information presumably would have reached Montreal merchants somewhat more quickly.

9 In the wheat and flour markets we can observe the lag very clearly in data of higher frequency. See Paterson and Shearer (2001a).

## 5. The Canadian price level, 1840–71

In this section we review four significant episodes in Canadian price history of this period. In doing so we compare the Canadian wholesale price index with those of the United States and Britain. Too much attention should not be given to small variations in the relative price movements given the imperfections in all three series.

### 5.1. *The boom and depression of the 1840s*

Two propositions have been advanced about the 1840s in Canada, both of which we have challenged elsewhere (Paterson and Shearer 2001a). One is that the Montreal price of wheat was determined in Canada, not in Britain (McInnis 1992, 26–36). The other is that the depression of the late 1840s was not a severe commercial depression but a short-term transition fuelled by a pessimistic psychology generated by the repeal of the Corn Laws (Norrie and Owram 1991, 213). We propose not to elaborate on these arguments here but rather to draw attention to the wild swings in the Canadian price level in this period, swings that our analysis suggests were induced by fluctuations in British prices. These swings were particularly pronounced in agricultural prices. In order to make the relevant comparison the Warren-Pearson price index for the United States and the Klovland-Sauerbeck index are taken as representative of American and British prices.<sup>10</sup> Klovland (1993) has recently gone back to the original sources and recalculated the Sauerbeck index to provide monthly observations.

The economic expansion of the mid-1840s is much commented on in the historical literature. The remarkable British market in railway shares, railway expansion in Britain and the United States, and the dramatic rise in food prices consequent on the Irish potato famine and European grain crop failures fuelled economic activity on both sides of the Atlantic. What is less well appreciated, especially in the Canadian case, is the depth of the depression that preceded and followed it.

Created in 1841, the Province of Canada began life with an almost stagnant economy and a continuing slump in prices that was not reversed until 1843. As a reflection of the depression, the wholesale price index fell from about 100 in January 1840 to 71 in late 1843 (figure 2). The drop in agricultural prices was even more severe, from 106 to 64 over the same 35-month period. As we shall

10 The Klovland-Sauerbeck wholesale price index closely corresponds to a new Liverpool wholesale price index. For details see Paterson and Shearer (2001b). Three British price indexes cover all or part of the period 1840–71. The Gayer-Rostow-Schwartz index terminates in 1850 and so is of little assistance (Gayer, Rostow, and Schwartz 1953). The Sauerbeck index extends from 1846 onward, and the Rousseaux price index covers the entire period 1840–71 (Mitchell and Deane 1962). The Gayer-Rostow-Schwartz index is weighted, but the latter two are not. All are annual indexes.

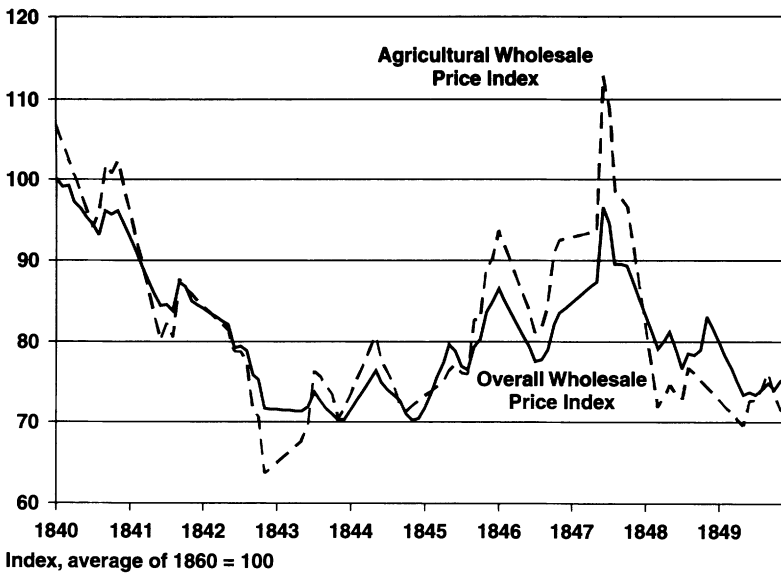


FIGURE 2 Agricultural and overall wholesale prices, monthly, 1840–49 (adjusted for gaps)

see, the tyranny of volatile agricultural prices over the price level was a characteristic of Canada's mid-nineteenth-century price history.

An intense boom followed on both sides of the Atlantic. However, unlike the economic expansions in Great Britain and the United States, Canada's boom of the mid-1840s was not widely based. Domestic canal building, funded by the so-called Sydenham loan, did raise public works expenditures sharply in the years 1842–44, but the spending then petered out. Attempts to finance Canadian railway construction in the years 1844–46 were a notable failure, and a broad construction boom did not occur. Rather, the Canadian boom at this time was essentially an agricultural market phenomenon, with some resonance in the timber market. Moreover, the ragged up and downs of the Canadian wholesale price index in the mid-1840s is a direct product of the wild gyrations of the British breadstuffs market. Figure 3 compares the Montreal price of flour with the price of Canadian flour in Liverpool. The two series move in tandem, with four successive peaks in 1844, 1845, 1846, and 1847 and deep intervening troughs. The prices of imported manufactured goods were much less volatile, moderating the fluctuations in the wholesale price index somewhat and producing corresponding swings in the terms of trade and hence in real income. The collapse of the boom in 1847 was of devastating proportions, with profound long-term implications for Canadian economic policy and for the Canadian constitution. The money supply contracted for two successive years, the prices of all exports declined sharply, and wheat and flour prices reached their lowest levels of mid-century – and the annexationist movement, initiated by the repeal of British preferential tariff protection, gained powerful popular support.

