



Does Consumer Confidence Forecast Consumption Expenditure in New Zealand?

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Abstract

This paper examines the ability of consumer confidence to forecast consumption expenditure in New Zealand. A two-step process commonly used by other researchers, which was developed by Carroll, Fuhrer and Wilcox (1994), was utilised. The two most widely followed and reported measures of consumer confidence in New Zealand – the One News Colmar Brunton Poll and the Westpac McDermott Miller Consumer Confidence Survey – were used. Lagged values of consumer confidence on its own were found to have some predictive ability for forecasting consumption growth. However, this predictive ability was greatly reduced when control variables – labour income, interest rates and stock prices - were introduced, suggesting that consumer confidence merely reflects current economic conditions. Because of this, consumer confidence provides little additional information above readily available economic and financial data for forecasting consumption. However, since confidence indexes are available in a timely manner compared to economic data, they still provide useful summary information for making assessments of current economic conditions.

JEL CLASSIFICATION E21, E27

KEYWORDS Consumer confidence; consumption; forecasting

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Does Consumer Confidence Forecast Consumption Expenditure in New Zealand?

1 Introduction

This paper investigates the usefulness of consumer confidence in forecasting consumption expenditure in New Zealand. Consumer confidence surveys are widely followed and reported by financial analysts, policy-makers, and the media. These surveys are also sometimes used to forecast economic activity, in particular consumer spending.

Chopin and Darrat (2000) report that there is no consensus about the value of consumer confidence for forecasting consumer spending that is not already captured by economic fundamentals. If the changes in confidence precede changes in consumer behaviour, information on confidence could help explain consumer spending, and will be useful for forecasting purposes. But if confidence changes after or simultaneously with other movements in the economy, then measures of consumer confidence adds little to models designed to forecast the economy.

Recent overseas empirical work on the usefulness of consumer confidence in forecasting household spending showed mixed results. Carroll et al (1994) and Bram and Ludvigson (1998) provided empirical evidence showing that lagged values of consumer confidence contain predictive information about United States household spending, while Acemoglu and Scott (1994) found similar results for United Kingdom consumption growth. Berg and Bergstrom (1996) found that confidence has a significant effect on consumption in Sweden. Loundes and Scutella (2000) also found that consumer confidence is a useful indicator of consumption growth in Australia, particularly discretionary consumption, although it requires a much longer time frame for confidence to impact on consumption compared to other studies. Fan and Wong (1998), and Chopin and Darrat (2000) on the other hand, found no evidence of explanatory power in forecasting consumption growth using consumer confidence indexes in Hong Kong and the United States respectively.¹ Utaka (2003) found that in the case of Japan, consumer confidence has a short term effect on economic fluctuations, but not in the long term.

Using the two most widely followed measures of consumer confidence in New Zealand, lagged confidence on its own were found to have some predictive ability for forecasting consumption growth. However, this predictive ability was greatly reduced when control variables were introduced, suggesting that consumer confidence merely reflects current

¹ Chopin and Darrat (2000) found that consumer confidence was an unreliable predictor for retail sales, but does contain valuable information for predicting some macroeconomic variables such as movements in personal disposable income, interest rates, and to some extent movements in the stock market index.

economic conditions. Because of this, consumer confidence provides little additional information above readily available economic and financial data for forecasting consumption.

This paper is structured as follows. Section 2 describes and compares the two measures of consumer confidence available in New Zealand. Standard determinants of consumer confidence are discussed in Section 3. In Section 4, the methodology, including data choice, is presented. In Section 5, the empirical results are discussed. Conclusions are contained in Section 6.

2 Consumer Confidence Surveys in New Zealand

The first survey of consumer confidence was initiated in the United States by the University of Michigan Survey Research Centre in the late 1940s. The purpose of this survey was to measure changes in consumer attitudes and expectations, to understand why these changes occur, and to evaluate how they relate to consumer decisions to save, borrow, or make discretionary purchases. The five attitudinal questions, from which the consumer confidence index is calculated, is only part of a broader survey, and was originally only inserted in order to loosen up the respondents so that they would be more forthcoming about their income and other personal financial details (Howrey, 2001).

In New Zealand, The One News Colmar Brunton Poll (One News) of consumer confidence and the Westpac McDermott Miller Consumer Confidence Survey (Westpac) are the two most widely followed and reported measures of consumer confidence.

Table 1 – Example of One News Colmar Brunton Poll of consumer confidence

Percentage of responses	November 2002	December 2002	February 2003	March 2003	April 2003
Economy in a better or worse state than at present during the next 12 months?					
[1] Better	41%	42%	38%	27%	34%
[2] Worse	31%	31%	34%	45%	40%
Consumer Confidence Index ([1] - [2]) + 100	110	111	104	82	94

Note: Percentage of “same” responses not reported.

The One News survey (formerly known as the Heylen Poll) dates from 1974, but monthly polling only started from 1976. The survey suffers from occasional missing data, and from 1997 onwards is conducted 11 times a year, with no survey in January. The One News survey is actually a political poll, conducted by computer assisted telephone interviews on a random sample of 1,000 eligible voters. The confidence index is based on one question, asked towards the end of the interview, regarding the respondents’ expectation of the state of the economy during the next 12 months. The One News survey does not actually calculate the confidence index. It just reports the percentage of positive (ie respondents saying “better”), negative (ie respondents saying “worse”), or neutral (ie respondents saying “same”) responses. A confidence index is derived by calculating the difference between the percentage of positive responses and the percentage of negative responses, and adding 100. Neutral responses are ignored. This net balance statistic is the most commonly used method of calculating consumer confidence. It allows a single

figure to be presented. A downside is that any information content in the neutral or unchanged responses are not directly captured.²

Table 2 – Example of Westpac McDermott Miller Consumer Confidence Survey

Percentage of responses	March 2002	June 2002	September 2002	December 2002	March 2003
Better or worse off financially now than a year ago?					
[1] Better off	34.3%	34.2%	33.8%	32.2%	28.8%
[2] Worse off	32.6%	27.9%	28.4%	30.8%	32.6%
[3] <i>Difference</i> ([1] - [2])	1.7%	6.3%	5.4%	1.4%	-3.8%
Expect to be better or worse off financially this time next year?					
[4] Better off	34.0%	33.7%	32.5%	32.2%	29.4%
[5] Worse off	14.3%	14.3%	13.1%	10.7%	16.6%
[6] <i>Difference</i> ([4] - [5])	19.7%	19.4%	19.4%	21.5%	12.8%
Good or bad economic times over the next 12 months in New Zealand?					
[7] Better off	44.5%	44.2%	39.9%	42.1%	28.7%
[8] Worse off	21.3%	22.0%	24.2%	20.5%	34.6%
[9] <i>Difference</i> ([7] - [8])	23.2%	22.2%	15.7%	21.6%	-5.9%
Good or bad economic times over the next 5 years in New Zealand?					
[10] Better off	42.0%	42.1%	42.6%	42.9%	44.2%
[11] Worse off	12.9%	11.8%	14.7%	14.7%	13.5%
[12] <i>Difference</i> ([10] - [11])	29.1%	29.4%	27.9%	28.2%	30.7%
Good or a bad time to buy major household items?					
[13] Better off	46.9%	46.7%	46.2%	47.8%	48.0%
[14] Worse off	19.3%	18.8%	16.8%	23.7%	21.1%
[15] <i>Difference</i> ([13] - [14])	27.6%	27.9%	29.4%	24.1%	26.9%
Consumer Confidence Index	120.2	121.0	119.6	119.4	112.1
([3] + [6] + [9] + [12] + [15]) ÷ 5 + 100					

Note: Percentage of “same” responses not reported.

