Looking at the numbers

A view of New Zealand's economic history

Chapter: Prices

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Preface

The New Zealand Institute of Economic Research (NZIER) was founded in 1958 as a non-profit making trust to provide economic research and consultancy services. The institute is probably best known for its long-established *Quarterly Survey of Business Opinion* and *Quarterly Predictions.* The institute also undertakes a wide range of consultancy activities for government and private organisations.

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Prices

James McIlraith

We begin this section with a description of the work of James W McIlraith. In 1911 the Government Printing Office published McIlraith's *The course of prices in New Zealand,* which was subtitled *An inquiry into the nature and causes of the variations in the standard of value in New Zealand*. At the time of publication McIlraith was an assistant lecturer in law at Canterbury College. He was also a graduate assistant to James Hight who was professor of history and economics at Canterbury. I haven't found out much else about McIlraith, other than that he seems to have been one of the 'Canterbury school' of economists (Endres, 1990). McIlraith is not listed in the *New Zealand Dictionary of Biography.*

But his work on prices seems to have brought him some renown, at least in New Zealand. I found a couple of newspaper clippings tucked away in an old copy of McIlraith's volume (see Figures 19 and 20). The first of these is an article that McIlraith wrote for the *Christchurch Press* on prices in 1912. The press clipping is not dated, but from shipping notices that are on the other side of the clipping it seems likely that the date of publication was January 1913.

The second clipping is a report on a lecture by McIlraith in the Whangarei Town Hall. Advertisements on the reverse side of the clipping indicate that it is from Whangarei's *Northern Advocate*. This clipping isn't dated either, but the article refers to the recent revolution in Russia and also looks forward to the period 'after the war'. The date therefore appears to be sometime in 1918.

McIlraith's work

McIlraith's work had two main objectives:

- To measure the changes in the general level of prices, year by year, from 1861 to 1908. By 1908 it was becoming clear that the state of the world was changing, and the cost of living was rising at a pace that was causing alarm. The first step was to attempt to measure just how much prices were rising.

- To determine the causes of the changes in the local price level.

Figure 1 Press report: McIlraith's article on prices in 1912

PRICES IN 1912.

CONTINUED UPWARD MOVEMENT IN NEW ZEALAND

(SPECIALLY WRITTEN FOR "THE PRESS")

(BY J. D. MCILRAITH, LITT. D.)

The most marked commercial characteristic of the year 1912 has been the continued upward movement in prices. The general level of prices is now about 17 per cent. higher than the average price level of the decade l890–1899. The following figures show recent price movements:—

1890–1899	100
1910	109
1911	112
1912	117

The rise last year was thus nearly 4 per cent. To find a similar high price level we must go back to the year 1883.

An analysis of the different groups of commodities affords interesting results:—

Farm Products.	
1890–1899	100
1910	125
1911	126
1912	133

A remarkable rise; but look at it thus:—

	Cereal products.	Animal products.
1890–1899	100	100
1910	110	135
1911	119	131
1912	115	147

Truly, this is the day not of the golden corn but of the golden butter and the golden fleece. The worship of the golden calf has been revived in a most lucrative form!

Foods have appreciated thus:-

1890–1899	100
1911	108
1912	113

Products other than farm products have varied thus:—

1890–1899	100
1910	104
1911	108
1912	111

Certainly an ominous rise, but only 25 per cent. of that which took place in animal products in a similar period. The whole commercial world seems to be riding on a wave of fast-rising prices. Here are some comparative figures:—

	1890–1899	1910	1911	1912
New Zealand	100	109	112	117
U.S.A.	100	132	129	—
England	100	118	121	—

This state of affairs cannot last without creating grave disturbances in the industrial and social world. While producers generally must rejoice, those in receipt of wages, salaries or fixed incomes will probably grow increasingly restive, as the continuous rise in the cost of living steadily decreases their purchasing power. Since a rise in prices of world-wide extent is not due to the exertions of any particular class, the great problem is to devise some method whereby the advantages or otherwise of such a rise will be distributed equally over all industrial classes. The world's gold production, on which the volume of credit and hence the general price level so largely depend, is of the greatest interest. It has increased thus:—

1890–1899	100
1905	128
1910	147
1911	149

From this it would appear that the wave of rising prices has not yet reached its crest.

Source: *The Press*, Christchurch, probably January 1913

Figure 2 Press report: McIlraith's lecture on the rise and fall of prices

THE RISE AND FALL OF PRICES.

DR. McILRAITH'S LECTURE.

The supper room of the Whangarei Town Hall was crowded last night on the occasion of the lecture by Dr. McIlraith on "Why Prices Rise and Fall."