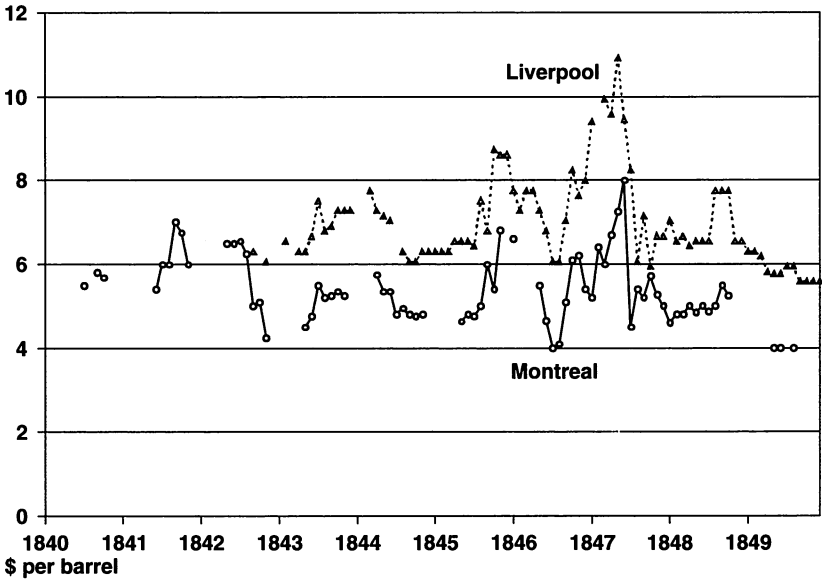


FIGURE 3 The price of Canadian flour at Montreal and Liverpool, monthly, 1840–49

### 5.2. The great Victorian boom and bust

The evidence suggests that the Canadian economy went through a period of major realignment in the early 1850s from almost complete dependence on Britain to close integration with the United States. This was associated with the building of the new north-south railways and the institution of the Reciprocity Treaty. From the slow recovery from the depression of 1847–49, the Canadian economy was soon catapulted into the great boom of the mid-1850s. In Britain it was evident by late 1851 in the form of a building boom. This put upward pressure on Canada's timber prices (Cooney 1960, 257–69) but also on some key import prices, such as those of iron and metals products. Although hostilities in the Crimea did not begin until the spring of 1854, pre-war posturing interrupted the flow of grain from Russia to Britain, and in late 1853 Liverpool agricultural prices rose sharply. Given the importance of agriculture and timber to Canada, it is not surprising that the Canadian wholesale price index also took a remarkable jump in late 1853. The result was another price-fuelled Canadian boom. However, this boom was more broadly based than that of the mid-1840s because of the coincident building of the Grand Trunk Railway, up to that time the world's longest railway project (Currie 1957).

What is surprising about the comparative behaviour of price levels during the great Victorian boom is the divergent paths followed by prices in Britain and those in North America (figure 4). British prices sagged through 1854 and early 1855, whether measured by the Klovland-Sauerbeck or a special

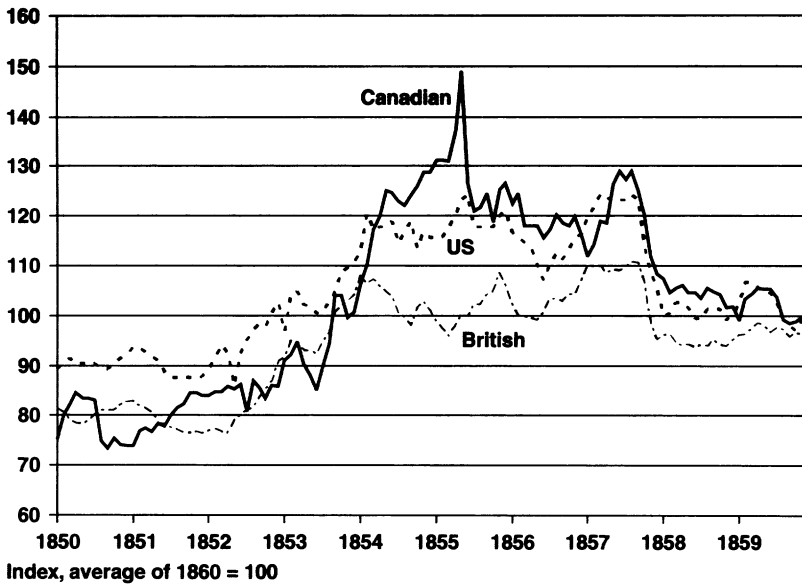


FIGURE 4 Canadian, US and British prices, monthly, 1850–59

Liverpool price index,<sup>11</sup> whereas North American prices remained high until 1856. Canadian prices, in particular, seem to soar, unconnected to those in Britain or the United States. Was this a real phenomenon or an aberration resulting from the deficiencies of the Canadian wholesale price index for the years 1850–mid-1855? As seen in appendix A the bundle of goods is severely restricted, giving excessive weight to agricultural prices. When the broader commodity bundle is reintroduced, the indexes again converge. One of the characteristics of the 1850s boom in all three North Atlantic economies is the three-peaked nature of its last phase. The peaks were separated in each country by substantial troughs of relatively short duration, but beyond what is normally considered the harvest cycle, rising to a final peak before the financial crisis of 1857. When the crisis came in September of that year, prices in all three economies plunged together into the subsequent depression.

### 5.3. The U.S. Civil War years

The most dramatic event in the price history of the North Atlantic economy in this period was the American greenback inflation. Throughout the 1860s and 1870s Canada and Britain were gold standard countries. The U.S. Civil War

11 For other purposes we have computed a wholesale price index for the port of Liverpool. See Paterson and Shearer (2001c). The agricultural component of this index is used below in table 2. It is the geometric mean of ten agricultural goods prices, including several types of grain and flour, some of Canadian origin.

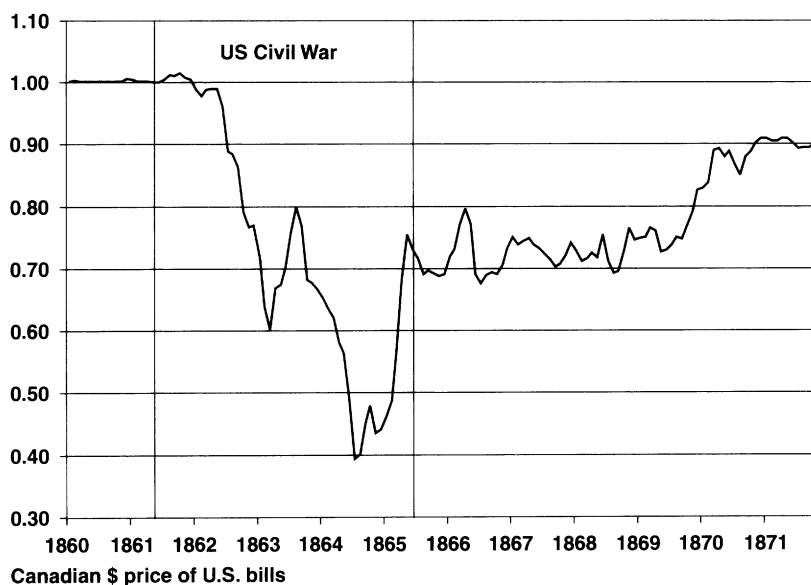


FIGURE 5 Canadian-U.S. exchange rate, monthly, 1860–71

began in April 1861 and quickly confronted the Union government with serious financial requirements. A decision was taken to fund the war effort largely by borrowing (to shift part of the cost of the war to future generations), and part of that borrowing involved the issuance of so called 'greenbacks' as legal tender currency. The United States immediately suspended gold convertibility, a suspension that lasted from January 1862 until January 1879. The issuance of inconvertible greenbacks had two effects of importance to Canada. Within the United States it produced a severe inflation. Externally, it placed the United States on a flexible exchange with its major trading partners. In Montreal the price of the U.S. dollar fell sharply, reaching a depth of \$.40 CDN in mid-1864 (figure 5).