The Westpac survey has been carried out on a quarterly basis since June 1988, conducted by computer assisted telephone interviews on a random sample of around 1,500 people. Because the survey is based on five internationally standardised questions, similar to the ones used in the University of Michigan survey, the confidence index is directly comparable with the Australian Westpac-Melbourne Institute Index of Consumer Sentiment, the University of Michigan’s Consumer Sentiment Index in the United States, and other European confidence indexes. Of the five questions that make up the confidence index, two ask respondents to assess the present economic conditions, and three ask about the respondents’ future expectations of their individual circumstances and the economy in general. The headline confidence index is calculated by averaging the difference in the percentage of positive and negative responses for each of the five questions, and adding 100. As with the case of the One News index, neutral responses are ignored. In the United States, the University of Michigan also produce subindexes relating to current and expected economic conditions. Bram and Ludvigson (1998) found that responses to questions about either the present or the future have more forecasting power than questions that compare the present with the past. For this paper, a Current Conditions Index and a Future Conditions Index are derived based on the component

² It is possible to calculate alternative indexes from the survey responses, but this lies outside the scope of this paper.

questions, to test whether they have greater predictive ability compared to the headline index (Overall Index).

Despite the methodological differences³, there is a high degree of correlation between the two consumer confidence indexes, with the One News index tending to be more volatile. The Westpac index is methodologically the more superior of the two, but the One News index has the benefit of being more timely. However, the timeliness factor of the One News index and the reliance on only one question can become a disadvantage when the survey is conducted immediately after a major event, such as the September 11 terrorist attacks in 2001. The terrorist attacks occurred in the middle of the One News interviewing dates for the September 2001 survey. Respondents' outlook on the economy was likely heavily influenced by the event, resulting in a decline in the confidence index from 114 in August 2001 to 99 in September 2001. Confidence deteriorated further in October 2001 when the index fell to 90. By the December 2001 survey, the confidence index had recovered to 109. In contrast, the quarterly Westpac index showed a modest decline in consumer confidence in the September 2001 quarter, but that quickly recovered in the December 2001 quarter.

Table 3 – Comparison of the two consumer confidence surveys in New Zealand

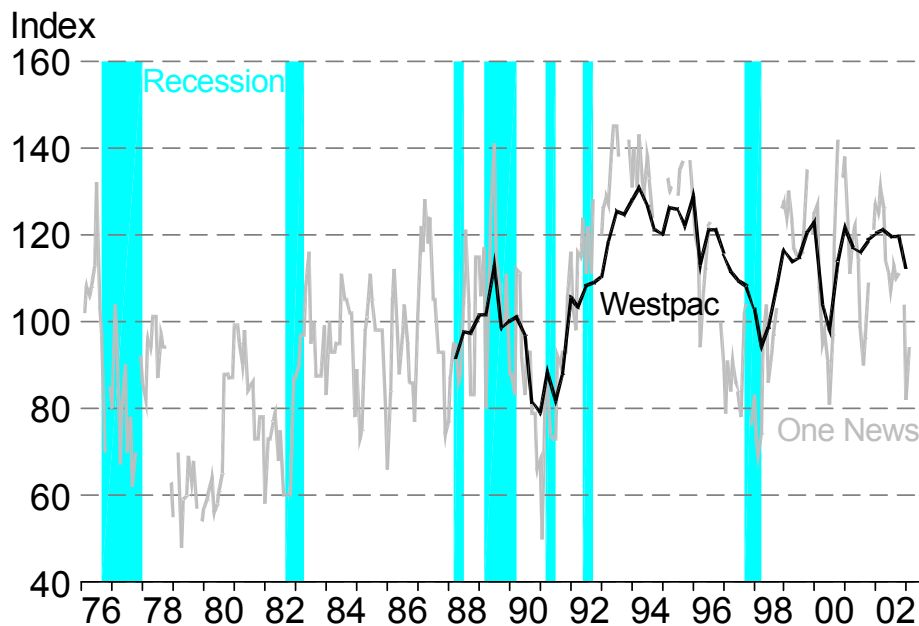
	Westpac McDermott Miller	One News Colmar Brunton
Frequency:	Quarterly	Monthly
Methodology:	Randomly selected households conducted by computer assisted telephone interviews.	Randomly selected eligible voter conducted by computer assisted telephone interviews.
Sample Size:	1,500	1,000
Questions:	(1) Are you better or worse off financially now than a year ago? (2) Do you expect to be better or worse off financially this time next year? (3) Do you expect good or bad economic times over the next 12 months in New Zealand? (4) Do you expect good or bad economic times over the next 5 years in New Zealand? (5) Is it a good or a bad time to buy major household items?	(1) Do you think during the next 12 months the economy will be in a better state than at present, or in a worse state?
Index Calculation:	Average of the percentage of respondents saying 'better' minus percentage of respondents saying 'worse' for each question, plus 100.	Percentage of respondents saying 'better' minus percentage of respondents saying 'worse', plus 100.

³ The One News survey is essentially just one of the component question in the Westpac survey.

3 Information Content of Consumer Confidence

Before moving on to examine the forecasting ability of consumer confidence, it is useful to evaluate the determinants of the confidence indexes itself. A common criticism of consumer confidence is that it is endogenous and merely a reflection of current macroeconomic conditions. Others argue however, that psychological factors that are not captured by economic variables can influence consumer decision-making, and confidence indexes are able to capture some of those effects. Figure 1 shows the two consumer confidence indexes. The shaded areas are technical recessions, defined as two consecutive quarters of negative growth in real gross domestic product (GDP). The graph shows that periods of recession do not necessarily correspond with falls in consumer confidence, and vice versa. In the September 2000 quarter, both consumer confidence indexes recorded large declines to levels last seen in the 1997/98 recession. However, no recession occurred.

