

SUPPLEMENTARY REPORT: EXPECTATIONS OF INFLATION

Robin Clements discusses the way in which inflation expectations are formed and the influence they have.

Introduction

Inflation and expectations of inflation have attracted considerable attention in recent years, largely as a result of the high profile given to the Government's aim of reducing the inflation rate. The prominence of expectations of inflation, in particular, has arisen because of the argument that the level of inflationary expectations has been a significant factor in explaining why nominal interest rates have remained high and why disinflation has involved costs in the shape of lower output and higher unemployment.

It is the purpose of this report to briefly discuss how expectations of inflation are thought to influence interest rates, output and employment, and to describe the results of some preliminary analysis assessing the way in which expectations of inflation are formed.

Channels of Influence

Interest Rates

The primary channel by which inflationary expectations influence nominal interest rates is through the effect that these expectations have on the actions of borrowers and lenders. A higher expectation of inflation on the part of borrowers will lead to a willingness to pay a higher nominal interest rate in the expectation that the true (or real) cost of the loan will be reduced by inflation.

"... a rise in inflationary expectations will result in a rise in nominal interest rates."

For lenders, higher inflationary expectations will lead to a desire to receive a higher nominal interest rate to compensate for the expected loss in purchasing power of the investment due to inflation. Thus a rise in inflationary expectations will, in the absence of other influences, produce a rise in nominal interest rates.

Output

If expectations of inflation are above the rate which Government policies are designed to produce then, as price setters (both wage and product prices) continue to increase prices on the basis of their expectations, nominal demand will tend to rise at a rate inconsistent with policy and push up nominal interest rates. Because this rise in nominal rates is in addition to that solely due to higher inflation expectations, the result will be an increase in real interest rates (i.e. the margin of nominal interest rates over expected inflation). This will then tend to reduce real demand for goods and services in the economy and produce a fall in the volume of output.

Employment

There are two major ways in which rising inflation expectations tend to produce declining levels of employment. The first relates to the reduced level of output alluded to above which would have a corresponding impact on the level of employment, while the second is concerned with the cost of employing staff.

"... rising inflation expectations tend to produce declining levels of employment."

If expectations of inflation are high, this tends to be associated with high wage demands from unions and a greater willingness by businesses to accept these demands on the basis that they expect to recoup some or all of the increase in wage costs through higher prices for their products. (It is for this reason that expectations of inflation are also used as an indicator of inflationary pressure.) However, if the flow on into prices of the higher wage bill does not occur, due to demand conditions and/or competition, wages relative to product prices rise and employers are faced with cutting staff in order to remain competitive.

Results

Table 1 presents the annual inflation expectations of respondents to the RBNZ Survey and expectations from a separately commissioned survey covering households. The actual inflation rates that eventuated are also listed. The table is read as follows: respondents to the March quarter 1988 RBNZ Survey expected that the annual inflation rate in the year to December 1988 would be 7.7 per cent whereas the actual out-turn was 4.7 per cent. Whereas, households surveyed in the December quarter 1988 expected the rate of inflation to be 6.7 per cent in that same quarter compared to the out-turn of 4.7 per cent.

Some features of the results are worth noting. Households have consistently expected inflation to be higher than actually turned out to be the case; by an average of nearly 3 percentage points for the expectation of the current inflation rate and by near 7 percentage points for the year ahead expectation. RBNZ Survey respondents, on the other hand, have had a lower average expectation for the year ahead inflation rate but still erred on the high side by an average of nearly 3 percentage points (see Figure 1 also).

In order to make an assessment as to how expectations are formed, some regression analysis was conducted which suggested the following results:

- The one year ahead expectation of inflation made by RBNZ Survey respondents is closely related to the last known actual inflation outcome.
- The two year ahead expectation of this group appears to be based on the one year expectation.
- Household inflation expectations of the current inflation rate were found to be related to the last known actual but an average of 1 percentage point higher.

"... expectations of inflation appear to fall only once the actual rate of inflation falls."