One important consequence of the flexible exchange rate regime was the substantial insulation of the Canadian price level from the greenback inflation – at least until the end of the war. Although the American price level rose sharply from 1862 through 1864, the Canadian price level fell and, despite a jump in late 1863, was about the same in 1865 as it had been in 1860. This is illustrated in figure 6, in which the Canadian wholesale price index is compared with U.S. wholesale prices, where the U.S. index is converted to Canadian dollars at the market exchange rate. For Canadians and Americans making decisions about cross-border commodity trade it was exchange rate adjusted U.S. prices that were relevant. Failure to recognize this has led at least one pair of economists astray. In their classic reassessment of the Reciprocity Treaty of 1854, which established free trade between the United States and Canada in

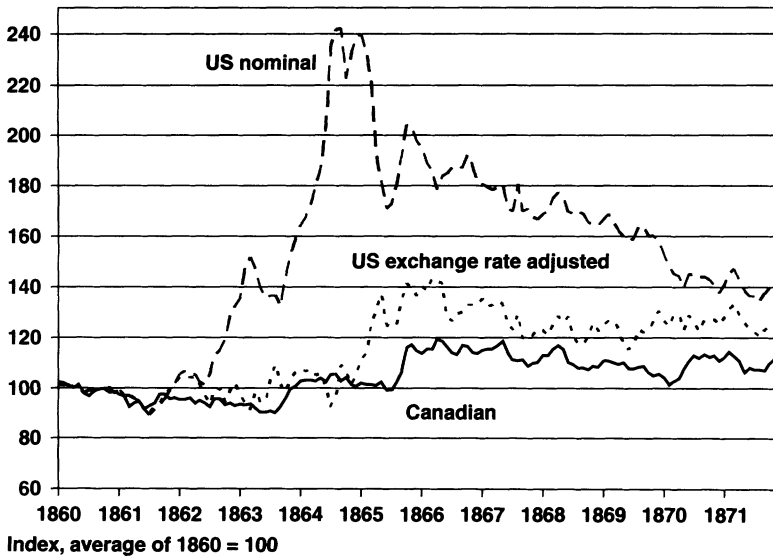


FIGURE 6 Canadian and U.S. nominal and exchange rate adjusted prices, monthly, 1860–71

natural resources and agricultural goods, Officer and Smith (1968) conclude that in the absence of free trade the differential rate of inflation ‘would have been sufficient to overcome any reasonable tariff’. This ignores the associated devaluation of the American dollar. With the appropriate exchange rate adjustment, Canadian and U.S. prices follow broadly similar paths during the U.S. Civil War period; contrary to Officer and Smith’s conclusion, relative inflation in the United States cannot be used to explain the trade flows of these years. Indeed, this episode is interesting historical evidence of the potential insulating properties of a flexible exchange rate for a small, open economy.

When looked at more closely, however, the relative behaviour of Canadian, American, and, we might add, British price indexes in the early 1860s was unusual. In 1860 and early 1861 wholesale prices in all three countries declined slowly and in close concert but, following the outbreak of war in April 1861 the close coherence disappeared. After an initial jump in all three series, the Canadian price index resumed its steady decline until mid-1863; the British price index jumped to a considerably higher level about which it fluctuated for the duration of the period; and the U.S. price index (adjusted for the exchange rate) was extremely volatile. Were these relative movements real or a product of the imperfections of the indexes?

Food and agricultural prices in both Britain and Canada continued their downward movement after the outbreak of war in the United States (see table 2). The jump in the overall British index relative to that of Canada was due to factors other than the prices in foodstuffs. The explanation appears to be due to the construction of the Klovland-Sauerbeck index, which uses raw input

TABLE 2  
Agricultural goods price indexes, annually, 1860–1871

	Warren-Pearson	Paterson-Shearer	
	U.S.A. (exchange rate adjusted)	Liverpool	Canada
1860	100	100	100
1861	98	98	93
1862	101	90	84
1863	102	79	76
1864	108	79	94
1865	126	83	110
1866	131	95	133
1867	126	107	129
1868	130	106	129
1869	126	95	120
1870	128	90	123
1871	120	99	121

NOTES: U.S. prices are exchange rate adjusted. The Liverpool wholesale agricultural price index is the geometric mean of nine wholesale prices of commodities: Canadian and U.S. salted beef and pork; Argentinean leather; U.S. tobacco leaf; domestic (British) oats and wheat (red); and Canadian wheat (spring) and flour (extra-superfine).

SOURCE: Warren-Pearson (1933, 26–7) and Paterson and Shearer (2001c).

prices, not finished goods prices, in the textile category (Klovland 1993, 225). Between August 1861 and August 1862 the price of raw cotton in Liverpool more than doubled, owing to the sharp decline in raw cotton imports. The U.S. price index uses finished textile goods and the Canadian one a proxy for finished textile prices. As noted earlier, finished textile product prices rose neither as early as the raw cotton price nor nearly to the same extent.<sup>12</sup>

With respect to U.S. prices, the apparent volatility of the exchange rate adjusted index may be an illusion, a product of the volatility of the foreign exchange market not sensitively reflected in wholesale prices. However, even if we discount the apparent volatility of U.S. prices, a widening gap appeared between Canadian and American wholesale prices. It seems unlikely that Canadian and American commodity brokers were unaware of possible profits from cross-border arbitrage, particularly in agricultural commodities, or that it took them twelve or more months to react to them. Wartime conditions may have disrupted normal marketing arrangements, including those governing cross-border trade. Was there an implicit or explicit trade restriction at the border? While the international trade statistics of the period are confusing, they do not support such an interpretation (Officer and Smith 1968, 600; Ankli 1971, 1–20).

12 On a yearly basis U.S. textile goods prices, adjusted for the exchange rate, were approximately the same until 1863, when they rose by 20%. They actually declined in 1864. The significant rise was not registered until 1865 (Warren and Pearson 1933, 26–7, 32–3).



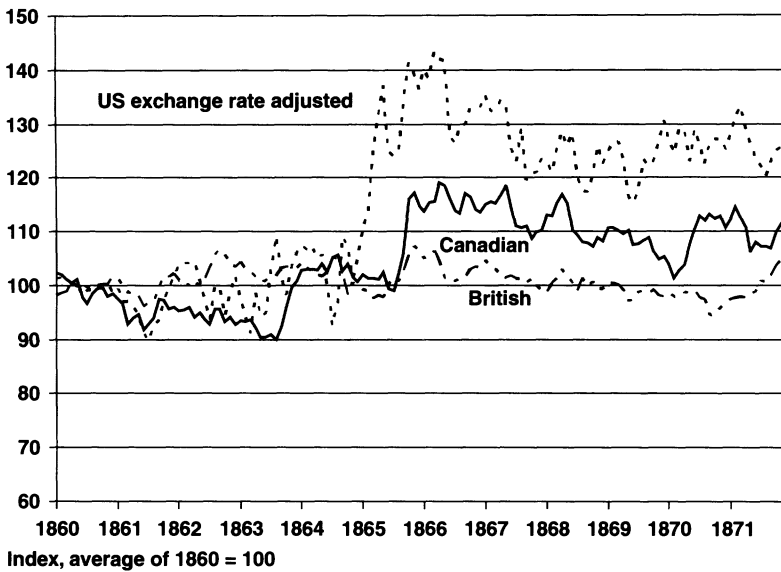


FIGURE 7 Canadian, U.S., and British prices, monthly, 1860–71

The Canadian wholesale price index, as noted, drifted downward through the early 1860s, led by the agricultural goods prices. All commodities experienced a continuous price decline, the only exception being that of building products, including timber. The fall in the prices of agricultural goods in Liverpool accelerated to a trough in 1863–64, when the index was 20% below its 1860 level; Canadian agricultural prices similarly fell by 24%. U.S. farm and overall foodstuff prices appear to have remained high in the first 18 months of the war (but not significantly cereal prices, which declined in parallel with those in Canada). By early 1863 Canadian agricultural prices had shaken loose from their apparent attachment to still declining British agricultural prices and began to rise, to be again in rough correspondence with the exchange rate adjusted U.S. prices.