Figure 1 – Consumer confidence indexes in New Zealand



Sources: One News Colmar Brunton, Westpac McDermott Miller, The Treasury

To test whether the consumer confidence indexes contain additional information over and above those contained in fundamental economic data, the following equation is specified:

$$(1) \quad S_t = \lambda + \delta X_t + \sigma_t$$

where S_t denotes the consumer confidence indexes, λ is a constant, X_t is a vector containing standard economic variables that are thought to have an influence on consumers, and σ is the error term. The economic variables considered are: real labour income, unemployment rate (a proxy for precautionary savings), inflation (a proxy for uncertainty), real interest rates, real net housing wealth, real net financial wealth and

lagged confidence.⁴ Confidence is expected to be positively correlated with changes in income, housing and financial wealth, and negatively correlated with interest rates, inflation and changes in the unemployment rate. The more income or wealth a consumer has, the more positive they are likely to feel as reflected in the survey response. Conversely, the higher the unemployment rate, the more likely that consumers will worry about their own job prospects. Higher interest rates and inflation erodes consumers' purchasing power due to less disposable income or higher prices.

Table 4 – Determinants of consumer confidence

	One News		Westpac	
	Initial	Final	Initial	Final
Constant	61.679 (4.998)*	53.171 (5.045)**	55.819 (5.602)**	55.479 (5.725)**
Current real interest rate	-1.500 (-1.453)		-1.246 (-2.14)*	-1.361 (-2.534)*
Current inflation rate	22.656 (0.237)		-15.748 (-0.294)	
Change in unemployment rate	-17.763 (-4.027)**	-18.204 (-4.654)**	-5.766 (-2.392)*	-6.526 (-2.883)**
Change in real labour income	-163.296 (-0.893)		126.888 (1.219)	
Change in real net housing wealth	165.225 (1.978)^	168.754 (2.14)*	125.679 (2.711)**	137.978 (3.133)**
Change in real net financial wealth	19.912 (0.258)		18.534 (0.424)	
Lagged confidence	0.518 (5.316)**	0.515 (5.426)**	0.559 (6.843)**	0.572 (7.271)**
Adjusted R-squared	0.74	0.75	0.82	0.82
DW d-stat	1.97	1.94	2.43	2.29
F-stat	22.16	52.08	34.06	60.76

Note: The sample period is 1990:1 to 2002:4. Normal *t*-values are reported in parentheses.

** Significant at the 1% level. * Significant at the 5% level. ^ Significant at the 10% level.

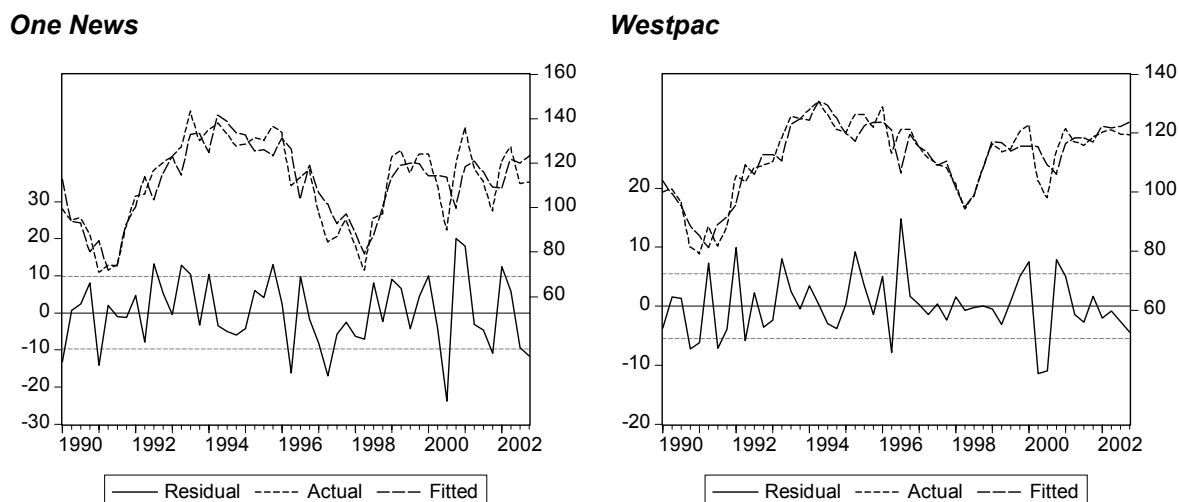
If consumer confidence is just a reflection of current economic conditions, then most of the variations in consumer confidence can be explained by the variables specified in equation (1). Table 4 presents the results of the initial and final specifications of equation (1). Due to data availability, the sample period is from 1990:1 to 2002:4, giving 52 observations. Multicollinearity among the independent variables was not found to be an issue. The initial specification regresses consumer confidence against all the variables considered above. The final specification regresses consumer confidence against only those variables that are found to be significant, using Hendry's general to specific modelling approach. Due to a break in the headline inflation series from 2001:2 when interest rate effects were removed, an alternative inflation series excluding interest rates was also used (not reported). This did not make material differences to the regressions. As a further alternative test, the actual headline inflation series were replaced with

⁴ The data used in this paper are described in more detail and plotted in the appendix.

consumers' current inflation perception as well as inflation expectations in a year's time.⁵ This alternative is intended to examine whether it is expectations rather than actual inflation that has an influence on consumer confidence. No significant differences to the results were found, mainly due to the strong correlation between actual and expected inflation (not reported). As a consequence, the reported results in Table 4 uses the headline inflation series.

Based on the final specification, three-quarters of the variation in the One News index ($\bar{R}^2=75.0\%$) can be explained by the change in the unemployment rate, change in real net housing wealth, and lagged confidence. Over four-fifths of the Westpac index ($\bar{R}^2=82.4\%$) can be explained by current real interest rates, the change in the unemployment rate, change in real net housing wealth, and lagged confidence. Although the results suggest that confidence is highly correlated with the current state of the economy, some of the variations in the confidence indexes cannot be explained by fundamental economic data. The unexplained variations of these indexes may contain useful information for forecasting purposes.

Figure 2 – Actual, fitted and residual values from equation (1): final specification



4 Forecasting Ability of Consumer Confidence

A two-step process is used to determine the forecasting ability of consumer confidence. The method was developed by Carroll et al (1994) and subsequently used by other researchers, allowing for cross-country comparisons. The first step involves specifying a simple forecasting equation to examine the predictive ability of consumer confidence on consumption expenditure. This is done by examining the \bar{R}^2 from regressions of the growth of various measures of consumption expenditure on lagged values of consumer confidence indexes. This specification takes the following form:

$$(2) \quad \Delta \log(C_t) = \alpha_0 + \sum_{i=1}^N \beta_i S_{t-i} + \varepsilon_t$$

⁵ Consumers' inflation expectations (both current perception and expectations in a year's time) are surveyed by the Reserve Bank of New Zealand and Westpac McDermott Miller. Both the current perception and future expectations exhibit strong correlations with current actual inflation (between 0.87 to 0.90).

where C_t denotes the four different measures of consumption, α_0 is a constant, S_t denotes the various consumer confidence indexes, and ε is the error term. The four measures of consumption are total private consumption, durables consumption, non-durables consumption, and services consumption. Equation (2) essentially amounts to a test of Hall's (1978) random-walk hypothesis, which states that since the permanent income hypothesis implies that consumption will follow a random walk, consumption growth cannot be forecasted from lagged information.⁶ If the β 's in equation (2) are significantly different from zero, Hall's hypothesis can be rejected. The predictive ability of the Westpac survey component questions is also tested by using the derived Current Conditions Index and Future Conditions Index; and the net responses for each of the five individual questions. The One News survey was also measured for the quarter based on the monthly reading at the end of the quarter instead of using the quarter average, as an alternative. The results, which are not reported in this paper, indicate that this alternative measure do not qualitatively change the estimations.

