

MAGKS



**Joint Discussion Paper
Series in Economics**

by the Universities of
**Aachen · Gießen · Göttingen
Kassel · Marburg · Siegen**

ISSN 1867-3678

No. 29-2018

Bernd Hayo and Florian Neumeier

**Central bank Independence in New Zealand: Public
Knowledge About and Attitude Towards the Policy Target
Agreement**

This paper can be downloaded from
<http://www.uni-marburg.de/fb02/makro/forschung/magkspapers>

Coordination: Bernd Hayo • Philipps-University Marburg
School of Business and Economics • Universitätsstraße 24, D-35032 Marburg
Tel: +49-6421-2823091, Fax: +49-6421-2823088, e-mail: hayo@wiwi.uni-marburg.de

Central Bank Independence in New Zealand: Public Knowledge About and Attitude Towards the Policy Targets Agreement

Bernd Hayo^{*} and Florian Neumeier^{*,†}

^{*}MACIE, School of Business & Economics, University of Marburg

[†]ifo Institute Munich, University of Munich, CESifo

This version: 31 July 2019

Corresponding author:

Bernd Hayo

Marburg Centre for Institutional Economics (MACIE)

School of Business and Economics

University of Marburg

D-35032 Marburg

Germany

Phone: +49–6421–2823091

Email: hayo@wiwi.uni-marburg.de

* Thanks for helpful comments to Alex Cukierman, Corinne Delechat, participants of the European Public Choice Society Conference in Jerusalem and the Western Economic Association Annual Conference in San Francisco, as well as to those attending research seminars at the Reserve Bank of New Zealand, the University of Texas at Dallas, the University of Kobe, and the University of Marburg. The usual disclaimer applies.

Central Bank Independence in New Zealand: Public Knowledge About and Attitude Towards the Policy Targets Agreement

Abstract

Employing unique representative survey data from New Zealand collected in 2016 and 2019, we study public knowledge about and attitude towards a specific monetary policy institution, the Policy Targets Agreement (PTA). We assess how much the population knows about the PTA and also ask whether our respondents support a clause in the PTA that allows the government to over-ride the RBNZ if the government deems it necessary. Responses to that question are interpreted as attitudes towards central bank independence (CBI). Using logit regression, we study which characteristics make people favour more CBI. Subjective and objective knowledge about the RBNZ and monetary policy increases support for CBI, whereas voting for a national-oriented party and trusting the government reduces it. We then investigate how the 2018 amendment of the Reserve Bank of New Zealand Act of 1989, effective April 2019, affected answers. The population does not have a clear view on whether CBI should be expanded; instead, people's attitudes seems to be dominated by a status-quo view. Overall, our results raise doubts that the PTA had a strong impact on anchoring inflation expectations among households.

JEL: E42, E52, E58, Z1

Keywords: Central Bank Independence, Bank of New Zealand Act, Public Attitude, Policy Targets Agreement, Economic Literacy, New Zealand, Monetary Policy, Household Survey

1. Introduction

Many economists believe that central bank independence (CBI) is key to successful monetary policy. See Berger et al. (2001) and Hayo and Hefeker (2010) for extensive surveys of CBI. This belief is reflected in practice as, over the last 25 years, an increasing number of countries have granted independence to their central banks (Arnone et al. 2009). In democratic countries, the consequences of CBI are complex. On the one hand, CBI implies that central banks may have a legitimacy problem, as an important part of economic policy is moved outside even indirect electoral control. On the other hand, there are checks and balances in the political (Moser 1999) and/or judicial systems (Hayo and Voigt 2008) that rein in central banks' ability to do whatever they want.

The extant literature suggests that central banks may be able to legitimise their independence via good monetary policy (Issing 1999) and/or by increasing their public accountability. It is also argued that increasing central bank transparency improves accountability (Geraats 2002). Moreover, empirical studies show that important outcome variables of monetary policy, specifically inflation and inflation variability, benefit from increased institutional transparency (Dincer and Eichengreen 2007) or monetary policy committee transparency (Hayo and Mazhar 2014). This suggests that increasing transparency yields a 'double dividend' in terms of increased legitimacy through the combination of improved accountability and better policy performance.