One great price anomaly of the early 1860s did, however, occur in the agricultural sector. In order to see this we construct a Liverpool monthly price index of agricultural goods (see table 2). A succession of small British wheat harvests kept British grain prices high in 1860–62 (Lawes and Gilbert 1893). Canadian and U.S. merchants responded. U.S. exports of wheat and flour to the Britain of 160,000 hundredweight in 1859 and 6.497 million in 1860 to 16.150 million in 1862, a surprising reaction of a country entering a full-scale war (U.S. 1976, 899). Canadian gross and net exports of wheat reached a high comparable to that of the 1850s boom but only for two years (Canada, Trade and navigation accounts, various years). The *Montreal Board of Trade Reports* (1860–63) indicate that by 1863 the export of grain and flour through the port was about 13% of North America's total, straining the port to

capacity. (Before the war Montreal typically handled less than 9% of continental exports). American breadstuffs were being shipped to Europe by way of Canada. The Union, of course, was denied the use of the Mississippi, forcing other routes to be exploited more than in the past.<sup>13</sup> Despite the rise in the British price of wheat and flour and despite the North American response of increased shipments, North American breadstuff prices did not rise to nearly the same degree. In fact, the price gap between Chicago and Montreal spring wheat, on one hand, and London and Liverpool wheat, on the other, was greater than at any other time in this mid-nineteenth-century period.<sup>14</sup>

The relative behaviour of the price indexes of Canada, the United States, and Britain in the closing stages of the U.S. Civil War is also interesting. Over 50 months from February 1863 wholesale prices rose from 78.9 to 114.1 – a rate of change unprecedented except by that of the 1850s. When the U.S. price index jumped to 242 in August 1864, the exchange rate adjusted sensitively, keeping the exchange rate adjusted price index reasonably stable. The exchange rate appears to have been determined by the relative behaviour of price levels. However, the subsequent recovery of the American dollar from \$.462 CDN in January 1865 to \$.755 CDN in May was not accompanied by an equally sharp drop in the price level. Apparently, the recovery of the exchange rate change was ‘spontaneous,’ induced by factors other than the price level. In any case, exchange rate adjusted U.S. prices rose sharply relative to Canadian and particularly British prices. While British prices remained at a very much lower level, the Canadian index eventually made a partial adjustment to the new American level. In contrast to the early stages of the U.S. Civil War period, Canada in the late stages experienced a sharp rise in prices, which followed the U.S. price rise, but not to the same extent and with a lag. If we abstract from these dramatic changes in the relative levels of the three price indexes in 1865–66, they subsequently track each other rather closely.<sup>15</sup> It is the relative adjustment in levels that begs for an explanation.

13 This raises the interesting possibility that in the early war years the United States was somehow dumping wheat to gather foreign exchange. Adding to the confusion American trade statistics show a dramatic increase of wheat imports from British North America, from 1.24 million bushels in 1859, to 4.63 million bushels in 1861, and 3.22 million in 1862 (U.S. 1894, 1497). This presumably represented wheat and flour in transit to Britain. Note that British North America includes the Atlantic colonies as well as Canada, although Canada was the major wheat growing and exporting region.

14 The contemporary statistician, William Elder of the U.S. Treasury, made the argument that there was a continuing incentive to export wheat even when the sterling price declined after 1863. This arose because of the receipt of gold equivalents, dependent on the rate of exchange, and the ability to pay off debt denominated in U.S. dollars that had been contracted before the greenback issue (U.S. 1865, 60).

15 If the indexes are recalculated so that 1871 = 100, the correspondence from 1866 on is close. If we ignore the 1865 discordance of levels, and again allowing for the undoubted deficiencies of all three indexes, the evidence is strong that commodity arbitrage was working well.

Part of the explanation may rest in changes in U.S. taxation, particularly the taxation of imports. Import duties, the traditional method of raising tax revenue, were increased at the beginning of the war and on several subsequent occasions. Internal taxation was introduced in a major tax bill on 1 July 1862. It involved a broad range of taxes, most of them in the nature of excise taxes, some specific duties, and some ad valorem tariffs (U.S. 1976, 1067–1150). Apparently initial enforcement was lax. Subsequently, revisions were made to the tax structure, including a major bill in 1864, and, of critical importance, administration of the tax system improved. Revenues went up accordingly, reaching a peak in 1866. This amounted to an increase from approximately \$40 million in 1861 to about \$90 million in 1866. While we do not attempt to estimate the effect of these new taxes on commodity prices, particularly on the Warren-Pearson wholesale price index, a crude indicator of the magnitude of the increase of a major portion of the taxes is customs duty revenue as a percentage of the value of commodity imports. The increase from 1861 to 1868 is dramatic going from approximately 13 to 46%. The tax rates applied to domestic production were not as draconian but were more comprehensive. Both the customs duties and the internal taxes would have raised the price level in the United States relative to both Canada and Britain. For the most part the new U.S. taxes were outside the agricultural sector. In agricultural goods the U.S. and Canadian wholesale prices are in rough accord after about 1863 (see table 2).

For Canada, a second change in U.S. policy was also important: the abrogation of the Reciprocity Treaty. The end of the treaty had long been anticipated. Notice had been formally given in March 1865 and the joint resolution of the U.S. Congress to end the treaty had been passed earlier in January. The treaty came to an end in March 1866. Canada's major exports that had previously entered the United States duty free now faced a stiff tariff. This should have depressed Canadian and perhaps increased American prices of those commodities covered by the treaty. However, these effects were swamped by the other developments in the closing stages of the U.S. Civil War, including the steady rise in effective U.S. commodity taxes, such that they cannot be observed in the raw data. The abrogation of the Reciprocity Treaty also appears to have had real macroeconomic effects. The Canadian money supply (our best indicator of aggregate economic performance) suggests that the Canadian economy stalled somewhat in 1866 following repeal of the agreement, and that this coincided with the peak in Canadian wholesale prices. Of course 1866 was no normal year in other respects, with the collapse of cotton prices and the financial crisis in May associated with the Prussian-Austrian war. This financial crisis was one in which Canada and the United States were not substantially involved (Kindleberger 1978, 131–2). The month of the crisis was, coincidentally, the peak of the post U.S. Civil War rise in prices in both the United States and Canada. The aftermath was a secular decline in wholesale prices in both countries that lasted for the rest of the decade.

