

Alternative measures of underlying inflation: further results

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In the New Zealand context, a measure of underlying inflation serves two key functions: one as a guide in setting monetary policy, the second in providing for policy accountability. In order to meet these requirements it is desirable for the measure of underlying inflation to be consistent with the concept of underlying inflation embodied in the Policy Targets Agreement (PTA), timely, and readily verified or credible.

The Bank's current measure of underlying inflation is PTA-consistent, but is subject to revision and difficult to verify externally. For this reason the Bank has examined several alternative 'mechanical' measures of underlying inflation that could be more readily verified outside the Bank. Of these, the weighted median measure of inflation, excluding credit charges, is the most attractive in terms of reliability and freedom from arbitrary judgment in design.

At the same time, however, the Bank has some reservations regarding the degree of PTA-consistency of the weighted median measure. For this reason, the Bank has decided to publish the weighted median (excluding credit charges) on a regular basis, but will continue to base its policy decisions primarily on the basis of its current underlying inflation measure. The Bank has also modified its current measure slightly but significantly to increase its transparency.

Introduction

In its December 1994 *Monetary Policy Statement*, the Bank announced that it would publish the weighted median measure of inflation (excluding credit services) as a supplement to, and check on, its current measure of underlying inflation. The weighted median measure, along with other 'mechanical' measures of underlying inflation, were described and discussed earlier in the June 1994 *Monetary Policy Statement* and the June edition of the *Reserve Bank Bulletin*¹.

This article reports on subsequent research into alternative measures of underlying inflation and why the Bank has decided to publish the weighted median series.

I. Reasons for considering an alternative measure of underlying inflation

The New Zealand approach to monetary policy involves greater central bank transparency and accountability to the public at large than is found in any other country. This openness is quite deliberate. The exceptional degree of operational independence enjoyed by the Reserve Bank ensures that its pursuit of price stability will not be deflected by partisan political pressures. At the same time, however, this independence largely eliminates the more traditional, if indirect, public accountability of the central bank via the Treasury.

In the New Zealand case, public accountability for the conduct of monetary policy is provided through a number of channels, notably including the Governor's appearances before the Finance and Expenditure Committee of Parliament and the Bank's twice-yearly publication of the *Monetary Policy Statement*.

The *Monetary Policy Statement* plays a particularly important role, not only because it is made available widely, but also because it requires the Bank to provide a regular assessment of what policy actions may be needed to ensure the Bank's compliance with the terms of the Policy Targets Agreement (PTA).

The PTA, established between the Minister of Finance and the Governor of the Bank, sets out the operational definition of general price stability. In doing so, the PTA clarifies the Bank's policy responsibility and provides a basic benchmark against which the Bank's performance is to be judged.

For the PTA to serve as a substantive as opposed to a *pro forma* accountability device, it is important that the concept of price stability as defined by the PTA be quantified. This is what the measure of underlying inflation seeks to do.

A problem in choosing or defining a measure of underlying inflation is that it is expected to serve several purposes, and it is difficult to find a single measure with all of the characteristics required to serve each purpose perfectly. The key characteristics, discussed below, include consistency with the PTA concept of underlying inflation, timeliness, and credibility and accountability.

¹ Roger, S. (1994a).

1. PTA consistency

For the purpose of consistency with the PTA, the measure of underlying inflation should distinguish in a reliable way between the different kinds of shocks identified in the PTA. The three² PTAs negotiated under the terms of the Reserve Bank of New Zealand Act (1989) have all provided for circumstances in which the headline rate of inflation may move outside the 0 to 2 percent target range without breaching the terms of agreement. In other words, the PTAs have recognised that there are certain kinds of events or inflation developments that the Bank should 'look through' when determining the appropriate stance of monetary policy. Although the wording of Agreements has changed over time, all three have contained an essentially similar conception of the types of shocks that should be disregarded for policy purposes. As discussed in Roger (1994a), these can be broadly described as:

- (a) one-off general price level shocks;
- (b) one-off relative price shocks;
- (c) direct interest rate effects on the Consumers Price Index (CPI).

A copy of the current PTA is appended to this article for reference purposes.

In seeking to define a measure of measure of underlying inflation that is fully consistent with the meaning of the PTA, a variety of issues arise:

- The PTA provides a list of what "the principal shocks are considered to be", but leaves open the question of how broadly relative price shocks, in particular (because all prices are relative prices), should be interpreted;
- The PTA also refers to "significant" shocks, but does not give a precise definition of the term, nor does it indicate whether the same threshold of significance (in quantitative terms) should apply to different kinds of shocks;
- The PTA gives no indication of the relevant level of aggregation of prices at which to consider shocks, even though this is potentially important. For example, a "significant" shock to the price of apples may not be considered "significant" if one looks at the price index for fresh fruit in general, and is likely to be

scarcely noticeable if one looks at a still more general food price index.