A monetary policy strategy of inflation targeting is assumed to increase transparency and, thus, to ease communication with the public as well as improve policy outcomes (see, e.g., Bernanke et al. 1999). In recent years, a burgeoning field of research investigates the efficacy of central bank communication (for a survey, see Blinder et al. 2008). The dominant strand of the literature in this field focuses on communication with financial market participants; central bank communication with the general public receives very little attention from researchers. Blinder (2009) explicitly notes this gap, which continues today, as evidenced by the survey of the extant literature in Binder (2018), a survey that concentrates on Federal Reserve communication. In the case of the European Central Bank (ECB), van der Cruiksen et al. (2015) study knowledge about monetary policy issues in the Dutch population and Hayo and Neuenkirch (2018) discuss information search and knowledge about ECB monetary policy among Germans.

Despite generally increasing central bank transparency across the world, CBI has come under attack. After the 2008 financial crisis, influential academics began criticising the performance and relevance of CBI (Stiglitz 2010; Alesina and Stella 2011; Benati and Goodhart 2011). Based on a survey of central bank governors and academic specialists, Blinder et al. (2017) find that discussions about changing the mandate of a central bank are more likely to occur in countries hit by the financial crisis. Half the central bankers surveyed are in favour of adding another indicator to the central bank's objective function; this share is even higher among academic experts. In recent years, there appear to be increasing attempts by politicians to undermine CBI, certainly *de facto*, sometimes even *de jure*. For example, US President Trump is critical of independent monetary policy and emphasises that '[i]t is so important to audit the Federal Reserve' (Trump 2016). In the United Kingdom, Jacob Rees-Mogg from the Conservative Party demands that the Governor of the Bank of England, Mark Carney, 'should be fired for the way he has behaved in office' (Huffpost 2016). Lorenzo Fontana, deputy leader of Italy's Lega Nord Party, strongly attacked the ECB (Express 2018) and Turkey's President Erdogan claims for himself the exclusive power to appoint central bank rate-setters (Bloomberg 2018). Under such conditions, the public's support of the central bank can increase or at least maintain *de facto* CBI. For instance, Berger

and de Haan (1999) illustrate how the German public helped the Bundesbank ward off government attempts to undermine its independence. In many countries, such support appears to be needed again.

The extent to which central banks can enlist the public's help in keeping political influences under control is unclear, however. In fact, it is still debated whether central banks can actually improve communication with laypersons more generally. Blinder (2018) remains deeply sceptical about central banks' ability in this respect; Haldane and McMahon (2018) are somewhat more optimistic and point out recent changes in the Bank of England's communication style.

Irrespective of whether communication matters for how the public perceives the central bank and its core institutional characteristics, to the best of our knowledge, there is no research on how the general public views key institutional design elements of central banks, such as CBI. There is some literature studying attitudes towards the inflation rate. For example, Hayo (1998) and de Jong (2002) take a macro-level approach to analyse 'inflation cultures' and CBI across countries. Van Lelyveld (1999) studies inflation aversion at an individual level in a cross-section of European countries in 1976, but does not relate the analysis to specific aspects of central bank design. In their analysis of monetary policy communication with the public, Hayo and Neuenkirch (2018) touch on the issue of CBI, but only indirectly and without referring to a real-world institutional framework.

New Zealand is a particularly interesting venue for studying public attitudes toward CBI. It was the first country, in February 1990, to officially introduce inflation targeting as a monetary policy strategy. In conjunction with the change in monetary policy, the Reserve Bank of New Zealand (RBNZ) was granted independence through the Reserve Bank of New Zealand Act of 1989. Until 2019, however, RBNZ's independence was to some extent governed by the Policy Targets Agreement (PTA). The PTA was an agreement between the Minister of Finance and the newly appointed Governor of the RBNZ. It basically regulated the relationship between RBNZ and government. An important aspect of the agreement was fixing the inflation target at a certain level or within a fluctuation band. Conceptually, the PTA could be viewed as an employment contract between a principal (the government representing the people of New Zealand) and an agent (the Governor of the RBNZ), where the former can make the latter redundant in the event the actual inflation rate deviates from the inflation target specified in the PTA (Walsh 1995a). Sometimes, the PTA was even interpreted as an incentive-oriented employment contract between a principal and an agent (Persson and Tabellini 1993; Walsh 1995b).