#### 5.4. *The Confederation boom and beyond*

By the beginning of 1868 not only had the Canadian economy recovered from its lacklustre performance in 1866, but it began to exhibit accelerated growth, a boom that was to last for the remainder of the period and beyond, until about 1873–74. Growth of the monetary aggregate in the years from 1868 to 1871 was, respectively: 6.0%, 16.1%, 30.6%, and 19.4%. Similar movements are apparent in many other indicators, such as railway freight and passenger revenues.<sup>16</sup> This expansionary episode, named here the Confederation boom, altogether rivals the booms of the earlier years *except* in the behaviour of prices. It was a boom that began in years of deflation, and the continued but slow general downward trend in prices marked its first two years. The trough of the decline was reached in early 1870, and that was immediately followed by a sharp increase in the wholesale price index. This sharp increase was exclusively a result of a rapid rise in food prices and building materials in the spring. This was followed early in the next year by a fairly substantial fall and subsequent rise in food prices dragging the index through a substantial gyration. But building product prices, rose and remained high, in a similar fashion to the 1850s boom. Overall prices at the end of 1871 were approximately the same as those established in 1870. Thus, throughout the period of substantial economic growth to 1871 wholesale prices were characterized by fairly erratic fluctuations at the monthly level, although by the end of the period, December 1871, they were about equal to those at the end of the U.S. Civil War period. Although the U.S. price index in the later years of this period was now at a different level from the Canadian one, the pattern of their variation was very similar.

An obvious question, of course, is how well the new wholesale price index fits with the available price information that begins in the late years of our period and continues onward. There are two general price indexes available, both annual:<sup>17</sup>

- The Dominion Bureau of Statistics (DBS) wholesale price index from 1868 using 89 commodity prices; and
- The implicit price index (deflator) of the Urquhart National Accounts project from 1870.

The later data cannot provide a direct test of the new monthly wholesale price index. However, we can make a crude test of the appropriateness of our weights.

16 Total operating revenues for the Grand Trunk and Great Western railways in 1868 and the next three years were, in millions: \$9.6, \$10.3, \$11.1, and \$12.8.

17 The third index of Michell's 70 commodity prices of (mainly) Toronto prices from 1867–68 using 70 commodity prices is more concentrated in agricultural commodities and covers fewer commodities in general than the DBS series and is not considered here. Nonetheless, it should be noted that the Michell annual price index using 32 commodities for the period 1848–68 captures the main contours of the annualized version of the new wholesale price index presented here. For a technical description of the Michell and DBS series see Leacy (1987, 281–4).

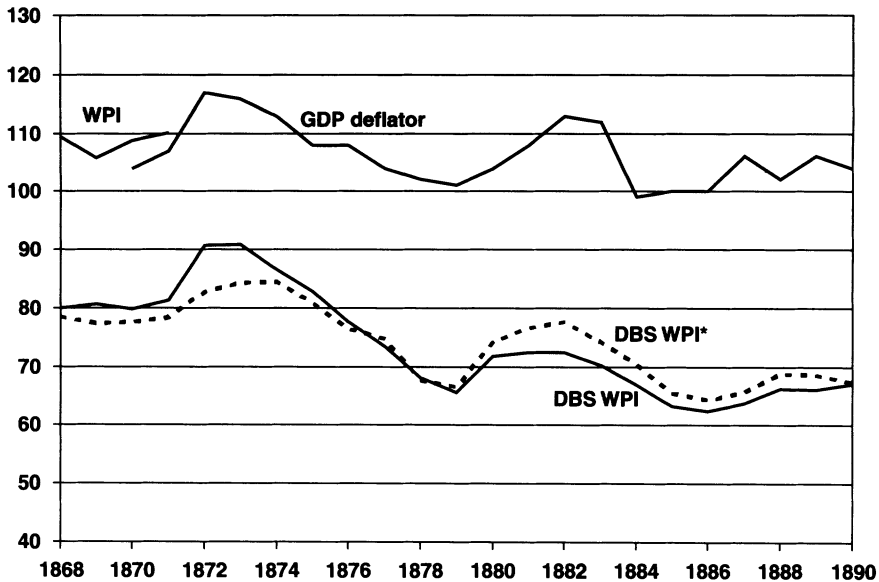


FIGURE 8 Wholesale price indexes, annually, 1869–90

NOTES: WPI: this study, 1860 = 100; GDP deflator: GDP deflator, 1870–90, 1900 = 100; DBS WPI: DBS wholesale price index, 1935/9 = 100; DBS WPI\*: above recomputed from the commodity classification series using the weights of this study as shown in table 2.

In figure 8 we present both the DBS wholesale price index (a geometric mean of the commodity group price relatives) and that index recalculated by applying our weights to the commodity group price relatives of the DBS series. The now-weighted arithmetic average DBS wholesale price index tracks the movements of the original DBS series closely. This is perhaps not surprising, given the importance of agricultural and processed agricultural goods prices in both. However, the re-weighted wholesale price index also mirrors the Urquhart GDP price deflator closely (Urquhart 1993).<sup>18</sup> Without passing judgment on the appropriateness of our weights, we can at least conclude that in the post-1870 period they are no worse than the weights in existing indexes.

<sup>18</sup> Urquhart's price deflator, described in 6–7, is a cost-of-living index based on the DBS series noted above; the Bertram-Percy modifications of the Department of Labour cost-of-living weights; and some food, fuel, and light prices from Kingston, Ontario. No direct adjustment can be made to our price series using Urquhart's weights or to Urquhart's prices using our weights, given the commodity classification differences and the differences in coverage. Our wholesale price index is not suitable as a GDP price deflator although apart from Firestone's tentative estimates for 1850, 1860, and 1870, no GDP estimates exist.

## 6. Conclusions

In this paper we have presented a new wholesale price index for Canada, 1840–71. We are acutely aware of its defects. The weighting system is somewhat arbitrary; for part of the period the available price data are seriously incomplete; and a simple fixed-weight index is all that the evidence allows. Sophisticated techniques of index number construction cannot be employed given the available data. Nonetheless, we believe that the index is a significant improvement over what has been available heretofore.

Several points stand out from our review of the price history of Canada using this index and we have suggested a few unresolved puzzles. First, the Canadian price level was extremely volatile. The greatest variability was in prices of agricultural goods, which were net exports, and the least in those of manufactured or semi-manufactured goods, which were, in large measure, imports. As a result, Canada's terms of trade were also cyclically variable with corresponding implications for Canadian real income.

Second, under normal circumstances throughout the mid-century period, Canadian and American prices moved in harmony with each other – a correspondence that could only be a product of highly integrated markets. During the part of the U.S. Civil War when the American price level and the exchange rate fluctuated widely, the correspondence broke down. Measured in their own currencies, Canadian and U.S. wholesale price levels moved independently of each other, illustrating the potential insulating effects of a flexible exchange rate for a small, open economy. When adjusted for fluctuations in the flexible exchange rate the disparity in behaviour is not as extreme, but there are significant anomalies in the relative movements of Canadian and American price levels during the Civil War. We see both a moderate degree of independence of Canadian prices in the opening years of the war and a much more dramatic shift in the level of American prices in 1865–66 that was not mimicked in Canada or in Britain. Perhaps the lesson is the obvious: in the unusual conditions of full-scale war many conventional propositions about market behaviour do not hold. Both the U.S. customs duties and the internal taxes would have raised the price level in the United States relative to both Canada and Britain. Adjusted for levels, they track each other closely from 1866–71. We interpret this as strong evidence that there was a relative change in the level of the American price index as a result of taxation.