Table 1
Expectations of Annual Inflation Rates

Reference Qtr	Actual ¹ %	RBNZ Survey				Households			
		Survey Qtr ²	%	Survey Qtr	%	Survey Qtr	%	Survey Qtr	%
Dec 87	9.6					Dec 87	13.5		
Mar 88	9.0	June 87	9.8			Mar 88	11.0		
June 88	6.3	Sep 87	9.8			June 88	9.9		
Sep 88	5.6	Dec 87	8.9			Sep 88	7.4	Dec 87	12.5
Dec 88	4.7	Mar 88	7.7			Dec 88	6.7	Mar 88	11.2
Mar 89		June 88	6.6	June 87	8.1			June 88	8.8
June 89		Sep 88	4.9	Sep 87	8.3			Sep 88	6.9
Sep 89		Dec 88	4.8	Dec 87	7.4			Dec 88	7.1
Dec 89		Mar 89	4.8	Mar 88	6.7				
Mar 90				June 88	5.6				
June 90				Sep 88	4.6				
Sep 90				Dec 88	4.7				
Dec 90				Mar 89	4.9				

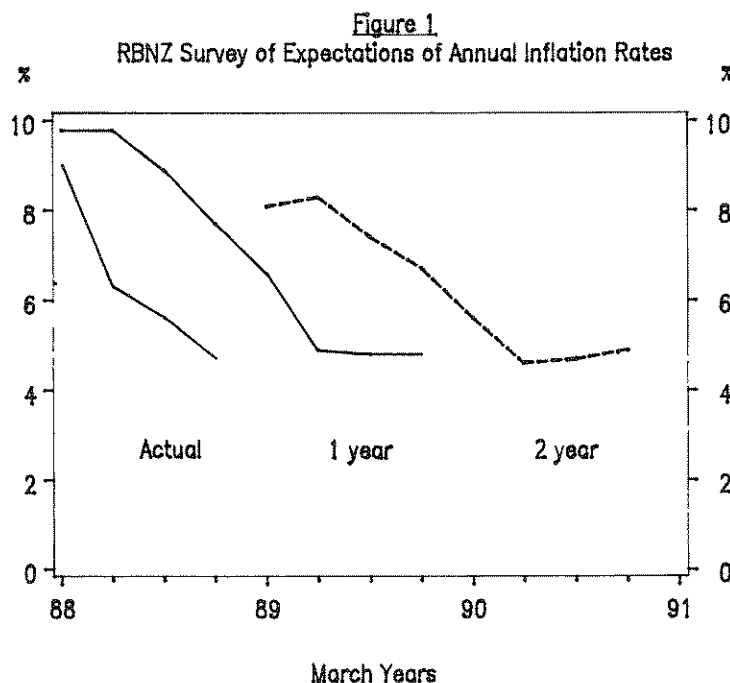
¹ Rate of CPI inflation in the year to the reference quarter

² The quarter in which the expectation for the reference quarter was surveyed

- The one year ahead expectation of inflation made by households is based on what they thought the current inflation rate was

Conclusions

The tentative results discussed above suggest that expectations of inflation fall only once the actual rate of inflation falls. The implication being that as government policy has consistently been aiming at an inflation rate lower than the rate of inflation prevailing at the time (and therefore lower than that expected by the public), some output and employment losses have occurred through the channels outlined earlier. A further implication is that additional costs of this nature can only be avoided if expectations of inflation are consistent with the intentions of government policy.



Note: 1/2 year series represent expectations made 1 and 2 years prior

**SURVEY OF EXPECTATIONS
HISTORICAL RESULTS¹**

Monetary Conditions²:

Q.1 What is your perception of monetary conditions at the present moment:

Survey Qtr	Very Tight			Neutral			Very Relaxed
	1	2	3	4	5	6	
Mar. 1988	1.6	14.1	30.8	27.0	22.7	2.7	1.1
June 1988	7.2	44.2	40.9	3.9	3.3	0.0	0.6
Sept. 1988	4.0	25.3	40.9	17.7	10.6	1.5	0.0
Dec. 1988	0.5	18.0	53.4	17.5	9.5	1.1	0.0
Mar. 1989	0.5	11.2	56.3	17.0	13.6	1.0	0.5

Q.2 What expectation do you have for monetary conditions at the end of (reference quarter):

Survey Qtr	Reference Qtr	Very Tight			Neutral			Very Relaxed
		1	2	3	4	5	6	
Mar. 1988	June 1988	0.5	6.0	32.4	30.8	23.6	5.5	1.1
June 1988	Sept. 1988	1.6	17.0	58.2	18.7	3.8	0.0	0.5
Sept. 1988	Dec. 1988	2.0	17.7	41.9	24.2	12.1	2.0	0.0
Dec. 1988	Mar. 1989	1.1	13.2	45.3	28.4	10.5	1.6	0.0
Mar. 1989	June 1989	1.0	8.3	34.6	35.1	15.1	5.4	0.5
June 1988	Mar. 1989	2.2	8.9	36.1	41.1	8.3	2.8	0.6
Sept. 1988	June 1989	2.0	6.1	33.3	35.7	19.4	3.6	0.0
Dec. 1988	Sept. 1989	0.5	6.9	25.4	43.9	20.1	3.2	0.0
Mar. 1989	Dec. 1990	1.5	4.9	24.4	38.5	23.9	5.4	1.5