Of great interest for CBI is that the government had the power to over-ride the PTA for a period up to 12 months, which is stated in Section 12 of the Reserve Bank of New Zealand Act 1989 (see Appendix C). Although the legal language is not easy to understand, the RBNZ's official interpretation is straightforward: 'Under section 12 of the Reserve Bank of New Zealand Act 1989, the government has the power to override the PTA for a 12-month period. However, any over-ride must be done publicly and transparently' (Reserve Bank of New Zealand 2009, 10). No over-ride has ever occurred. We interpret this rule as a practical example of the situation envisaged by Lohmann (1992). She argues that governments may prefer a legal environment where they are able to override independent central banks in the event of particularly large negative economic shocks. However, in equilibrium, the government will never actually need to over-ride, as the central bank will act according to the government's wishes. In this framework, although central banks are independent, they take the government's preferences into account.

In contrast to the situation modelled by Lohmann (1992), the New Zealand government's ability to over-ride the PTA was not conditioned on specific economic shocks, potentially giving the government more discretionary power. However, due to the Central Bank Governor being more or less the sole

monetary policy decision maker, CBI could be viewed as particularly high, at least as long as the governor is not ‘captured’ by the government or an interest group. The RBNZ is not ranked consistently across a variety of widely used CBI indicators. Based on an extension of the Cukierman et al. (1992) index, Bodea and Hicks (2015) show the RBNZ to have been quite independent since 1990. In 2014, it is ranked 26th amongst 124 central banks. In contrast, considering four alternative CBI measures, Dincer and Eichengreen (2014, 217) rank the RBNZ only 72nd among 89 countries in 2010. An important empirical implication of Lohmann’s (1992) model is that although two central banks may be quite similar in terms of their governing statutes, they may differ dramatically with respect to *de facto* CBI, conditional on the costs governments incur when overriding central banks. The costs of overriding the central bank, however, might depend on how such a move would be perceived by the population.

In December 2018, the government made several important amendments to the Reserve Bank of New Zealand Act of 1989. First, monetary policy objectives were amended to require consideration of maximum sustainable employment alongside price stability. Second, price stability is now explicitly targeted at the medium term. Third, a monetary policy committee replaces the governor as sole monetary policy decision maker. Fourth, the PTA was replaced by a ‘remit’, which fully shifts to the government, in the guise of the Minister of Finance, the power of determining the operational objectives of monetary policy.

This monetary policy reform package was publicly discussed in 2018 and, therefore, should have raised popular awareness of monetary policy issues. Moreover, it reduces the RBNZ’s independence in at least two ways: first, it is the government that now decides on the operational objectives of monetary policy and, second, monetary policy is no longer solely in the governor’s hands, which may also reduce CBI. These interesting historical circumstances make an interesting case for analysing ordinary people’s attitude towards such a policy move.

In this paper, we study public attitudes to and knowledge about the PTA using a specifically designed representative survey of the New Zealand population. On our behalf, Research New Zealand conducted the survey in May 2016 and collected a sample of 1,000 respondents aged 18 or above. The survey was implemented online and based on quota sampling involving age, gender, and region. The survey is described in Hayo and Neumeier (2016), where we explain when and how the data were collected, show that they are representative, and provide the full questionnaire as well descriptive statistics. Using other parts of the questionnaire, Hayo and Neumeier (2017, 2018) study trust in the RBNZ as well as the New Zealand population’s inflation perceptions and expectations. To capture changes related to the amendment of the Reserve Bank of New Zealand Act of 1989, we commissioned Research New Zealand to resample some of the questions from the 2016 survey and added a couple new ones. The fieldwork took place in February and March 2019, that is, only about three months after the amendment was passed and before the first remit was published. The sample is comprised of 1,003 respondents and is representative for the population of New Zealand. A short description of the survey is given in Appendix A.

Our survey examines people’s awareness of the PTA and elicits answers to the question of whether New Zealanders support or oppose the restriction on CBI as specified in the PTA overriding clause as well as in the 2018 amendment of the Reserve Bank of New Zealand Act. We then use logit regression analysis on the large 2016 survey to find out which type of people would opt for removal of this clause. We consider respondents who oppose the PTA as being in favour of higher CBI and those who support the PTA as being sceptical about CBI.