Finally, there is a close correspondence between the Canadian and British wholesale prices. In one major respect, however, the behaviour of the Canadian wholesale price index is different from that of the U.S. index. The Canadian index shows wider fluctuations – higher peaks and lower troughs. This is most apparent in the slide in prices to troughs in the late 1840s; at the peak of the mid-1850s boom; and in the early U.S. Civil War years to 1863. It is possible that the greater variation in Canadian wholesale

prices is a statistical artefact – a result of the omission of some prices from the Canadian index that were less cyclically sensitive than those of Canada's major export products. However, apart from the early 1850s, the omitted items had very little weight in the index in either country. With the possible exception of the peak of 1855, we think that the extreme behaviour of Canadian prices is a real phenomenon, not a product of the construction of our index. The explanation is not obvious; it is a task for further research.

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### **Appendix A: Classification of the monthly wholesale price indexes**

Montreal wholesale prices prior to 1867 are taken primarily from the *Montreal Gazette* published in a section usually described as 'Wholesale Prices Current.' In certain years there was an individual description of particular markets such as the 'Leather Market.' Occasionally, there were annual reviews (1861 and 1863) of monthly prices. These prices were quoted in other Montreal newspapers on an irregular basis over the period: the *Montreal Herald* and *Daily Commercial Gazette*, the *Montreal Transcript and Commercial Advertiser*, and the *Pilot and Evening Journal of Commerce*. Also the *Morning Chronicle* of Quebec City and the *Ottawa Citizen* occasionally carried Montreal market information.

The wholesale prices often date as continuous series from 1840, but others date from 1850, 1855, and 1860. It is not clear why the fragmentary reporting suddenly becomes continuous or why there are some breaks in reporting. The months from January 1850 to May 1855 are a particular problem. New techniques in printing and the newspaper industry also facilitated the use of templates and tabular material.

For weights within a category we use the weights presented by Hanes – these are adaptations of the weights used by Warren and Pearson in their pioneering studies of U.S. wholesale prices (1933). The original Warren-Pearson weights varied from year to year but are in practice fixed from 1860 onward. In many cases we can match the individual commodities, and where this is not possible, we use close substitutes. For instance, in the Food Products Index the beef entry is the same: the price of salt beef (mess) in barrels. On the other hand, for Canada we do not have separate prices for hams, mess salt pork, and prime salt pork and use the price of Canadian mess salt pork to cover all three. In the lists below, where weights have been grouped, the original Hanes-Warren-Pearson (HWP) weights are shown in brackets. The weights that are shown in table A1 may total to less than 100 if full coverage cannot be achieved. In these cases the index is computed by scaling all the weights proportionately.

TABLE A1  
Classification of the monthly wholesale price indexes

Monthly Food Products

	1/1840 12/1849	1/1850 5/1855	6/1855 12/1871	
Beef	14.0	14.0	14.0	Salt beef (mess) in barrels
Pork	14.0	14.0	14.0	Salt pork (mess) in barrels (Hams 4%; Mess 5%; Prime 5%)
Butter/Fats	8.0	8.0	8.0	Butter
Peas/beans	0	0	1.0	Peas
Tea	1.0	1.0	1.0	Tea (Twankey)
Coffee	3.0	0	3.0	Coffee, South American or Rio
Sugar	8.0	0	8.0	Sugar, Cuba bright
Molasses	1.0	0	1.0	Montreal molasses (clayed)
Flour/Bread	22.5	22.5	22.5	Superfine flour (Bread 5%; Cornmeal 3%; Flour 14.5%)
Rice	0.5	0	0.5	Patna rice
Fruit	0	0	3.9	Average price of Dried Muscatel raisins & Dried Currants
Salt	1.0	0	1.0	Stoved common salt
Olive Oil	0	0	0.1	Olive Oil
Spices	0	0	0.2	pepper
Total	76.0	59.5	78.2	

We achieve a 78.2% coverage of the HWP commodities with the principal omissions being: Potatoes 6%; Milk 3.4%; Fish 1%; Cheese 2%; Tallow 1%; Lard 5%; and Eggs 3%. The *Food Products Index* is calculated for the period 1855–71.

Spirits & Alcohol. This is the unweighted average of the indexes of the prices of:

	1/1840 12/1849	1/1850 5/1855	6/1855 12/1871	
Spirits	25.0	0	25.0	Hennessey Brandy or Best Cognac for 1840s
Spirits	25.0	0	25.0	Jamaica rum
Spirits	0	0	25.0	De Kuypers' or Holland gin
Beer	25.0	0	25.0	London porter at Montreal, per doz.
Total	75.0	0	100.0	

*Building Materials*

The prices of lumber here are the Quebec City posted prices from the Forsyth and Bell Circulars. All other prices are from Montreal markets. The principal part of the building materials index is made up of wood. Although certain key building commodities are not included here such as lime, cement, bricks and glass (except in the period 1840–49) and their absence accounts for only a 15% difference from the HWP index. We would not expect the time pattern of the index to be very much different had these prices been available.

TABLE A1 *continued*

	1/1840 12/1849	1/1850 5/1855	6/1855 12/1859	1/1860 12/1871	
White Pine Boards	32.0	32.0	32.0	32.0	Quebec City pine deals (White pine 24%; yellow pine 8%)
Oak Timber	13.0	13.0	13.0	13.0	Quebec City oak (Oak timber 10%; oak headings 3%)
Spruce Boards	5.0	5.0	5.0	5.0	Quebec City spruce deals
Staves & Shingles	26.0	26.0	26.0	26.0	Quebec City staves, 'firsts' (Shingles 12%; staves 14%)
Paint / Red Lead paint	4.0		4.0	4.0	Red lead paint
Putty	0.0		0.1	0.1	Putty
Linseed Oil	2.0		2.0	2.0	Best boiled linseed oil
Tar	0.0			0.5	Coal tar
Turpentine	0.4			0.4	Turpentine
Nails	2.0			2.0	Common wire nails
Glass	3.0			0.0	Window glass, 6.5×7.5
Total	87.0	76.0	82.1	85.0	

Excluded: cement 2%; (after 1849) glass 3%; bricks 5%; and lime 5%.

*Drugs and Chemicals*

The US Hanes Warren-Pearson index for this commodity group uses five commonly produced and used drug and chemicals prices with equal weight applied. We follow the same procedure with four or five such goods as available. Two are the same as the HWP: alum and sulphur. The HWP uses the prices of blue vitriol, copperas, and indigo. Here, we use carbonate of soda and borax.