Mr F. D. McGovern, the chairman, in introducing the speaker, said that Dr. McIlraith had been the first in the Southern Hemisphere to take up the study of this subject, and was beyond doubt the best authority on it in New Zealand.

Dr. McIlraith was received with applause, and in his opening remarks said that the question of rising prices was becoming so acute that it was well for the community to have some information as to the causes of that rise. It was not only in New Zealand that prices were rising; the same thing was going on in all parts of the civilised world. Prices had been low in the 80's and 90's; since then, the rise had been so great and so rapid that, unless some palliative were devised there was danger of unrest that would be followed by discontent and possibly by revolution as had just been exemplified in the case of Russia.

The lecturer said that he would be able to convey his views better by means of the lantern than by giving figures and he proceeded to illustrate by diagrams and "graphs" the various stages in the rise and fall of prices in New Zealand for a number of years past. He spoke of the "hard times" experienced in the early 90's, and mentioned among other things that New Zealand's produce was last year 103 percent. higher than in 1890. The Dominion had been in an exceptionally fortunate position during the past 20 years. The lecturer touched briefly upon several phases of the commercial and industrial history of the Dominion, and kept his audience thoroughly interested throughout the entire lecture.

At the conclusion of the Doctor's remarks, a number of questions were asked bearing upon the prospects as to trade and finance after the war, and Dr. McIlraith replied to each, but declined to take upon himself the role of prophet. He said, however, that after the war there would be need of statesmen of prudence and insight such as the world had never yet seen.

On the motion of Mr W. Reynolds, seconded by Mr S. J. McCormick, a very hearty vote of thanks was passed to Dr. McIlraith, and also to the gentleman who operated the lantern.

Source: *Northern Advocate*, probably 1918

In looking at McIlraith's work, it is important to bear in mind a couple of points:

- The unit of currency over the period was the pound—the British pound—reflecting New Zealand's status as a British colony.
- The British pound was tied to the gold standard. A British pound sterling was defined as 113.00 grains of pure gold.[1]

Therefore, McIlraith saw his work as determining changes in the purchasing power of gold.

McIlraith took 45 products and for each of them obtained their average annual price. To do this he took the average of prices occurring in the first week of January, April, July and October, or as near as possible to these dates. He then converted each price series to an index, and based this index on the decade 1890–99. That is, the average price for each item over this period was deemed to equal an index value of 100. Finally, for each year the average of all the indexes was taken, and this was the index for total prices.

The total price index was therefore calculated using equal weights. There was no attempt to weight the component indexes on the basis of total spending on each item, probably because there was little data on aggregate spending on these items.

But where did McIlraith get his price data for the 45 items he included in his total index? He depended on two sources:

- Old newspapers: 'Fortunately for the investigator, it was formerly the practice of the New Zealand newspapers to publish periodical lists of both wholesale and retail prices in the various centres' (McIlraith, p31).
- The *New Zealand Trade Review and Price Current,* a monthly journal which had been published in Wellington since 1873. The information in this publication came from leading wholesale firms and was for Wellington prices.

McIlraith used Wellington prices where possible but thought that for export data, it would be better to use Canterbury data, since this

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[1] Source: 'Money' in *Encyclopaedia Britannica* (1996).

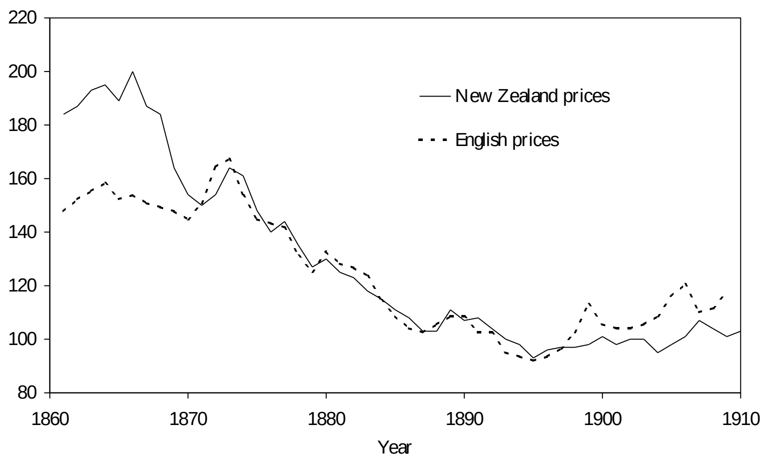
was the country's main agricultural centre. He therefore used quoted prices from *The Press* for agricultural products. In general, McIlraith took Wellington prices for imported goods, and Christchurch prices for exported goods. He also focused on wholesale prices rather than retail prices. McIlraith acknowledges the difficulty of adjusting prices to account for changes in the quality of goods; he finally decided it was best therefore 'to select, if possible, only those articles the physical and psychical efficiency of which varies but little from year to year' (p34).