The second step involves investigating whether consumer confidence has any predictive ability once controls for information contained in other variables are introduced. This is done by modifying equation (2) above by introducing control variables, producing the following form:

$$(3) \quad \Delta \log(C_t) = \alpha_0 + \sum_{i=1}^N \beta_i S_{t-i} + \gamma Z_{t-1} + \varepsilon_t$$

where Z_{t-1} is a vector of control variables. Equation (3) allows the predictive ability of consumer confidence to forecast future consumption expenditure to be quantified by examining the incremental \bar{R}^2 values. The choice of control variables used is based on existing literature. Carroll et al (1994) used a minimal specification that included four lags of the dependent variable and four lags of the log first difference in real labour income, although they note that the choice of variables is inherently somewhat arbitrary. Bram and Ludvigson (1998) expanded the choice of variables to include four lags of the first difference in the three-month Treasury bill rate and four lags of the log first difference in the real stock price index as measured by the S&P 500 index. The rationale for including the two financial indicators is that they are available on an almost continuous basis and may contain much of the same information captured by consumer confidence.

For this paper, the control variables included in Z_{t-1} are four lags of the dependent variable, four lags of the log first difference in real labour income, four lags of the first difference in the real 90-day bank bill rate, and four lags of the first difference in the real stock price index as measured by the NZSE40 index. Since the composition of New Zealand household's wealth is strongly biased towards housing, four lags of the first difference in real house prices were substituted for the stock price index as an alternative. The results, which are not reported, suggest that the stock market index is a better financial indicator for the purposes of this paper.

⁶ Hall's argument is that if previous values of consumption incorporated all information about the wellbeing of consumers at that time, then lagged values of other variables should have no additional explanatory value once lagged consumption is included. Hence, the best forecast of next period's consumption is this period's.

5 Empirical Results

Table 5 presents the results of equation (2), where consumption growth is regressed against four lags of consumer confidence as explanatory variables. Lagged values of consumer confidence on its own explain between 12.8% and 24.4% of the variation in the quarterly growth rate of total private consumption expenditure. The coefficients of all the lagged consumer confidence measures are statistically significant at the 5% level. The estimated explanatory ability of New Zealand consumer confidence are higher than that found for the United States (14%, by Carroll et al (1994)) and Australia (4%, by Loundes and Scutella (2000) although this was not significant at the 10% level), but less than that for the United Kingdom (29.2%, by Acemoglu and Scott (1994)). Differences in time periods must be borne in mind with the cross-country comparisons.

A similar result was found for durables consumption, where consumer confidence accounted for between 10.6% and 25.3% of the variation in the quarterly growth rate. However, in the case of non-durables consumption, none of the confidence measures had any significant explanatory ability except for the Westpac Current Conditions Index. For services consumption, most of the lagged values of consumer confidence were significant in explaining a proportion of the variation in the quarterly growth rate.

The Westpac Current Conditions Index had the greatest explanatory ability for total private consumption, durables consumption and non-durables consumption, but is not significant in predicting services consumption. In general, the component questions of the Westpac survey on their own do not have as much predictive ability as the derived indexes. Similarly, the One News index has poorer predictive ability compared to the Westpac indexes. This is not surprising considering that the One News index is essentially a component question of the Westpac survey.

The finding that most of the consumer confidence indexes have no predictive ability in explaining variations in non-durables consumption growth is expected. Food and beverages make up over 60% of non-durables consumption, and demand for these products are generally income inelastic. Hence, consumer confidence would not have been expected to be a significant influence on non-durables consumption growth.

Table 6 reports the increment to the \bar{R}^2 provided by the lagged values of consumer confidence, when four lags of the dependent variable and four lags of the log first difference in real labour income growth are added as control variables. These control variables are similar to the ones used by Carroll et al (1994). The results show that the One News index has no significant predictive ability once lags of the dependent variables and income are added. This lack of predictive ability is across all consumption measures. Similarly, most of the component questions of the Westpac survey do not significantly explain any additional variations to consumption growth once the control variables are introduced. The Westpac Current Conditions Index adds the most explanatory power for total private consumption, durables consumption and non-durables consumption growth. The Westpac survey Question 1 adds the most explanatory power for services consumption growth.

The additional predictive ability of consumer confidence is further eroded when financial indicators are introduced into the control variables. Table 7 reports the increment to the \bar{R}^2 provided by the lagged values of consumer confidence, when the interest rate and stock market index are added to the control variables. These control variables are similar to the ones used by Bram and Ludvigson (1998). Of all the measures of consumer confidence, only the Westpac Overall Index and Current Conditions Index showed any additional explanatory power. Once again, the Westpac Current Conditions Index had the largest additional predictive ability, explaining an additional 23.4% of the variation in total private consumption growth.

Table 5 – Predictive ability of consumer confidence

	Westpac McDermott Miller Consumer Confidence Survey						One News Colmar Brunton		
	Overall Index	Current Conditions Index	Future Conditions Index	Question 1	Question 2	Question 3		Question 4	Question 5
Total Private Consumption	0.226 (0.001)	0.244 (0.000)	0.189 (0.004)	0.177 (0.005)	0.167 (0.007)	0.165 (0.008)	0.166 (0.008)	0.128 (0.023)	0.135 (0.019)
Durables Consumption	0.203 (0.002)	0.253 (0.000)	0.165 (0.008)	0.223 (0.001)	0.126 (0.025)	0.148 (0.013)	0.135 (0.019)	0.106 (0.042)	0.164 (0.008)
Non-durables Consumption	0.043 (0.182)	0.118 (0.031)	-0.005 (0.444)	0.069 (0.103)	-0.031 (0.649)	-0.015 (0.517)	0.024 (0.265)	0.085 (0.070)	-0.009 (0.466)
Services Consumption	0.143 (0.015)	0.077 (0.085)	0.135 (0.019)	0.142 (0.015)	0.090 (0.062)	0.150 (0.012)	0.175 (0.006)	0.096 (0.054)	0.119 (0.029)

Note: The table reports the adjusted R² statistics of equation (1), based on four lags of consumer confidence as explanatory variables. The numbers in parentheses are p-values of the joint significance of the lags. Figures in bold indicate significance at the 5% level. Sample period is 1990:2 to 2002:4.