	1/1840 12/1849	1/1850 5/1855	6/1855 12/1871	
Alum	20.0	0	20.0	Alum
Borax	20.0	0	20.0	Borax
Carbonate of soda	20.0	0	20.0	Carbonate of soda
Sulphur	20.0	0	20.0	Sulphur
Total	80.0	0	80.0	

*Miscellaneous Commodities*

The HWP Miscellaneous Commodities Price Index for the United States has five commodities that can be closely duplicated in Canada. We have substituted the price of saltpetre for the unavailable gunpowder and borax for soap. Borax was the universal cleaning agent of the nineteenth century (and later) and could be used in various concentrations. Apart from various household cleaning uses, borax was also used for personal hygiene: 'It allays the heat of sunburn, bleaches out tan and redness helps freckles and moth to a great degree' (Jefferies and Nichols 1894, 111). We have no price corresponding to that of rubber.

	1/1840 12/1849	1/1850 5/1855	6/1855 12/1871	
Ashes, pearl Alum	20.0	0	20.0	Ashes, pearl
Saltpetre	30.0	0	20.0	saltpetre (Gunpowder 30%)
Starch	10.0	0	10.0	Glenfield starch – not always described
Soap	30.0	0	30.0	Imported soap (Soap 30%)
Total	90.0	0	90.0	

Excluded: rubber 10%.

TABLE A1 *continued**Hides and Leather Goods*

	1/1840 12/1849	1/1850 5/1855	6/1855 12/1871	
Hides	30.0	0	30.0	Green or fresh slaughter hides
Leather	70.0	0	70.0	Average of: leather, Sole No.1; calfskin leather; and patent
Total	100.0	0	100.0	

*Fuel and Lighting*

	1/1840 12/1849	1/1850 12/1859	1/1860 12/1871	
Coal, Bituminous	50.0	0	50.0	Newcastle grate coal (occasionally described as 'Welsh')
Coal, anthracite	0.0	0	34.0	Lehigh coal
Candles	3.0	0	3.0	Belmont candles
Oil	2.0	0	2.0	whale oil, often described as 'bleached'
Total	55.0	0	89.0	

Excluded: Petroleum 10% and Matches 1%.

*Metals and Metal Products*

	1/1840 12/1849	1/1850 12/1859	1/1860 12/1871	
Pig Iron	17.0	0	17.0	pig iron (Gartshire, No. 1)
Sheet Iron	21.0	0	21.0	sheet iron (best brands)
Nails, Wire	22.0	0	22.0	cut nails 'assorted' (Nails 10%; wire 5%; screws 5%; butts 2%)
Spring Steel	5.0	0	5.0	spring steel, best (Shovels 5%)
Tin	13.0	0	13.0	charcoal tin plate IC (Tin, pig 5%; spelter 3%; zinc plate 5%)
Lead	5.0	0	0.0	lead, average of sheet & shot
Total	83.0	0	78.0	

Excluded: Copper sheets and pigs 15%; and Quicksilver 1%.

*Textiles and Clothing (1858–71) Proxy*

Textiles and textile products made up 16.0% of all imports by value in 1855 and 27.4% in 1865. Linen imports were 4.3% and 5.1% of all textile imports in the same two years. Cotton textiles made up the bulk of textile imports in 1855 (59.1%) but the second largest category in 1865 (33.2%). Woollen goods were 38.0% of all textile imports in 1855 but were the largest class in 1865 at 47.4%. As noted in the text, there are no useful textile prices for Canada of this period. Furthermore, even in pursuit of a proxy for textile prices there are few alternatives. The Liverpool price of raw cotton, which is available, is not a good indicator, because raw cotton prices tended to be more volatile than the price of finished textile goods. Here, the proxy is the simple average of the price of two popular weights of linen yarn. Although the prices are quoted at Belfast, they were essentially the Liverpool ones. Source: *Belfast Linen Trade Circular* (1853–71), Belfast. The systematic reporting of prices did not begin until January 1858. The assumption is that linen price movements matched the prices of near substitutes. This can be confirmed for woollen goods on an annual basis. 'Summary Statement of the Quantity and Value of Foreign Merchandise Entering for Consumption . . .', *Sessional Papers*, various years.

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TABLE A1 *concluded*

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Linen Yarn	50.00	25 Lea, Linen Yarn, Weight 8lbs. per bundle, Medium and Prime Warp
Linen Yarn	50.00	50 Lea, Linen Yarn, Weight 8lbs. per bundle, Medium and Prime Warp
Total	Not Applicable	

Not covered in this index are 'House Furnishings.' These account for 1% in the Warren-Pearson All Commodities Index.

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NOTE: *All Commodity Index*: For category weights see table 1.