Two important corollaries follow from the fact that the PTA is not extremely precise. The first is that a number of different practical definitions of underlying inflation may satisfy any reasonable interpretation of the concept embedded in the PTA. The second corollary is that in arriving at any practical or operational definition of underlying inflation, some elements of judgment - however sensible - are unavoidable.

Judgment in interpreting the PTA, for the purposes of defining an underlying inflation measure, can be applied in either of two basic ways. The first is by using judgment in establishing an explicit, time-invariant formula for calculating an underlying inflation measure that is deemed to be consistent with the PTA.

The second method of applying judgment is somewhat more discretionary in so far as a complete formula is not pre-specified. While some aspects of the calculation of underlying inflation may be governed by judgment-based rules or formulas, other aspects may be decided on a case-by-case basis.

The Bank's current measure of underlying inflation is more akin to the second, more discretionary variety.³ This discretion is applied in three key areas:

- In deciding which kinds of relative price shocks to exclude from the definition of underlying inflation, the Bank has kept very close to the letter of the PTA, rather than interpreting the PTA in a more permissive manner;
- Discretion is also used in setting the threshold at which price shocks are judged to be significant. The threshold applied by the Bank can be regarded as 'conservative' in so far as most movements in eligible prices do not cross the threshold;
- Discretion is involved in estimating the magnitude of price shocks. Estimating the CPI effects of shocks to international trade prices for basic commodities (eg. oil and timber) is difficult because such commodities are only rarely represented at the retail level (eg. petrol and construction timber). The Bank's approach to estimating the CPI effects of such shocks has varied through time, but has tended to be based increasingly on the most obvious CPI effects rather than on model-based estimations.

2 The first PTA came into effect on 2 March 1990, the second on 19 December 1990, and the third (the current PTA) on 16 December 1992.

3 For a detailed description of the Bank's current underlying inflation measure, see Reserve Bank of New Zealand (1994).

2. Timeliness

In addition to being PTA consistent, the measure of underlying inflation should be timely. If the measure is only available long after release of the headline CPI, or is subject to revision over a lengthy period, the value of the measure will be undermined for both policy and accountability purposes.

For the purposes of setting the appropriate stance of monetary policy, it is desirable to have an accurate estimate of underlying inflation, not subject to revision, on a frequent basis (most OECD countries have monthly CPI and producer price series) and as soon after the date of measurement as possible. The less frequent are readings on inflation or the longer the delay in receiving a final estimate, the greater the likelihood that policy settings will be inappropriate.

By contrast, for accountability purposes, timeliness is rather less important. Even a delay of several months in obtaining a final estimate of underlying inflation may not materially affect the degree of policy accountability.

For the efficient functioning of financial markets, it is desirable to have the underlying inflation measure available as close as possible to the release of the headline figure, so that market reactions are based on full information.

3. Credibility and accountability

It is one thing to claim that a particular measure of underlying inflation faithfully represents the concept of price stability expressed in the PTA. It is another thing for the claim to be fully accepted.

The issue of credibility, and how to promote it, is, of course, common to many fields of endeavour. The two most frequently used techniques for enhancing credibility, both based on ensuring that claims can be readily verified or disproven, are:

- (i) to provide observers with all the information required to reproduce and, thereby, verify the claim. This is the standard approach taken with empirical research in the natural and social sciences;
- (ii) to use a respected, disinterested agent to verify and vouch for the claim. In sports, for example, athletes' performances are measured by independent officials, and, in business, it is routine for company accounts to be externally audited.

The difficulty in applying either of these standards of verifiability to the measurement of underlying inflation is that both approaches tend to rely on the particular claim being readily proven or disproven according to widely-accepted standards of proof.

If the judgment applied to measuring underlying inflation is applied to defining a formula for its calculation, it should be possible to verify whether the formula has in fact been followed in calculating the measure. This is a principal attraction of 'mechanical' or formula-based measures of underlying inflation. The ability to verify the accuracy of the calculation of underlying inflation does not guarantee, however, that the measure truly represents underlying inflation.

Conversely, the Bank's current measure of underlying inflation, because it involves elements of judgment in calculation as well as in definition, is more difficult to verify. But the fact that the Bank's underlying inflation measure is not readily verifiable does not mean that it does not faithfully represent underlying inflation.

The discussion above points to a basic dilemma that has been of concern to the Bank for some time: the judgment it applies in calculating underlying inflation has been aimed squarely at ensuring close conformity of its measure to the definition of underlying inflation implicit in the PTA. At the same time, however, the exercise of this judgment makes verification of the measure difficult and, thereby, may undermine the perceived credibility and accountability of the Bank.

II. The alternatives considered

Over the past year or so, the Bank has examined a variety of alternative measures of measures of inflation to see whether a measure exists which is more readily verified than its current measure, but which also embodies the essential elements of underlying inflation as defined in the PTA.