Our main findings can be summarised as follows. In 2016, only 15 per cent of New Zealanders had heard about the PTA, compared to almost 30 per cent in 2019. Only 6 per cent of the population gave a correct answer to a question about the current inflation target in 2016, a share that increased only modestly to 9 per cent in 2019, indicating that in spite of the public debate, ordinary people did not pay too much attention to the details. This conclusion is further corroborated by our finding that only 3 per cent of the population were aware of the March 2018 change in the PTA that instituted maximum employment as a second monetary policy objective for the RBNZ.

Regarding the degree of CBI granted to the RBNZ, our analysis reveals that in 2016, there was roughly a one-third split of the population on that issue: one-third thought that the government should have the right to override the PTA (which we interpret as constraining CBI), one-third thought the government should not have that right (which we interpret as a preference for higher CBI), and another one-third had no opinion on the subject. In 2019, the share of people supporting more CBI declined, while the undecided share rose correspondingly. The decrease in CBI resulting from amendment of the Reserve Bank of New Zealand Act is met with indifference by more than 40 per cent of the population. Roughly one-third are against the decrease and more than a quarter are in favour. We use the 2016 survey for a logit regression approach to discover more about who supports CBI and conclude that only three groups of indicators matter: (ii) Economic Knowledge, (iv) Trust, and (v) Politicians and Government. On average, those respondents with higher subjective and objective knowledge about RBNZ are in favour of increasing CBI, whereas those who trust in the government and support the National Party are against it.

In the next section of the paper, we provide descriptive information about the population's subjective and objective PTA knowledge as well as its attitude towards the possibility of the government overriding the RBNZ. Using logit analysis, Section 3 investigates who supports central bank independence. In Section 4, we describe the monetary policy reform that took place in New Zealand over the course of 2018 and elicit the public's attitude towards it. Section 5 concludes.

2. The Policy Targets Agreement in the Eyes of the Population

Given that the PTA was at the heart of the RBNZ's monetary policy design until April 2019, we wanted to know how well-known this set of rules is by the broad public. Table 1 summarises the answers to the question of whether people have heard about the PTA.

Table 1: Have you heard of the Policy Targets Agreement or PTA? (relative frequencies)

	Yes	No
2016	15%	85%
2019	28%	72%

Note: Unweighted sample values. Observations: 1,000 in 2016 and 1,003 in 2019.

In 2016, only 15 per cent of the population state report having heard about the PTA, which is a clear minority. However, media reporting and political debate about monetary reform in New Zealand appear to have made an impact on people's awareness of the PTA. The share of respondents who said they had heard about the PTA almost doubled in 2019. Still, even then, more than 70 per cent of the population did not seem to be aware of this important part of their country's monetary policy design. Arguably, for the PTA to have an economic impact via people's reactions, it is not enough that they

have heard about it, they also need to know what has been specified in the PTA itself. Here, we first focus on the inflation target.

A core argument in favour of inflation targeting is its presumed ability to make it easier to evaluate a central bank's performance (Bernanke et al. 1999). Thus, we broadly ask about the inflation rate as stated in the PTA. Note that as a target, the PTA actually specifies a range of 1 to 3 per cent inflation. However, pretesting the survey question using this range revealed that most people were quite confused about the concept of a target in the form of an inflation band. This is an early indication that part of the attraction of an explicitly stated inflation target, in terms of communicating with laypersons, is lost when moving away from a point value. We thus opted for a simpler specification, generally asking about the inflation rate stated in the PTA. Focusing solely on respondents who mentioned that they had heard of the PTA, in a follow-up question we ask about the inflation rate agreed upon in the current PTA. Table 2 sets out the answers.

Table 2: What is the inflation rate agreed upon in the current PTA? (relative frequencies)

	Correct answer	Incorrect answer and don't know
2016	6%	94%
2019	9%	91%

Note: An answer to the PTA knowledge question is coded as correct if it lies between 1 and 3 per cent. Unweighted sample values. Observations: 1,000 in 2016 and 1,003 in 2019.

In 2016, we find that only 6 per cent of the New Zealand population appears to have a clear understanding about the RBNZ's inflation target as stated in the PTA, which is slightly more than one-third of those who said they had heard about the PTA. In 2019, this value increases to 9 per cent. However, these low values suggest that the PTA is unlikely to guide people's behaviour.

Next, we provided all survey respondents with a brief description of one of the PTA's important aspects:

Info PTA: The Policy Targets Agreement or PTA is an agreement between the Governor of the Reserve Bank of New Zealand and the Minister of Finance aimed at keeping the inflation rate at a certain average level. The Reserve Bank of New Zealand Act gives the Government the power to over-ride the PTA for a 12-month period, with any over-ride done publicly and transparently.