Q.3 What is your expectation of the annual % change in the M3 money supply for the year to (reference quarter):

Survey Qtr	Mar. 88	June 88	Sept. 88	Dec. 88	Mar. 89
Reference Qtr	Mar. 87	June 88	Sept. 88	Dec. 88	Mar. 89
Mean	14.1	12.0	10.7	9.3	7.1
Reference Qtr	Dec. 88	Mar. 89	June 89	Sept. 89	Dec. 89
Mean	11.8	9.9	8.7	8.5	7.6

Prices:

Q.4 What quarterly % change do you expect in the Consumers Price Index (C.P.I.) for the (reference quarter):

Survey Qtr	Mar. 88	June 88	Sept. 88	Dec. 88	Mar. 89
Reference Qtr	Mar. 88	June 88	Sept. 88	Dec. 88	Mar. 89
Mean	1.8	1.4	1.0	1.1	1.2
Reference Qtr	June 88	Sept. 88	Dec. 88	Mar. 89	Dec. 89
Mean	1.7	1.4	1.1	1.1	1.3

Q.5 What annual % change do you expect in the Consumers Price Index (C P I) for the year to (reference quarter)

Survey Qtr	Mar 88	June 88	Sept 88	Dec 88	Mar 89
Reference Qtr	Dec 88	Mar 89	June 89	Sept 89	Dec 89
Mean	7.7	6.6	4.9	4.8	4.8
Reference Qtr	Dec 89	Mar 90	June 90	Sept 90	Dec 90
Mean	6.7	5.6	4.6	4.7	4.9

Interest Rates:

Q.6 What do you expect the 90-day Bank Bill market yield to be at the end of (reference quarter)³

Survey Qtr	Mar 88	June 88	Sept 88	Dec 88	Mar 89
Reference Qtr	Mar 88	June 88	Sept 88	Dec 88	Mar 89
Mean	16.3	15.9	14.6	13.9	13.3
Reference Qtr	Dec 88	Mar 89	June 89	Sept 89	Dec 89
Mean	14.2	13.8	12.8	12.6	12.4

Q.7 What do you expect the 5-year Government Security market yield to be at the end of (reference quarter)

Survey Qtr	Mar 88	June 88	Sept 88	Dec 88	Mar 89
Reference Qtr	Mar 88	June 88	Sept 88	Dec 88	Mar 89
Mean	14.6	13.1	12.7	12.6	12.8
Reference Qtr	Dec 88	Mar 89	June 89	Sept 89	Dec 89
Mean	13.0	11.8	11.5	11.6	12.1

Exchange Rates:

Q.8 Relative to the following currencies, what spot exchange rate do you expect for the New Zealand dollar at the end of (reference quarter)

Survey Qtr	Mar 88	June 88	Sept 88	Dec 88	Mar 89
US Dollar					
Reference Qtr	Mar 88	June 88	Sept 88	Dec 88	Mar 89
Mean	0.653	0.675	0.658	0.616	0.605
Reference Qtr	June 88	Sept 88	Dec 88	Mar 89	June 89
Mean	0.631	0.660	0.644	0.608	0.596
Reference Qtr	Dec 88	Mar 89	June 89	Sept 89	Dec 89
Mean	0.609	0.640	0.623	0.597	0.587

Australian Dollar

Reference Qtr	Mar 88	June 88	Sept 88	Dec 88	Mar 89
Mean	0.920	0.882	0.830	0.757	0.690
Reference Qtr	June 88	Sept 88	Dec 88	Mar 89	June 89
Mean	0.901	0.865	0.815	0.749	0.692
Reference Qtr	Dec 88	Mar 89	June 89	Sept 89	Dec 89
Mean	0.879	0.851	0.799	0.744	0.702

Pound Sterling

Reference Qtr	Mar. 88	June 88	Sept. 88	Dec. 88	Mar. 89
Mean	0.367	0.361	0.387	0.353	0.348
Reference Qtr	June 88	Sept. 88	Dec. 88	Mar. 89	June 89
Mean	0.357	0.352	0.373	0.348	0.344
Reference Qtr	Dec. 88	Mar. 89	June 89	Sept. 89	Dec. 89
Mean	0.347	0.342	0.361	0.342	0.343

Japanese Yen

Reference Qtr	Mar. 88	June 88	Sept. 88	Dec. 88	Mar. 89
Mean	84.4	84.3	88.0	78.5	78.5
Reference Qtr	June 88	Sept. 88	Dec. 88	Mar. 89	June 89
Mean	82.7	82.4	86.1	77.2	77.1
Reference Qtr	Dec. 88	Mar. 89	June 89	Sept. 89	Dec. 89
Mean	80.2	80.8	83.9	75.9	75.9