The focus of this investigation has, therefore, been on 'mechanical' formula-based, measures which could be calculated or, at least, easily verified, outside the Bank. The alternatives considered have been wide-ranging and include a 'mechanical' approximation of the Bank's current measure, the CPI excluding food and energy components, two versions of a trimmed-mean CPI, and the weighted median CPI.

All of the measures investigated have three elements in common:

- All are based on the CPI regimen, disaggregated into approximately 300 sub-component price series;
- The direct effects of interest rate movements on the CPI are purged from all of the measures either by holding interest costs fixed at base year levels, as in the case of the 'mechanical' approximation of the Bank's underlying measure, or by assigning zero weight to interest cost subcomponents, as in the cases of the other measures considered;
- None of the measures offers an 'automatic' method for purging the effects of one-off, generalized price shocks coming from the supply-side of the economy. In particular, the price level effects of the introduction of and later change in the rate of the Goods and services Tax (GST) are purged from each inflation measure by non-'mechanical' means.

Since the effects of generalized price level shocks and interest costs are removed from each of the measures in essentially similar ways, the measures differ from one another almost exclusively in the way that they filter out the effects of relative price disturbances on the measured inflation rate. In this regard, the measures vary considerably:⁴

- The '*mechanical*' approximation to the Bank's measure of underlying inflation removes the effects on the headline rate of specific shocks to a short list of prices in the CPI regimen. This list includes government charges (considered as a group) and selected prices of internationally traded goods such as oil, timber, dairy and meat prices. The effects of movements in such prices are only removed when their cumulative impact on the 12-month change in the CPI exceeds 0.25 percent. This approach to removing the effects of relative price shocks may be described as 'specific adjustment', insofar as adjustments are made only for specific shocks relating to specific kinds of prices;
- The *CPI excluding fresh food and energy components* excludes on a systematic basis the prices of a select group of goods that are particularly erratic or prone to supply disturbances leading to substantial movements in their relative prices;
- The *trimmed-mean CPI* systematically excludes the effects on the CPI of extreme movements in all prices. In principle, this approach could lead to exclusion of price movements not legitimately excluded accord-

ing to the PTA. In practice, however, extreme price movements tend to be associated with supply shocks of the kind referred to in the PTA.

Two variants of the trimmed-mean were considered. The first was the *10 percent trimmed-mean*. This variant involves excluding (by assigning a zero weight to) the top 5 percent and bottom 5 percent (by regimen weight) of price changes in each quarter. It may be noted that as the proportion of prices trimmed from the mean in this way approaches 100 percent the mean of the remaining prices will converge towards the median change in prices.

The second variant considered was a 1.5 standard deviation trimmed-mean. Whereas the 10 percent trimmed-mean excludes price changes on the basis of their ranking, the 1.5 standard deviation trimmed-mean excludes prices on the basis of whether they are very different from the mean. For a Normal distribution, excluding all price movements more than 1.5 standard deviations different from the mean would be equivalent to trimming the top and bottom 6.7 percent of price changes. It may be noted that, in contrast with the trimmed-mean based on trimming percentiles of the distribution, the value of trimmed-mean based on trimming standard deviations will converge towards the value of the untrimmed mean as more and more of the distribution is trimmed;

- The *weighted median CPI*, unlike all of the other measures of underlying inflation (including the Bank's current measure), is not based on excluding price movements (other than, as noted earlier, credit charges) either selectively or systematically. The weighted median rate of inflation and the headline rate - which is the *weighted average* rate of inflation - are both analytically based measures of the central tendency of prices. The difference between the two measures is that the weighted average effectively places far greater weight on extreme or outlier price movements than does the weighted median.

III. Properties of the alternatives

As noted earlier, the differences between the various measures of underlying inflation are based on the different ways in which they adjust for movements in relative prices. A key feature shared by the *CPI excluding fresh food and energy components* and the 'mechanical' approximation of the Bank's underlying inflation measure is that they both require pre-specification of the sources of relative price shocks. With the CPI excluding certain components this is very obvious - only shocks to food and energy prices will be excluded from underlying inflation.

4 See also Roger (1994a).

With the 'mechanical' approximation of the Bank's underlying inflation measure, the rules for excluding shocks are more complicated - only shocks greater than a pre-specified size will be excluded - but there is a pre-set list of prices considered eligible for possible exclusion.

The problem with setting out a specific list of price movements considered eligible for exclusion from underlying inflation is that we cannot guarantee that the list will cover all the relative price shocks that should be left out of underlying inflation. The likelihood that these measures will fail to cover shocks that should be covered would, of course, decrease if the list were very long. But a long list of price movements, either systematically or occasionally excluded, would tend to undermine the credibility of the measure.