McIlraith includes tables detailing actual prices, as well as calculated indexes, for each item.

Figure 3 shows McIlraith's index for New Zealand, as well as Sauerbeck's index for English prices. Augustus Sauerbeck first published his index of English wholesale prices in the *Journal of the Royal Statistical Society* in 1886. He subsequently updated his series in various journals. To make Sauerbeck's index comparable with his own, McIlraith rebased it so that the average for 1890–99 equalled 100. Note that these indexes show the price level, rather than changes in prices (inflation).

Figure 3 New Zealand and English prices 1861–1910

Index, 1890–99=100



Source: McIlraith (1911)

The most startling feature of the chart to modern eyes is that for the latter part of the 19th century prices declined. And by quite large amounts. From 1866, when prices were at a high owing to the effects of the gold rushes, to 1895, when prices bottomed out, the average annual change was -2.6 percent.[2]

What caused this decline in prices? Perhaps we should firstly put the New Zealand experience in an international context. As the chart shows, prices also declined in Britain over this period, although the fall wasn't quite as severe. As noted above, New Zealand's prices at the start of the period were being affected by the gold rushes. McIlraith also includes a series for US prices in his report; these too declined over the period from 1865 till the mid-1890s. This fall in international prices has largely been attributed to two factors:

- Productivity improvements: with breakthroughs in technology, such as the use of steam in factories, ships and land transport (railways), the cost of producing and delivering goods went down. This was reflected in selling prices.
- Despite gold discoveries in such places as California, Australia, and New Zealand, world gold production generally fell from 1865 through to the 1890s, when it started to rise again.

Hence, relative to overall levels of production, which were rising fast, the stock of gold was declining. And since currencies were tied to gold, the supply of money, relative to output, was declining. The effect, in modern terms, was extremely tight monetary conditions and the result was falling prices or deflation.

In effect, currencies such as the pound were increasing in value. A pound would buy more than it had previously. And since New Zealand was using sterling, the effects of this flowed into the New Zealand economy.

But what happened from 1895? As Figure 3 shows, both English prices and New Zealand prices rose from about this time, with English prices generally rising faster than ours through to 1910. What drove the English price rises? Some possibilities:

[2] The index was 200 in 1866 and 93 in 1895.

- A rise in raw material prices. According to McIlraith, the English index contains a much higher proportion of raw material items than the New Zealand index.
- The impact of the Boer war. The placing of large contracts by the British government would have inflated prices for a time. The war also affected the prices of coal and minerals.
- A large increase in the world production of gold. In effect this increased the money supply.

A possible factor not mentioned by McIlraith was the growing influence of the trade union and co-operative movements in Britain, which perhaps had the effect of placing a 'floor' under wages and prices.

McIlraith split his index into two, producing an index for farm products and non-farm products.

As Figure 4 shows there were three periods when the index for farm products prices differed significantly from the index for non-farm products. In the early 1860s, the farm index was higher than the non-farm index. This may have been due to the impact of the gold rushes on food products, much of which would have been consumed domestically at that time. The price of farm products fell sharply in the late 1860s as wool prices fell. This reflected some easing in the general level of prices in Britain. But the major impact on prices may have come from a supply side effect; at this time New Zealand wool exports to Britain were increasing rapidly, and the increased supply would have affected prices. Agricultural prices recovered quickly in the early 1870s as the British price level lifted and wool prices in particular showed strong gains.

The strong rise in farm product prices from 1895 reflects rises in prices for all of the main components—wool, meat and dairy products. As we have already seen, the general level of prices in Britain rose steadily during this period, although not as strongly as prices for New Zealand agricultural products. Rises in the prices of these products was consistent with a rise in prices for raw materials, which was also touched on above. It seems that during this period, New Zealand began to play an unambiguous role as a colony of

Britain—supplying food and fibre to a rapidly developing market that was being built on free trade. (Belich, 2001, refers to this period as one of 'recolonisation'.) What's more, given that our products were to the tastes of Britain's consumers, we received high prices for our premium products.