Table 6 – Incremental predictive ability of consumer confidence

	Westpac McDermott Miller Consumer Confidence Survey					One News Colmar Brunton			
	Overall Index	Current Conditions Index	Future Conditions Index	Question 1	Question 2		Question 3	Question 4	Question 5
Total Private Consumption	0.272 (0.001)	0.373 (0.000)	0.172 (0.015)	0.138 (0.033)	0.117 (0.052)	0.108 (0.063)	0.124 (0.045)	0.128 (0.042)	0.067 (0.141)
Durables Consumption	0.140 (0.026)	0.201 (0.005)	0.091 (0.081)	0.168 (0.013)	0.088 (0.086)	0.061 (0.147)	0.002 (0.395)	0.021 (0.296)	0.044 (0.200)
Non-durables Consumption	0.023 (0.295)	0.131 (0.044)	-0.030 (0.584)	0.019 (0.312)	-0.067 (0.822)	-0.040 (0.645)	-0.004 (0.425)	0.112 (0.065)	-0.021 (0.528)
Services Consumption	0.167 (0.012)	0.077 (0.105)	0.136 (0.028)	0.172 (0.011)	0.119 (0.042)	0.135 (0.029)	0.168 (0.012)	0.028 (0.263)	0.065 (0.134)

Note: The table reports the increment to the adjusted R^2 statistic from adding four lags of consumer confidence to four lags of the dependent variable, and four lags of the log first difference in real labour income. The numbers in parentheses are the p -values for the joint significance of the lags of consumer confidence. Figures in bold indicate significance at the 5% level. Sample period is 1990:2 to 2002:4.

Table 7 – Incremental predictive ability of consumer confidence controlling for financial indicators

	Westpac McDermott Miller Consumer Confidence Survey										One News Colmar Brunton
	Overall Index	Current Conditions Index	Future Conditions Index	Question 1	Question 2	Question 3	Question 4	Question 5	Question 4	Question 5	
Total Private Consumption	0.138 (0.048)	0.234 (0.005)	0.055 (0.198)	0.002 (0.397)	0.051 (0.210)	-0.004 (0.425)	0.037 (0.255)	0.005 (0.382)	0.037 (0.255)	0.005 (0.382)	-0.017 (0.492)
Durables Consumption	0.074 (0.162)	0.128 (0.070)	0.028 (0.294)	0.090 (0.128)	0.086 (0.136)	-0.008 (0.442)	-0.066 (0.735)	-0.074 (0.773)	-0.066 (0.735)	-0.074 (0.773)	-0.036 (0.580)
Non-durables Consumption	0.049 (0.243)	0.137 (0.077)	-0.005 (0.426)	0.020 (0.332)	-0.094 (0.826)	-0.016 (0.469)	0.016 (0.345)	0.091 (0.145)	0.016 (0.345)	0.091 (0.145)	-0.005 (0.424)
Services Consumption	0.054 (0.167)	0.050 (0.181)	0.000 (0.408)	0.101 (0.065)	0.043 (0.206)	0.026 (0.276)	-0.025 (0.560)	-0.063 (0.819)	-0.025 (0.560)	-0.063 (0.819)	0.018 (0.312)

Note: The table reports the increment to the adjusted R^2 statistic from adding four lags of consumer confidence to four lags of the dependent variable, four lags of the log first difference in real labour income, four lags of the first difference in the real 90-day bank bill rate, and four lags of the first difference in the real stock price index. The numbers in parentheses are the p -values for the joint significance of the lags of consumer confidence. Figures in bold indicate significance at the 5% level. Sample period is 1990:2 to 2002:4.

6 Conclusions

This paper examined the ability of consumer confidence to forecast consumption expenditure in New Zealand. The headline measures of consumer confidence from the One News Colmar Brunton Poll and Westpac McDermott Miller Consumer Confidence Survey were used. Two further indexes were also derived from the Westpac survey based on the individual component questions. Although a large proportion of the variation (between 75% to 82%) in the headline consumer confidence measures can be explained by fundamental economic data, there is enough unexplained variations to suggest that confidence may contain useful information for forecasting purposes. The Westpac survey appears to better reflect current economic conditions compared to the One News survey.

On their own, lagged values of all the headline and derived consumer confidence indexes, as well as all the individual component questions of the Westpac survey were found to have some explanatory power for the quarterly growth rates of total private consumption and durables consumption. The explanatory ability of New Zealand consumer confidence was higher compared to the United States and Australia, but less compared to the United Kingdom.

When control variables were introduced all the confidence measures, with the exception of the headline index and Current Conditions Index from the Westpac survey, were found to contain no additional predictive ability. The Current Conditions Index had the largest additional predictive ability for total consumption after introducing control variables, explaining an additional 23.4% of the quarterly growth rates. Confidence was not found to contain additional predictive ability for durables, non-durables or services consumption.

This finding suggests that consumer confidence merely contains a lot of the economic information that influences consumption expenditure, and therefore adds very little additional information for forecasting purposes. Although confidence appears to have additional predictive ability for total consumption, this result should be treated with caution as confidence had no predictive ability for the components of consumption. However, this is not to say that no attention should be paid to consumer confidence. Because confidence indexes are available in a timely manner compared to economic data, they provide useful summary information for making assessments of current economic conditions.

Appendix: Data and Data Sources

One News Colmar Brunton Poll

Data is available via subscription from Colmar Brunton (www.colmarbrunton.com). Missing data is interpolated by taking the average of the previous and proceeding monthly measures. The monthly series is then converted to a quarterly series by averaging the monthly measures.

Westpac McDermott Miller Consumer Confidence Survey

Data is available from Westpac (www.westpac.co.nz) or from McDermott Miller (www.mcdermottmiller.co.nz). The Overall Index is calculated by averaging the difference in the percentage of positive and negative responses for each of the five questions, and adding 100. The Current Conditions Index is calculated by averaging the difference in the percentage of positive and negative responses to Questions 1 and 5, and adding 100. The Future Conditions Index is calculated by averaging the difference in the percentage of positive and negative responses to Questions 2, 3 and 4, and adding 100.

Consumption

Data for total consumption and its three components (durables, non durables and services) are quarterly, seasonally adjusted in millions of dollars, and expressed in 1995/96 prices. The data come from Statistics New Zealand (*series identifier SNCQ.S2RP30GS for total consumption, SNCQ.S2RP30BES for durables consumption, SNCQ.S2RP30AES for non-durables consumption, and SNCQ.S2RP30CES for services consumption*).

Wealth

All wealth data comes from the Westpac Household Savings Indicators. The series starts from 1989:4, and the unit is in millions of dollars. Data is available via subscription only from Morningstar (www.morningstar.net.nz).