Q.9 What quarterly % change do you expect in the Reserve Trade Weighted Index for the (reference quarter):

Survey Qtr	Mar. 88	June 88	Sept. 88	Dec. 88	Mar. 89
Reference Qtr	Mar. 88	June 88	Sept. 88	Dec. 88	Mar. 89
Mean	-0.1	0.5	-0.4	-0.5	-1.2
Reference Qtr	June 88	Sept. 88	Dec. 88	Mar. 89	June 89
Mean	-1.8	-1.2	-1.2	-0.5	-0.5

Q.10 What annual % change do you expect in the Reserve Bank Trade Weighted Index for the year to (reference quarter):

Survey Qtr	Mar. 88	June 88	Sept. 88	Dec. 88	Mar. 89
Reference Qtr	Dec. 88	Mar. 89	June 89	Sept. 89	Dec. 89
Mean	-3.7	-2.0	-2.6	-2.5	-2.0

Others:

Q.11 What is your expectation of the seasonally adjusted quarterly % change in the real Gross Domestic Product (G.D.P.) index for the (reference quarter):

Survey Qtr	Mar. 88	June 88	Sept. 88	Dec. 88	Mar. 89
Reference Qtr	Dec. 87	Mar. 88	June 88	Sept. 88	Dec. 88
Mean	-0.2	-0.2	-0.4	-0.2	-0.2
Reference Qtr	Mar. 88	June 88	Sept. 88	Dec. 88	Mar. 89
Mean	-0.4	-0.2	-0.3	0.1	0.1

Q.12 What is your expectation of the annual average % change in the real Gross Domestic product (G.D.P.) index for the year to (reference quarter)⁴:

Survey Qtr	Mar. 88	June 88	Sept. 88	Dec. 88	Mar. 89
Reference Qtr	Dec. 88	Mar. 89	June 89	Sept. 89	Dec. 89
Mean	-0.4	-0.2	-0.1	0.3	0.4

Q.13 What is your expectation of the External Balance of Payments on Current Account (in \$ billions) for the year to (reference quarter):

Survey Qtr	Mar. 88	June 88	Sept. 88	Dec. 88	Mar. 89
Reference Qtr	Mar. 88	June 88	Sept. 88	Dec. 88	Mar. 89
Mean	-2.0	-1.9	-1.6	-1.5	-0.5
Reference Qtr	Dec. 88	Mar. 89	June 89	Sept. 89	Dec. 89
Mean	-1.9	-1.8	-1.5	-1.4	-0.4

Q.14 What is your expectation of the Government Budget Table 2 balance (in \$ billions) for the year to (reference quarter):

Survey Qtr	Mar. 88	June 88	Sept. 88	Dec. 88	Mar. 89
Current financial year	Mar. 88	Mar. 89	Mar. 89	Mar. 89	Mar. 89
Mean	-0.5	0.3	0.7	0.3	0.1
Next financial year	Mar. 89	Mar. 90	Mar. 90	Mar. 90	Mar. 90
Mean	-0.2	0.3	0.6	0.2	-0.1

Q.15 What is your expectation of the annual % change in the prevailing weekly wage rates index for the year to (reference quarter):

Survey Qtr	Mar. 88	June 88	Sept. 88	Dec. 88	Mar. 89
Reference Qtr	Dec. 88	Mar. 89	June 89	Sept. 89	Dec. 89
Mean	7.0	6.2	4.5	4.7	4.3

Q.16 What do you expect the number of unemployed persons registered with the Labour Department (excluding special work schemes and vacation workers, in 000's) to be at the end of (reference quarter):

Survey Qtr	Mar. 88	June 88	Sept. 88	Dec. 88	Mar. 89
Reference Qtr	Mar. 88	June 88	Sept. 88	Dec. 88	Mar. 89
Mean	105	113	128	141	161
Reference Qtr	Dec. 88	Mar. 89	June 89	Sept. 89	Dec. 89
Mean	122	126	154	145	165

¹ The survey quarter refers to the quarter in which the survey was undertaken, with the actual survey dates being: 10 February 1988; 11 May 1988; 10 August 1988; 2 November 1988; 8 February 1989. The reference quarter refers to the quarter (period ended or the quarter itself) for which the expectation was held.

² Results for questions 1 and 2 are in the form of percent of total responses in each category, while the remainder of the questions report the mean expectation.

³ Prior to the March quarter 1988 survey this question referred to the 90-day Prime Commercial Bill market yield.

⁴ This question was changed for the December quarter 1987 survey to ask for the annual *average* % change from the previous question which had asked for the annual % change.