For these reasons, the Bank has concluded that neither a 'mechanical' approximation to its current underlying inflation, nor a CPI excluding fresh food and energy components could adequately replace its current measure, essentially because both measures cannot be relied upon to be fully consistent with the PTA in the future.

The two variants on the trimmed-mean measure of inflation partially overcome the key pitfall of the previous two measures. Both measures involve re-calculating the mean of the CPI after excluding extreme price movements, regardless of the source of such movements. In principle, this approach could lead to the exclusion of price movements that are not intended to be excluded. In practice, however, most extreme price movements do tend to reflect supply-side shocks of the type intended to be excluded from underlying inflation, under a reasonably broad reading of the PTA.

The trimmed-mean measures of underlying inflation are attractive in terms of their simplicity of calculation and ease in understanding, but there are two important shortcomings associated with them.

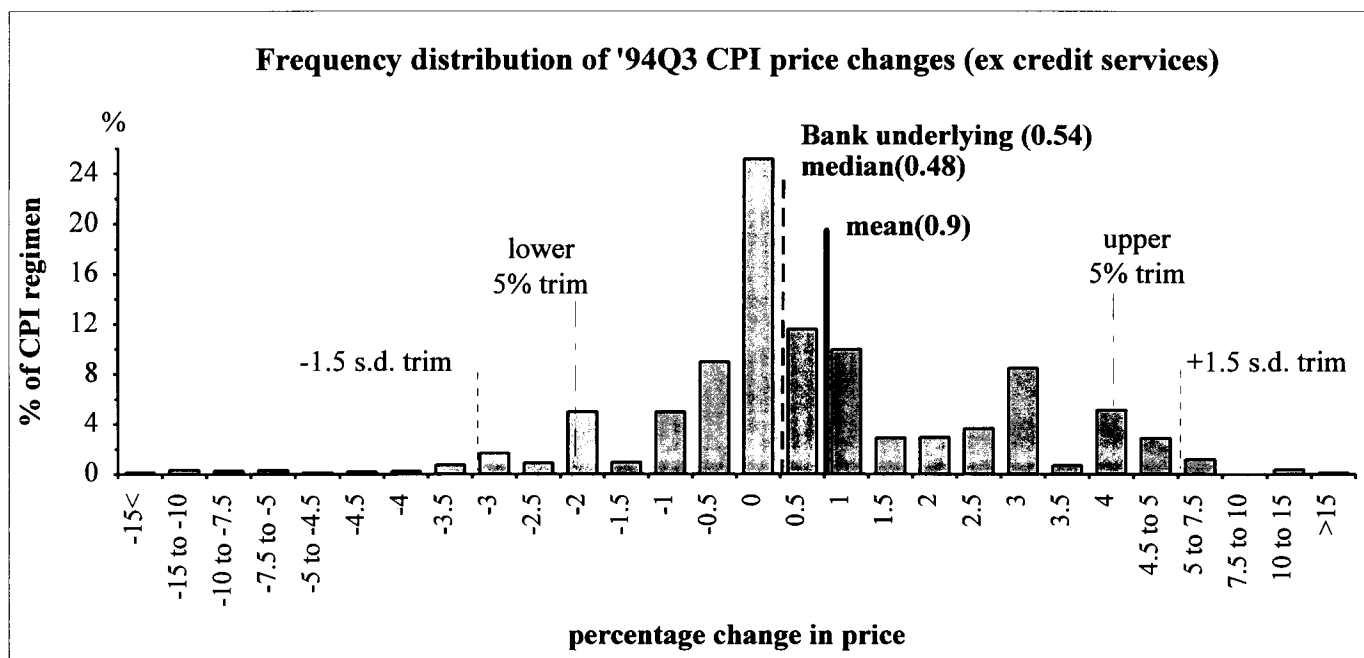
The first shortcoming is that both the definition and placement of the trimming thresholds are arbitrary. This is clearly reflected in the fact that we have examined *two* differently-defined trimmed-means. Moreover, with both measures the trimming thresholds - in one case some percentage of the CPI, and in the other, price changes beyond some 'distance' from the mean - may seem reasonable, but are arbitrary nonetheless.

The second shortcoming is that, precisely because the trimming thresholds are set arbitrarily, they may lead to some shocks not being excluded, even when they should be. A timely illustration of this point is provided by Figure 1, showing the distribution of CPI subcomponent price changes in the September 1994 quarter.

The figure shows that while some prices rose or fell by well over 15 percent in the quarter, the mean (weighted average) price change was 0.9 percent. Somewhat unusually, both variants of the trimmed-mean change also came out at 0.9 percent. This occurs because the distribution of price changes in the trimmed 'tails' of the distribution is nearly symmetric, or balanced. When this sort of symmetry exists, trimming the 'tails' makes little or no difference to the re-calculated mean.