Labour income

This series was derived using data from Statistics New Zealand, The Treasury, and the Ministry of Social Development. After-tax labour income is defined as wages and salaries less social security contributions and tax plus transfer payments:

$$LY = (WAGES - ACC - TAXES) + (TRANSFERS)$$

WAGES is the quarterly wage bill constructed by multiplying the average weekly earnings series (*Statistics New Zealand series identifier code is EESQ.SASZ9A*) by the total number of wage and salary earners (full-time equivalent adjusted) (*Statistics New Zealand series identifier code is HLFQ.SLA3HA*), and scaling it into a quarterly series. *ACC* and *TAXES* are calculated from the *WAGES* series based on the official statutory *ACC* and income tax rates obtained from The Treasury.

TRANSFERS is derived by multiplying the relevant weekly net benefit rates by the estimated number of beneficiaries, and scaling it into a quarterly series. There are three main beneficiary groups in *TRANSFERS*. The weekly benefit rates are based on the actual main statutory rates obtained from the Ministry of Social Development. The number of beneficiaries are estimated from population and labour market data from Statistics New Zealand.

Interest rate

The interest rate used in this paper is the quarterly average 90-day bank bill yield as at 11am. Data source is the Reserve Bank of New Zealand, and the official series starts from 1985:1. (*Data available at www.rbnz.govt.nz/statistics/exandint/index.html*).

Unemployment rate

The unemployment rate is the proportion of people in the labour force actively seeking work but not currently employed. Quarterly data are seasonally adjusted in percentage terms. Data source is Statistics New Zealand, and the official series starts from 1985:4. (*Statistics New Zealand series identifier code is HLFQ.S1F3S*).

Inflation rate

This is the annual percentage change in the quarterly Consumers Price Index, published by Statistics New Zealand. (*Statistics New Zealand series identifier code is CPIQ.SE9A*).

Stock market index

The stock market index used is the NZSE40 capital index. The data are quarterly averages. The index is calculated and maintained by the New Zealand Stock Exchange (www.nzse.co.nz).

Consumption deflator

This is the implicit price deflator for total private consumption, calculated by dividing the seasonally adjusted current price quarterly series (*Statistics New Zealand series identifier code is SNCQ.S2NP30GS*) by the equivalent constant price series (*Statistics New Zealand series identifier code is SNCQ.S2RP30GS*). Data source is Statistics New Zealand, and the official series starts from 1987:2. The consumption deflator was used to deflate all nominal series.

Stationarity tests

Table 8 below presents the unit root tests for the above variables, using the Augmented Dickey Fuller (ADF) procedure. The appropriate lag length for the ADF test was chosen by minimising the Akaike Information Criterion (AIC). All level and log-level variables included an intercept but no trend except for all the consumption variables, real labour income and wealth variables. For the first difference variables, all the chosen specification included an intercept only. All variables are I(1) except for durables consumption and the unemployment rate. However, over a longer time period, there is evidence to suggest that both durables consumption and the unemployment rate are I(1). Based on *a priori* expectations, the consumer confidence measures are expected to be I(0) because they are expected to be free of trend and seasonality problems. Although the unit root tests suggests that the consumer confidence measures are all I(1), for this paper we assume that they are I(0).

Table 8 – Results of ADF tests

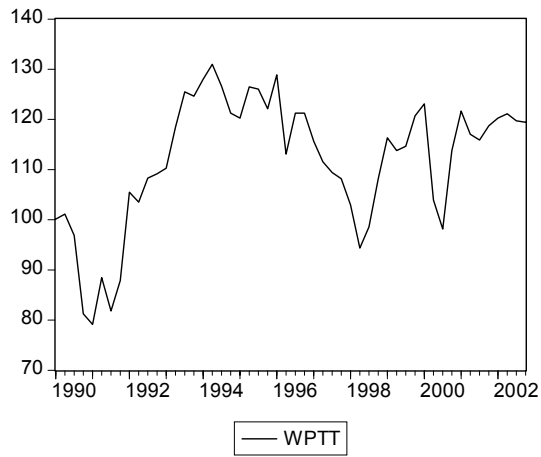
Variable	Level	Log-level	1st difference
Total Private Consumption	-2.741	-2.747	-3.571**
Durables Consumption	-2.677	-3.112	-2.694
Non-durables Consumption	-2.117	-2.067	-5.454**
Services Consumption	-3.270	-3.155	-3.968**
Westpac Overall Index	-1.601	-	-6.583**
Westpac Current Conditions Index	-1.975	-	-5.213**
Westpac Future Conditions Index	-1.601	-	-7.15**
Westpac Component Question 1	-1.349	-	-5.959**
Westpac Component Question 2	-1.975	-	-5.984**
Westpac Component Question 3	-1.621	-	-7.13**
Westpac Component Question 4	-1.687	-	-7.954**
Westpac Component Question 5	-2.361	-	-6.062**
One News Colmar Brunton	-2.486	-	-6.556**
Real Labour Income	-2.093	-2.616	-2.953*
Real Interest Rates	-1.233	-	-5.867**
Real Stock market index	-2.280	-2.272	-4.688**
Inflation Rate	-2.823	-	-3.25*
Real Net Housing Wealth	-2.005	-2.041	-3.327*
Real Net Financial Wealth	-1.316	-1.307	-5.023**
Unemployment Rate	-1.493	-	-2.627

** Stationarity at the 1% level (MacKinnon critical values).

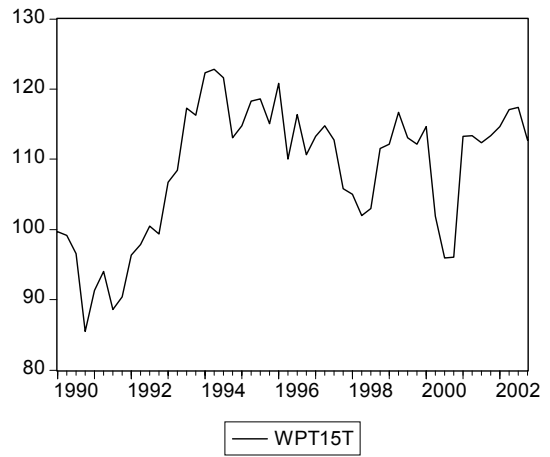
* Stationarity at the 5% level (MacKinnon critical values).

Note: All variables were tested over the 1990:2 to 2002:4 period.