## Appendix B

TABLE B1  
Wholesale price index, monthly, 1840–71

Average of 1860 = 100.0

Jan-40	100.1	Mar-44	74.0	May-48	81.2	Jul-52	80.7	Sep-56	118.6
Feb-40	99.2	Apr-44	75.2	Jun-48	78.7	Aug-52	86.8	Oct-56	118.0
Mar-40	99.3	May-44	76.4	Jul-48	76.6	Sep-52	85.5	Nov-56	119.9
Apr-40	97.3	Jun-44	75.0	Aug-48	78.5	Oct-52	83.4	Dec-56	116.2
May-40	96.3	Jul-44	74.1	Sep-48	78.3	Nov-52	86.0	Jan-57	111.9
Jun-40	95.4	Aug-44	73.4	Oct-48	78.9	Dec-52	85.9	Feb-57	114.3
Jul-40	94.4	Sep-44	72.7	Nov-48	83.1	Jan-53	91.0	Mar-57	118.8
Aug-40	93.1	Oct-44	71.0	Dec-48	81.5	Feb-53	92.2	Apr-57	118.5
Sep-40	96.1	Nov-44	70.3	Jan-49	79.9	Mar-53	94.8	May-57	126.4
Oct-40	95.7	Dec-44	70.5	Feb-49	78.2	Apr-53	90.3	Jun-57	128.9
Nov-40	96.2	Jan-45	71.8	Mar-49	76.6	May-53	88.0	Jul-57	127.4
Dec-40	94.4	Feb-45	73.6	Apr-49	75.0	Jun-53	85.1	Aug-57	128.9
Jan-41	92.7	Mar-45	75.5	May-49	73.4	Jul-53	89.9	Sep-57	125.3
Feb-41	91.0	Apr-45	77.4	Jun-49	73.7	Aug-53	94.3	Oct-57	120.2
Mar-41	89.3	May-45	79.6	Jul-49	73.3	Sep-53	104.0	Nov-57	111.9
Apr-41	87.6	Jun-45	78.9	Aug-49	74.1	Oct-53	104.1	Dec-57	108.3
May-41	85.8	Jul-45	76.9	Sep-49	74.9	Nov-53	99.6	Jan-58	107.4
Jun-41	84.4	Aug-45	76.5	Oct-49	74.0	Dec-53	100.7	Feb-58	104.6
Jul-41	84.6	Sep-45	79.3	Nov-49	75.1	Jan-54	106.2	Mar-58	105.6
Aug-41	83.7	Oct-45	80.3	Dec-49	75.3	Feb-54	110.2	Apr-58	106.0
Sep-41	87.3	Nov-45	83.7	Jan-50	75.3	Mar-54	117.2	May-58	104.5
Oct-41	86.8	Dec-45	84.7	Feb-50	80.1	Apr-54	119.8	Jun-58	104.6
Nov-41	85.0	Jan-46	86.5	Mar-50	82.3	May-54	125.0	Jul-58	103.5
Dec-41	84.5	Feb-46	85.0	Apr-50	84.4	Jun-54	124.6	Aug-58	105.5
Jan-42	84.0	Mar-46	83.6	May-50	83.5	Jul-54	123.0	Sep-58	104.9
Feb-42	83.5	Apr-46	82.2	Jun-50	83.3	Aug-54	122.2	Oct-58	104.1
Mar-42	83.0	May-46	80.8	Jul-50	83.0	Sep-54	124.1	Nov-58	101.5
Apr-42	82.6	Jun-46	79.3	Aug-50	74.8	Oct-54	126.0	Dec-58	101.7
May-42	82.1	Jul-46	77.5	Sep-50	73.4	Nov-54	128.8	Jan-59	99.0
Jun-42	79.2	Aug-46	77.7	Oct-50	75.4	Dec-54	128.7	Feb-59	103.3
Jul-42	79.4	Sep-46	78.9	Nov-50	74.1	Jan-55	131.2	Mar-59	104.4
Aug-42	78.9	Oct-46	82.1	Dec-50	73.9	Feb-55	131.2	Apr-59	105.4
Sep-42	75.8	Nov-46	83.5	Jan-51	73.9	Mar-55	130.9	May-59	105.4
Oct-42	75.3	Dec-46	84.1	Feb-51	76.9	Apr-55	137.3	Jun-59	105.4
Nov-42	71.7	Jan-47	84.8	Mar-51	77.4	May-55	149.1	Jul-59	103.7
Dec-42	71.6	Feb-47	85.4	Apr-51	76.8	Jun-55	126.4	Aug-59	99.1
Jan-43	71.5	Mar-47	86.1	May-51	78.3	Jul-55	120.9	Sep-59	98.4
Feb-43	71.5	Apr-47	86.7	Jun-51	77.7	Aug-55	121.7	Oct-59	98.9
Mar-43	71.4	May-47	87.3	Jul-51	80.1	Sep-55	124.6	Nov-59	99.8
Apr-43	71.4	Jun-47	96.6	Aug-51	81.6	Oct-55	118.7	Dec-59	101.1
May-43	71.3	Jul-47	94.6	Sep-51	82.3	Nov-55	125.3	Jan-60	102.3
Jun-43	71.9	Aug-47	89.6	Oct-51	84.5	Dec-55	126.5	Feb-60	101.9
Jul-43	73.7	Sep-47	89.6	Nov-51	84.4	Jan-56	122.5	Mar-60	101.1
Aug-43	72.5	Oct-47	89.3	Dec-51	84.0	Feb-56	124.6	Apr-60	100.4
Sep-43	71.7	Nov-47	87.3	Jan-52	84.0	Mar-56	118.0	May-60	101.2
Oct-43	71.0	Dec-47	85.2	Feb-52	84.7	Apr-56	118.0	Jun-60	97.7
Nov-43	70.2	Jan-48	83.2	Mar-52	84.6	May-56	118.0	Jul-60	96.6
Dec-43	70.4	Feb-48	81.2	Apr-52	85.8	Jun-56	115.6	Aug-60	98.4
Jan-44	71.6	Mar-48	79.1	May-52	85.3	Jul-56	117.2	Sep-60	99.5
Feb-44	72.8	Apr-48	80.1	Jun-52	86.2	Aug-56	120.2	Oct-60	99.5

(continued)

TABLE B1 *concluded*

Average of 1860 = 100.0

Nov-60	98.0	Feb-63	93.3	May-65	102.4	Aug-67	110.7	Nov-69	104.9
Dec-60	98.5	Mar-63	93.6	Jun-65	99.3	Sep-67	110.9	Dec-69	105.4
Jan-61	97.5	Apr-63	92.1	Jul-65	99.0	Oct-67	108.7	Jan-70	104.0
Feb-61	96.6	May-63	90.4	Aug-65	101.9	Nov-67	109.8	Feb-70	101.4
Mar-61	92.7	Jun-63	90.4	Sep-65	106.4	Dec-67	110.2	Mar-70	102.8
Apr-61	93.9	Jul-63	90.8	Oct-65	116.0	Jan-68	112.9	Apr-70	103.8
May-61	94.6	Aug-63	90.0	Nov-65	117.3	Feb-68	112.9	May-70	107.7
Jun-61	91.7	Sep-63	92.4	Dec-65	114.8	Mar-68	115.3	Jun-70	110.3
Jul-61	92.8	Oct-63	95.9	Jan-66	113.7	Apr-68	116.8	Jul-70	112.9
Aug-61	93.9	Nov-63	99.6	Feb-66	115.3	May-68	115.2	Aug-70	112.0
Sep-61	97.5	Dec-63	100.7	Mar-66	115.5	Jun-68	110.1	Sep-70	113.2
Oct-61	97.2	Jan-64	102.7	Apr-66	119.1	Jul-68	109.4	Oct-70	112.3
Nov-61	95.5	Feb-64	103.1	May-66	118.5	Aug-68	107.9	Nov-70	112.9
Dec-61	95.9	Mar-64	103.0	Jun-66	116.0	Sep-68	107.8	Dec-70	110.7
Jan-62	95.3	Apr-64	102.8	Jul-66	113.8	Oct-68	107.2	Jan-71	112.4
Feb-62	95.4	May-64	103.9	Aug-66	113.4	Nov-68	108.9	Feb-71	114.5
Mar-62	95.9	Jun-64	102.5	Sep-66	117.0	Dec-68	108.2	Mar-71	112.5
Apr-62	94.0	Jul-64	105.1	Oct-66	116.3	Jan-69	110.8	Apr-71	110.6
May-62	95.0	Aug-64	105.7	Nov-66	114.1	Feb-69	110.6	May-71	106.2
Jun-62	93.7	Sep-64	102.7	Dec-66	113.5	Mar-69	110.2	Jun-71	108.1
Jul-62	92.7	Oct-64	104.0	Jan-67	115.0	Apr-69	109.5	Jul-71	107.1
Aug-62	95.5	Nov-64	101.5	Feb-67	115.4	May-69	110.2	Aug-71	107.2
Sep-62	95.6	Dec-64	100.7	Mar-67	115.3	Jun-69	107.6	Sep-71	106.8
Oct-62	93.3	Jan-65	102.0	Apr-67	116.8	Jul-69	107.6	Oct-71	109.8
Nov-62	94.0	Feb-65	101.2	May-67	118.5	Aug-69	108.3	Nov-71	111.5
Dec-62	92.7	Mar-65	101.3	Jun-67	114.1	Sep-69	108.9	Dec-71	112.3
Jan-63	93.5	Apr-65	101.1	Jul-67	111.0	Oct-69	106.3		

NOTES: Numbers in italics between Jan 1840 and Dec 1849 are interpolated. Appendixes A and B are also available on the Web site: [www.arts.ubc.ca/econsochistory](http://www.arts.ubc.ca/econsochistory).