What the trimmed-mean measures fail to do in this particular case is to filter asymmetric price disturbances between the trimmed 'tails'. As can be seen from Figure 1,

Figure 1



price changes in the middle of the distribution are not evenly distributed. There is a 'spike' in the 3 to 3.5 per cent range⁵, accounting for about 9 percent of the regimen, which is not matched by a similar 'spike' around the -1.5 to -1 percent range. Had the trimming thresholds been set to exclude, say, around 20 percent of the CPI, the 'spike' would have been eliminated and, consequently, the trimmed-mean measures would have been quite a bit lower.

Like the variants on the trimmed-mean, *weighted median* measure of inflation does not involve pre-specifying the sources of price shocks eligible for filtering. But it has the important additional merit of not requiring any arbitrary threshold to be set in filtering price movements. Like the mean, therefore, the weighted median is derived from the entire distribution of price changes. However, compared with the mean, the weighted median places progressively less weight on price movements that lie further and further from the centre of the distribution. This results in the median measure being less influenced by the 'spike' in the 3 to 3.5 percent range than is the mean. In this sense, we can see the weighted median as very much dominated by the central cluster of price changes (price movements in the -1 to +1 percent range covered just over half of the CPI regimen in the September quarter), while the mean is pulled in the direction of outliers.

In short, the weighted median has considerable attraction as a measure of underlying inflation in so far as it is an analytically-based measure of central tendency in inflation. Because of this it overcomes the principal problems

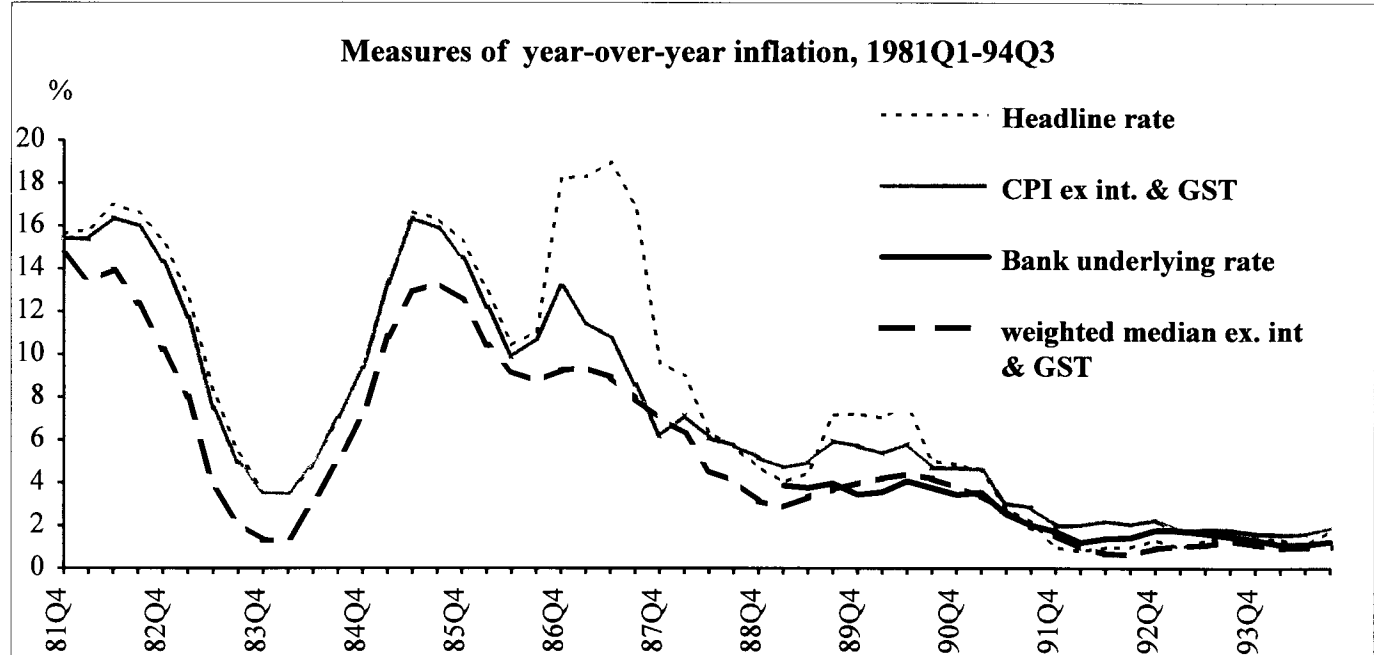
of potential unreliability and arbitrariness associated with the other 'mechanical' measures of underlying inflation considered. It also happens to be quite easy to calculate: it is simply the 50th percentile (weighted) price change. In other words, the weighted median is that price change such that half the CPI regimen (excluding credit charges) rises by more and half by less.