Figure 4 New Zealand farm and non-farm prices 1861–1910

Index, 1890–99=100

Source: McIlraith (1911)

From around 1880 on, a large proportion of the output covered by the farm products index would have been exported. Hence we can see the farm products price index as being a proxy for export prices. Similarly, since most non-farm products were imported, we can view the non-farm products index as a proxy for import prices. From 1895 to 1910, the growth in export prices appears to have exceeded the growth in import prices. In short, the terms of trade improved significantly. (The terms of trade is simply the export price index over the import price index. It shows how many imports we can buy with a unit of exports. A rise in the terms of trade shows that the purchasing power overseas of a unit of exports has increased.)

This appeared to be a major finding by McIlraith. It helped to explain why the colony had been doing so well, despite the overall increase in domestic prices. We will come back to this issue later, when we look at the external sector.

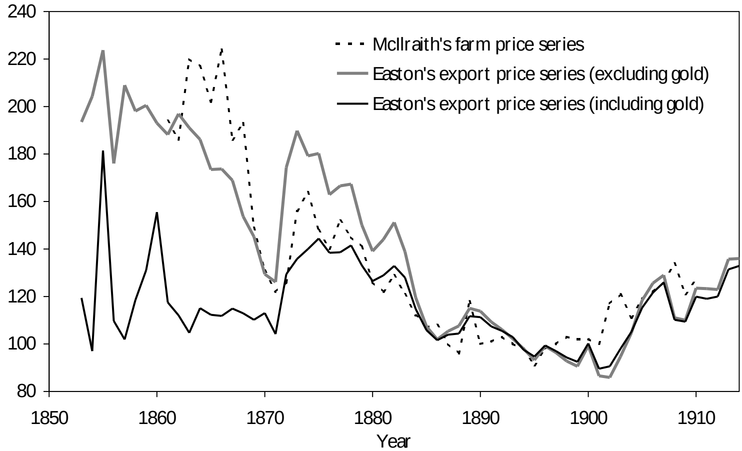
However, we should note one point about McIlraith's series before we move on: none of his series included the price of gold. From his point of view this seemed unnecessary, since the price of gold was constant. And as he notes, he was trying to estimate the purchasing power of gold; his series measured the value of items relative to gold.

But if we were constructing a price series today for the economy as a whole, or for total exports, we would include the price of gold even if it stayed constant. In deriving an index for total exports, for example, we would also weight together the price indexes for individual export items, using their shares of nominal exports as weights. We would not simply take the average of the component price indexes as McIlraith did. Given the fact that the price of one item—that is, gold—would remain constant in an index derived this way, the index would not decline as rapidly over the 1865–95 period as McIlraith's series did.

Easton (1984) did produce weighted indexes for export and import prices, and reported results back to the 1850s. He presented two export indexes: one including gold and one excluding gold. As Figure 23 shows, Easton's series excluding gold looks similar to McIlraith's farm price series. But the series including gold is much lower than McIlraith's series, especially in the period prior to 1870. What are the implications of this? None, as far as actual farm prices are concerned. McIlraith's series is still correct in showing that prices for primary produce generally fell between 1865 and 1895. But if we include gold in an index for total exports, then, as the chart shows, we find that the price level looks quite different. This does have implications for the terms of trade, which we will look at later.

Figure 5 Export prices 1853–1914

Index, 1890–99=100



Sources: Easton (1984), McIlraith (1911)

The course of prices after 1910

McIlraith's report presents indexes up to 1910. But the newspaper report from *The Press,* which we saw earlier, presents index values from 1910 to 1912. This press report also shows that McIlraith had revised up substantially the value of the non-farm index for 1910. The farm index for 1910 had been revised down slightly. I have as yet not tracked down any articles showing why these revisions were made.

There are other sources of data on prices after 1910. The 1990 NZOYB includes an index for the consumers price index (CPI) going back to 1891.[3] In reality though, the CPI didn't start until 1914. For years prior to that, the series is based on an index of retail prices and

[3] The consumers price index, as computed by Statistics New Zealand, measures the price of a basket of goods that a representative household would buy.

house accommodation, averaged for the four main centres.[4] This data series has been linked to the official CPI series at 1914.

Figure 6 shows a price index which runs from 1861. The data to 1910 is from McIlraith while the data from 1910 is the linked CPI mentioned above. Is it legitimate to link the McIlraith series and the CPI? Recall that in his work McIlraith was trying to capture movements in the general price level, rather than consumer prices. Perhaps it would be more appropriate to use the GDP deflator, which also measures the general price level, as the series to join to McIlraith's.