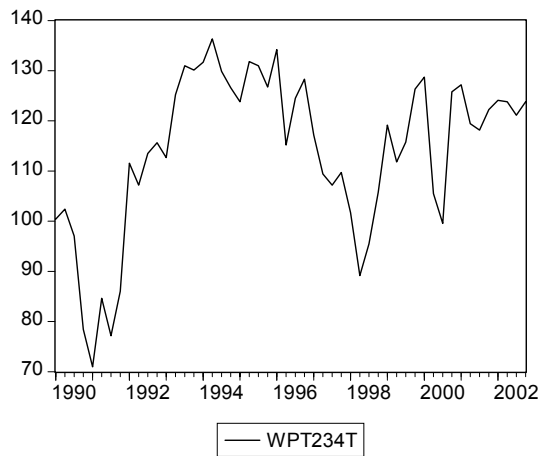
Westpac Overall Index



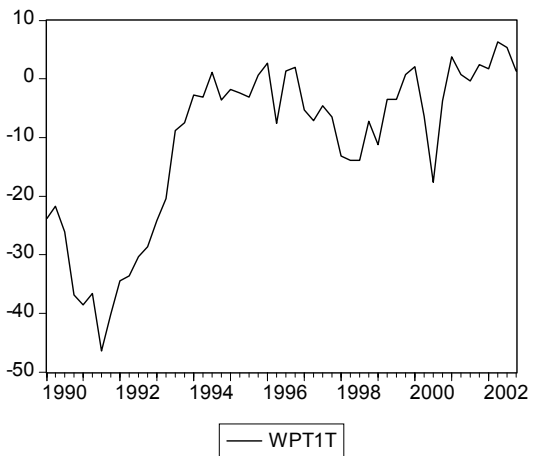
Westpac Current Conditions Index



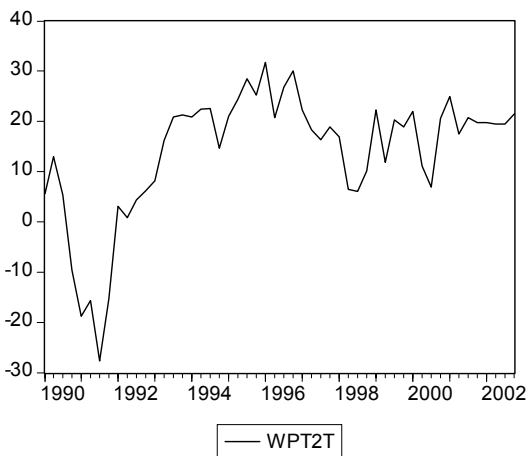
Westpac Future Conditions Index



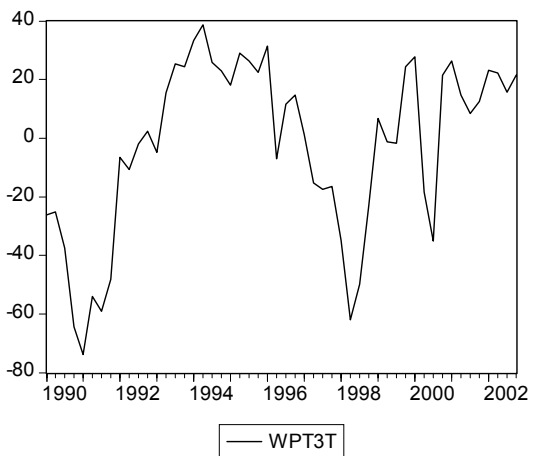
Westpac Component Question 1



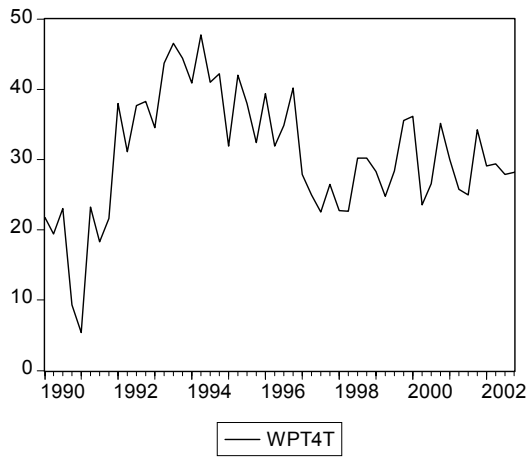
Westpac Component Question 2



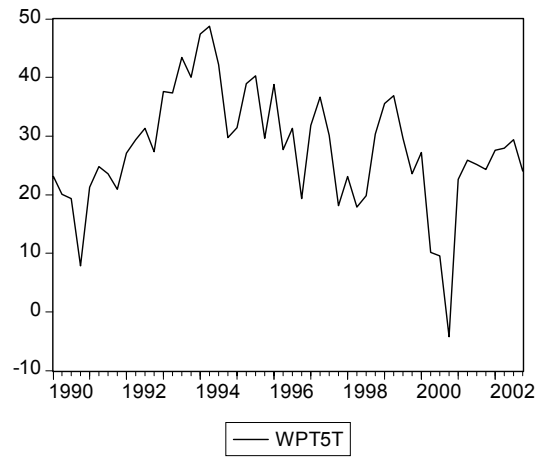
Westpac Component Question 3



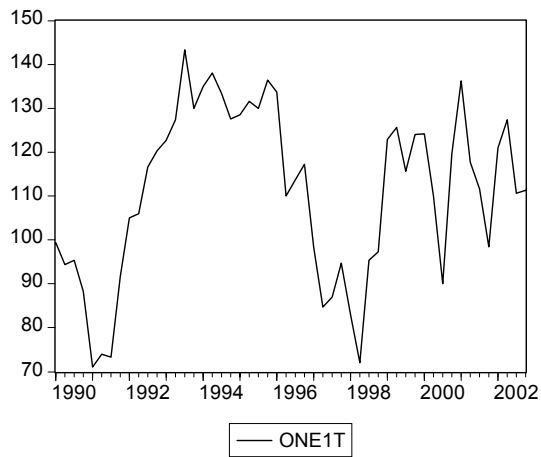
Westpac Component Question 4



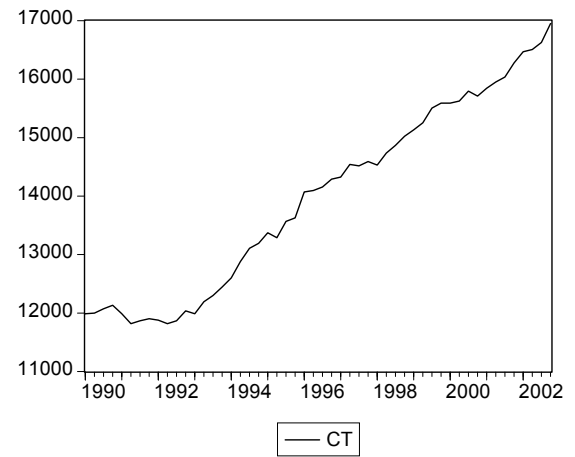
Westpac Component Question 5



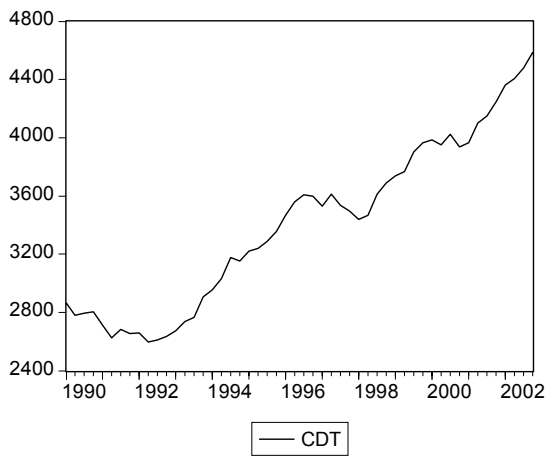