IV. Some concerns about the weighted median

The fact that the weighted median is the most appealing of the 'mechanical' measures of underlying inflation, however, does not mean that it is a better measure, overall, than the Bank's current measure of the concept of underlying inflation embodied in the PTA. Although the weighted median measure is more readily verified than the current measure, and also outperforms the current measure in terms of timeliness (because it is not subject to revision), it is less clear that the weighted median is as PTA-consistent as the Bank's current underlying inflation measure.

The main source of concern in this regard is that the weighted median shows a fairly chronic tendency to track below the CPI excluding credit charges and GST effects. As shown in Figure 2, the year-over-year rate of change in the weighted median has been below that of the CPI excluding interest and GST almost continuously since 1981.

Figure 2



5 A closer inspection of the 'spike' reveals that it consists mainly, and about equally, of petrol price and house construction cost increases.

An alternative way of illustrating this point is presented in Figure 3, which shows the implicit price levels associated with the Bank's current underlying inflation measure and the weighted median relative to the CPI excluding credit charges and GST effects. Both measures display a clear downward drift. This tendency for downward drift, it may be noted, is also shared by the two variants of the trimmed-mean, but is the most evident in the case of the weighted median.

The cause of the downward drift is that the estimates of relative price shocks, according to each of the measures, have a mean that is greater than zero. This is a disturbing

finding in so far as one might expect that over time, relative price shocks would be more evenly balanced between inflation-boosting and inflation-dampening shocks, with an average of close to zero.

Figure 4 shows the frequency distribution of interest rate shocks (to credit service charges in the CPI) and relative price shocks, over the 1981-94 period, based on the weighted median measure of underlying inflation. The figure shows quite clearly that both types of shocks display the sort of 'bell curve' distribution that might be expected, but that the interest rate shocks have a mean below zero while relative price shocks have a mean above zero.

Figure 3

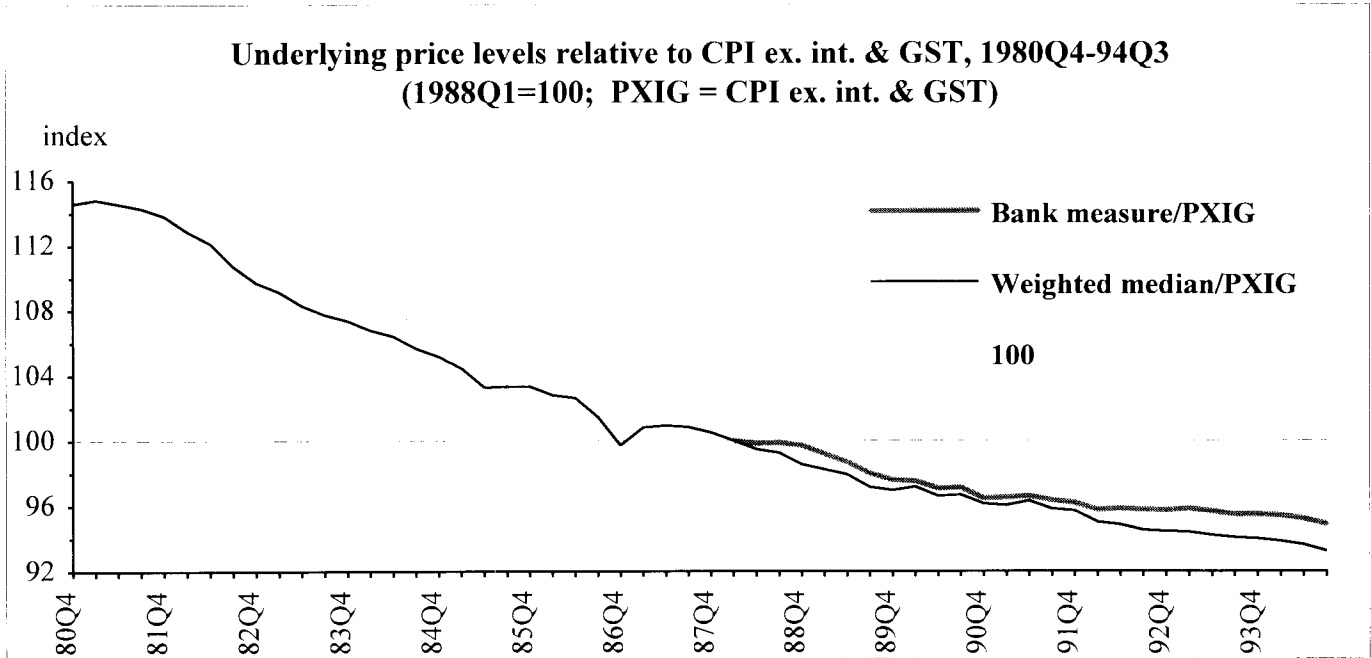
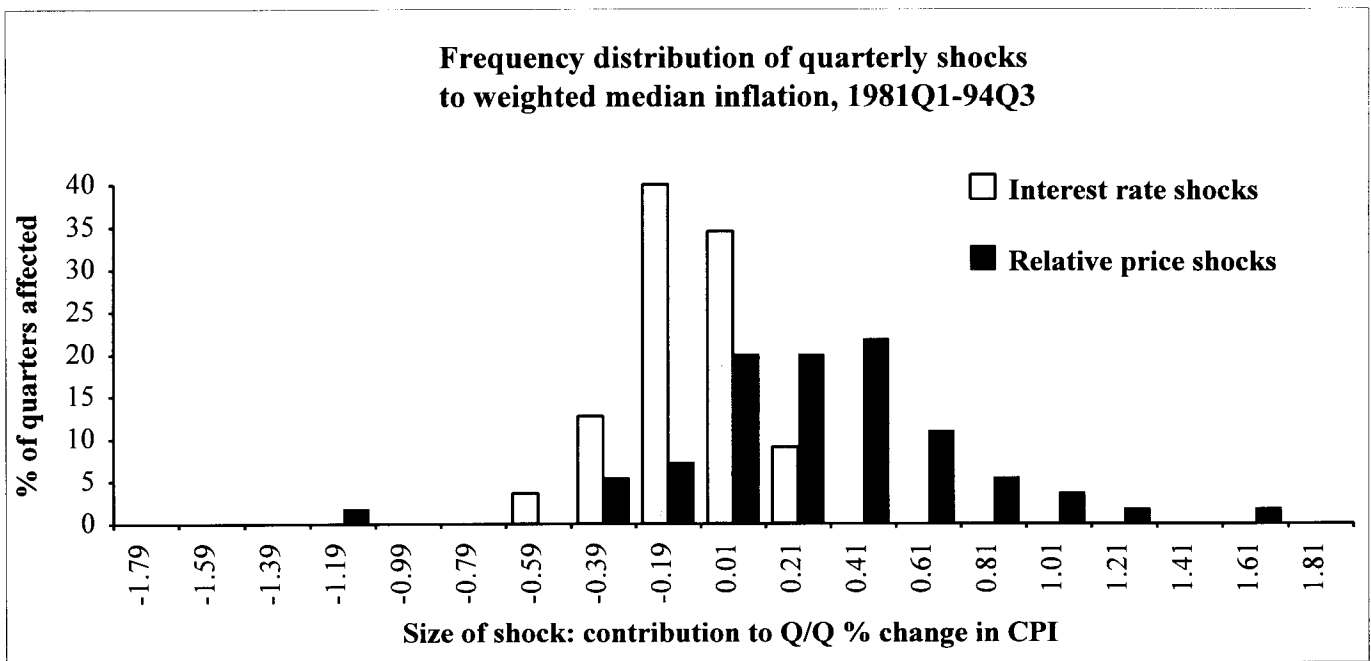