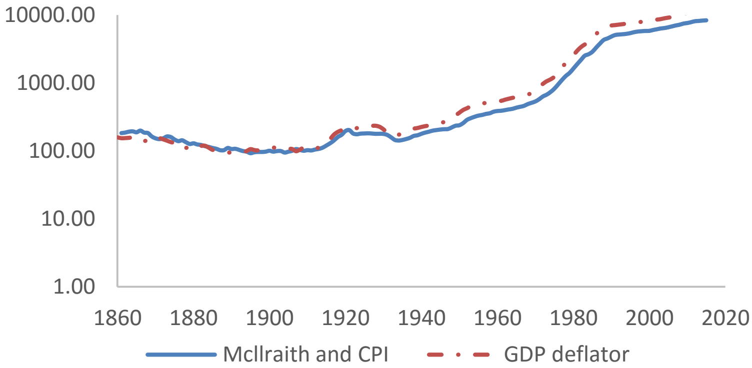
The problem is that our GDP deflator for the period up to 1955, when official data becomes available, is a derived series. For the period 1933–1955 the deflator is from Easton (1990). And as we saw earlier this deflator series is based on the CPI as well as other series. For the period 1860–1933, the deflator is from Rankin (1991). We have butted the Rankin and Easton series together, joined them onto the 'official' deflator at 1955, and converted the resulting series into an index with the same base as the McIlraith/CPI series (see Figure 6).

As the chart shows, this derived GDP deflator is similar to the McIlraith/CPI series. The major difference occurs in the late 1940s and early 1950s when the GDP deflator increases by more than the CPI. This is the result of strong export prices in this period (more on this in the following chapter on the external sector). Export prices drive up the GDP deflator during this period as they feed into the equation derived by Easton (1990). But the CPI, which is an official series, did not rise as sharply. This is feasible. It is possible that not all of the additional export earnings arising from higher export prices were spent on consumption goods. Some of the additional earnings may have been saved while some may have been spent on investment goods. Hence the impact of the higher export prices on consumer prices may have been muted a little

[4] See NZOYB (1990), p614. Index values for 1891–1914 are based on data from *Report on the cost of living in New Zealand 1891–1941*, Government Printer, 1915, Wellington.

Figure 6 New Zealand prices from 1861

Index, 1890–99=100, plotted on logarithmic scale



Sources: McIlraith (1911), Easton (1990), Rankin (1991) and Statistics New Zealand

But even though the GDP deflator is similar to the McIlraith/CPI series, let's focus for now on the CPI-based series. The CPI does have the virtue of being a prime source, being built up from actual data on prices collected regularly by staff from Statistics New Zealand.

Note the scale in Figure 6—it is logarithmic so that we can capture the index values of later years, which are large, on the same chart as the index values for earlier years.

A number of features stand out from the chart:

- The general decline in prices from 1866 to 1895, which we have already looked at in detail.
- A steady rise in prices from 1895 to 1914, followed by a large rise in prices during the 1914–1918 war.
- Prices initially fell after the war but were then generally unchanged over the remainder of the 1920s. They dropped sharply during the depression of the early 1930s.
- Prices showed a steady rise from the end of the depression through to the late 1960s (our 'long expansion' period).

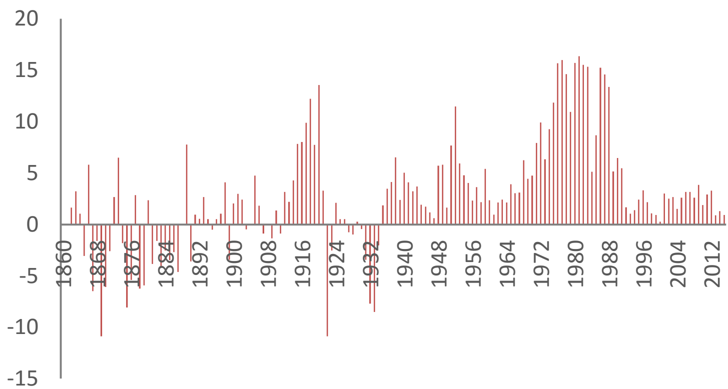
- Large and sustained rises in prices from the late 1960s to the late 1980s. (These rises were greater than those in most other OECD countries.) We then see a slower rise in prices after the Reserve Bank adopts a policy of directly targeting inflation.

These phases are shown even more clearly in Figure 7, which shows the annual inflation rate since 1861.

It is sobering to look at this chart and think that only over the past 10 years do we seem to have had the means, or the will, to control inflation. Even with historically low unemployment and strong consumption demand in 2007, the Reserve bank has kept inflation between 1 and 3 percent on average over the medium term.

Figure 7 Annual inflation rate from 1862

Percent change in prices



Sources: McIlraith (1911), Statistics New Zealand