One News Colmar Brunton



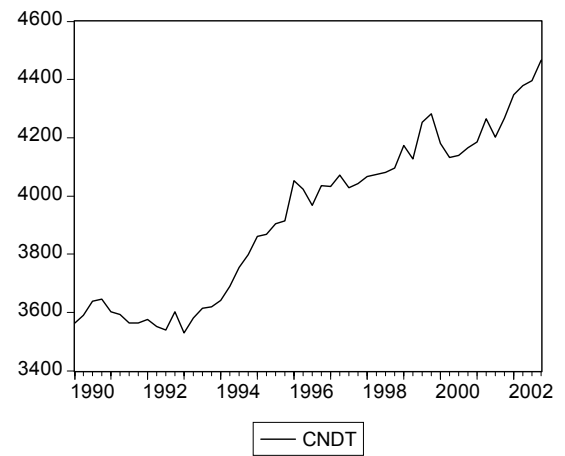
Total Private Consumption



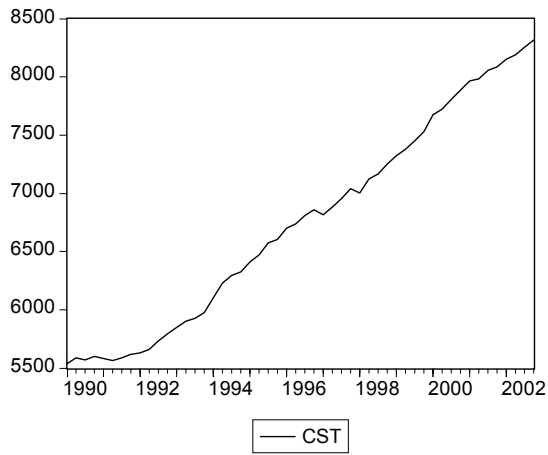
Durables Consumption



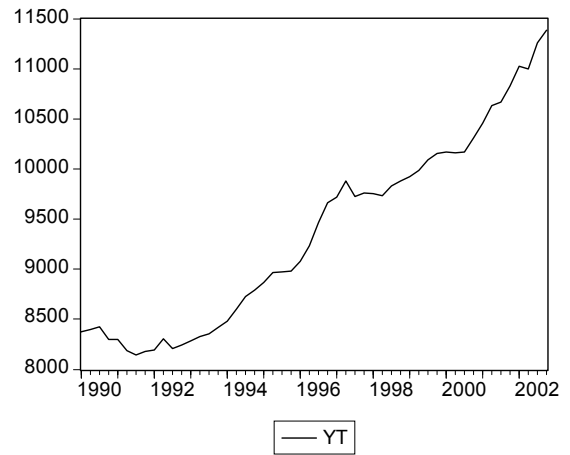
Non-durables Consumption



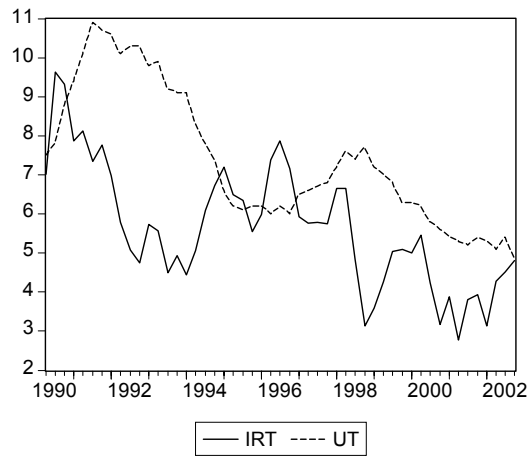
Services Consumption



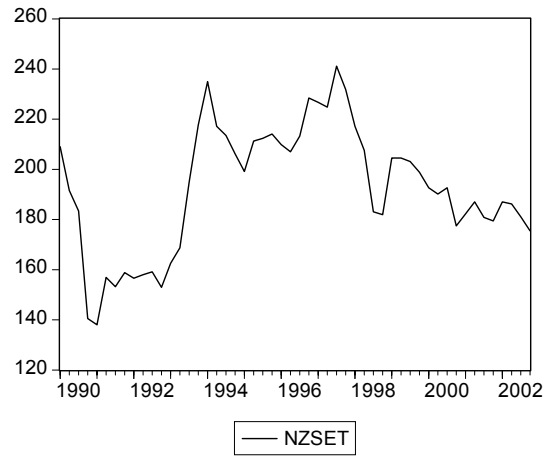
Real Labour Income



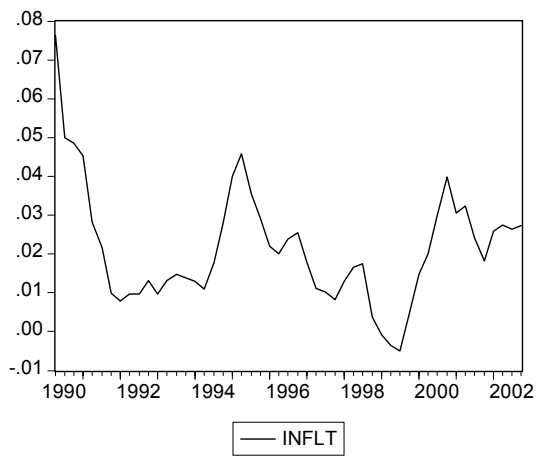
Real Interest Rates and Unemployment Rate



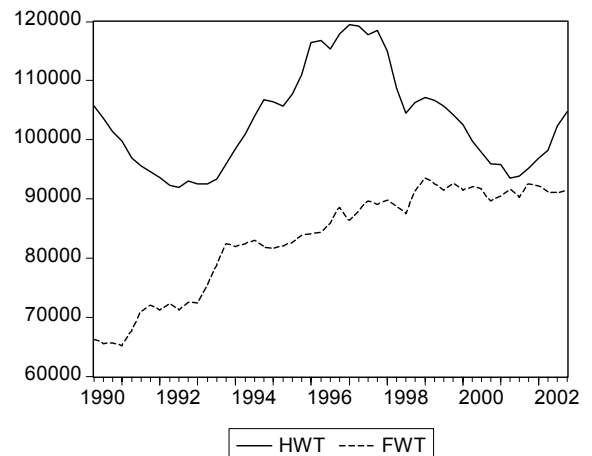
Real Stock Market Index



Inflation rate



Real net housing and financial wealth



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