Figure 4



To date, research at the Bank has not come up with an entirely convincing explanation for the predominance of inflation-boosting relative price shocks that accounts for the downward drift observed in Figure 3. A number of possibilities have been considered or conjectured:

- A substantial part of the downward drift does appear to reflect mainly one-sided relative price shocks associated with changes in government charges. Much of the rise in government charges relative to other prices over the period reflects the substantial reforms that have taken place in the pricing of publicly-provided goods and services. This suggests that the downward drift is at least partly an artefact of the reform period, and should diminish as reforms in this area wind down;
- Through much of the period, international commodity price movements (eg. to meat and dairy prices, timber prices and, at times, to oil prices) have, on balance, boosted headline inflation. It is possible that the Bank's current underlying inflation measure understates the impact of commodity price movements having a diffuse and difficult-to-measure impact on the CPI. The weighted median may be better at picking up these diffuse effects, but as yet we cannot be sure of this;
- The weighted median may also be treating some ongoing inflation as relative price movements. Of particular concern are prices which are adjusted only infrequently but by fairly large amounts when they do change. In such cases, stability in such prices between adjustment will tend to be given a fairly high weight in the weighted median, while the infrequent large adjustments will be given a relatively low weight. This phenomenon is most likely to occur in industries either dominated by a relatively few suppliers (eg. government, utilities), or in industries where prices are heavily regulated by government. In principle, this effect may be expected to diminish as the general rate of inflation approaches zero, and there is some evidence to suggest that this may be occurring;
- Changes in inflation pressures could show up in some industries sooner than in others, and could be mistaken for relative price movements when, in reality, they represent precursors of generalised inflation. The evidence on this proposition appears to be mixed. As is evident from Figure 2, turning points in the weighted median measure of inflation coincide very closely with those of the Bank's current measure of underlying inflation, and with the CPI excluding interest and GST effects. In addition, tests for a causal relationship between relative price shocks and

changes in the underlying inflation trend, as measured by the weighted median, do not support the hypothesis. By contrast, some regression analyses suggest, tentatively, that wage movements and demand pressure variables may partly explain the relative price shocks based on the weighted median measure. Even if such effects are present, however, they do not readily explain the observed downward drift: in a period characterised by disinflation, mistaking a change in inflation for a relative price shock would tend to hold the underlying inflation rate up, not down.

V. Conclusions and decisions

The Bank's current measure of underlying inflation is regarded as a reliable representation of the concept of underlying inflation as defined by the Policy Targets Agreement (PTA). But, because judgment is involved in ensuring the measure's PTA-consistency, the measure is less than ideal for the purposes of maximising monetary policy accountability. For this reason the Bank has investigated a number of alternative, 'mechanical' measures of underlying inflation which could be more readily verified by independent observers.

Examination of these alternative measures indicates that the weighted median measure (excluding credit charges) is likely to be the best in terms of reliability and freedom from arbitrary judgment in design. Nonetheless, at this point, we still have some reservations regarding the PTA-consistency of the weighted median. For this reason, the Bank has decided to publish the weighted median (excluding credit charges) on a regular basis, but will continue to base its policy decisions primarily on the basis of its current underlying inflation measure. The weighted median will serve as a supplement to, and a check on, our current measure. The reservations with regard to the properties of the weighted median will remain an ongoing area of research.

An additional step being taken to enhance the transparency of the Bank's current measure, as discussed in the December *Monetary Policy Statement*, is to replace the Bank's own estimate of the effects of credit charges on the CPI with an estimate produced and published by Statistics New Zealand. Since credit services charges account for much of the difference between the Bank's measure of underlying inflation and the headline inflation rate, this modification to the Bank's measure represents a substantial increase in its transparency.

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Appendix

Reserve Bank of New Zealand Policy Targets Agreement

Reprinted from the June 1993 *Monetary Policy Statement*

This agreement replaces that signed under section 9(4) of the Reserve Bank of New Zealand Act 1989 (the Act) between the Minister of Finance (the Minister) and the Governor of the Reserve Bank of New Zealand (the Governor) on 19 December 1990.

It is made under section 9(4) of the Act, and also under section 9(1) of the Act, so that it shall also apply during the Governor's next term of office.

In terms of section 9 of the Act, the Minister and the Governor agree as follows:

1. Price Stability Target

Consistent with section 8 of the Act and with the provisions of this agreement, the Reserve Bank shall formulate and implement monetary policy with the intention of maintaining a stable general level of prices.

2. Measurement of Price Stability

(a) In pursuing the objective of a stable general level of prices, the Bank will monitor prices as measured by a range of price indices. The formal price stability target will be defined in terms of the All Groups Consumers Price Index (CPI), being the measure that is monitored most closely by the public.

(b) For the purposes of this agreement, 12-monthly increases in the CPI of between 0 and 2 percent will be considered consistent with price stability.

3. Deviations from the Targets

(a) There is a range of possible price shocks arising from external sources, certain government policy changes, or a natural crisis which are quite outside the direct influence of monetary policy. The Bank shall generally react to such shifts in relative prices in a manner which prevents general inflationary pressures emerging.

(b) This approach means that the CPI inflation rate can be expected to move outside the 0-2 percent range in response to particular shocks. The principal shocks are considered to be:

- significant changes in the terms of trade arising from an increase or decrease in either import or export prices;
- an increase or decrease in the rate of GST, or a significant change in other indirect tax rates;
- a crisis such as a natural disaster or a major disease-induced fall in livestock numbers which is expected to have a significant impact on the price level;
- a significant price level impact arising from changes to government or local authority levies; and
- a movement in interest rates that causes a significant divergence between the change in the CPI and the change in the CPI excluding the interest costs component.

- (c) In the event of such shocks, the Reserve Bank shall be fully accountable for its handling of the price effects, and, in particular, for any movements outside the 0-2 percent band. In each Policy Statement made under section 15 of the Act, the Bank shall detail fully its estimate of the direct price impact of any such shock and the impact on the Bank's achievement of the price stability target. The Bank shall also detail what measures it has taken, or proposes to take, to ensure that the effects of such shocks on the inflation rate are transitory.

4. **Renegotiation of the Targets**

The policy targets are established on the understanding that the monetary policy instruments available to the Bank are adequate to achieve the objective. The Governor shall inform the Minister if he considers that any changes in the availability or effectiveness of these policy instruments impair the conduct of monetary policy. The Minister and the Governor may then set new policy targets.

5. **Implementation**

- (a) The Bank shall implement monetary policy in a sustainable, consistent and transparent manner.
- (b) Each Policy Statement released by the Bank under section 15 of the Act shall contain a statement of how the Bank proposes to formulate and implement monetary policy to ensure that price stability is maintained over the succeeding five years.

16 December 1992