We then asked the following:

In your personal opinion, do you agree or disagree that the Government have this ability?

Table 3 shows that in 2016, slightly more than one-third of the population supported this PTA rule, about one-third were against it, and slightly less than one-third were unsure.

Table 3: Support for government over-ride power as stated in the PTA (relative frequencies)

	Agree	Disagree	Don't know
2016	36%	33%	32%
2019	37%	22%	42%

Note: Unweighted sample values Observations: 1,000 in 2016 and 1,003 in 2019.

In 2019, support for the over-ride clause is almost unchanged. In contrast, at 22 per cent, fewer people now object to the government having this power. The share of people unable to specify a clear position

has correspondingly increased to over 40 per cent. Hence, the government seems to have been at least partially successful in raising doubts about granting more independence to the RBNZ. The New Zealand population appears to be divided and/or undecided over this issue. Based on these numbers, it seems unlikely that a majority of the population wants the RBNZ to have a greater degree of CBI.

3. Who Supports Central Bank Independence?

In a next step, we move from the aggregate level of analysis to the individual level, utilising the large number of covariates available in the 2016 survey, to discover the characteristics of those in favour of increasing CBI. It is difficult to derive straightforward hypotheses about what type of people likely support CBI. For instance, Posen (1993) assumes that the financial sector and better-off groups in society are in favour of CBI, whereas Easterly and Fischer (2001) provide evidence that poor people feel the impact of inflation more strongly than do rich people, which may make the poor supportive of CBI. More generally, assessing the distributional consequences of monetary policy at the household level is complex (see Bunn et al. 2018). Thus, even though specifying *a priori* hypotheses based on an ‘egotropic’ perspective, that is, emphasising the importance of personal circumstances for individual attitudes and decisions, is common in the extant literature (see Berger et al. 2001; Hayo and Hefeker 2010), it appears problematic in the current context. We thus take an explorative approach, drawing on the wealth of individual-level information in the survey. In total, we include 67 covariates in our empirical model and group them into six categories. Table 4 shows the full list of variables. Precise definitions of those variables are contained in Table A2 in Appendix B; Hayo and Neumeier (2016) provide the full questionnaire.

Using these 67 variables, we run logit regressions on a dummy variable coded 1 when people are in favour of extending CBI beyond that currently granted in the PTA and 0 otherwise. We proceed in a consistent general-to-specific modelling procedure (see Hendry 1993). The estimation results for the general model are set out in Table A3 of the Appendix. Note that the estimates for the general model take into account that about 20 per cent of the observations for income and wealth were imputed. Table 5 summarises the outcome for various reduced models.

Model 1 of Table 5 provides the results for the reduced model when employing robust standard errors (White 1980). The testing-down restriction contains 63 variables and is far from significant at any reasonable level of significance ($F(63, 3.7e+07) = 0.81$). Four indicators from three different groups of variables are statistically significant, namely, (ii) Economic Knowledge, (iv) Trust, and (v) Politicians and Government.

We check the robustness of our results before interpreting them. Based on King and Roberts’s (2015) argument that notable deviations between normal standard errors and robust standard errors are a sign of model misspecification, in Model 2 of Table 5 we re-estimate the model employing normal standard errors. The test results are virtually unchanged.

Since we could consistently drop many variables from the general model, 138 additional observations are available for estimating the reduced model. In Model 3, we use the 17 per cent increase in sample size to check whether our model is robust to including these out-of-sample observations. We find that the resulting coefficients are remarkably close to the ones in the previous models and the fit of the model even improved, thus demonstrating that our specification is robust.

Table 4: List of covariates

Category	Variables
(i) Economic Situation	(1) Household net income, (2) household net wealth, (3) saver, (4) debtor, (5) subjective economic situation
(ii) Economic Knowledge	(6) Subjective level of knowledge about the RBNZ and its monetary policy, (7) subjective level of knowledge about the inflation rate, (8) subjective level of knowledge about the Official Cash Rate (OCR), (9) heard of the PTA, (10) objective knowledge about the RBNZ's main objective, (11) objective knowledge about the responsibility for setting interest rates, (12) objective knowledge about the inflation rate agreed upon in the current PTA, (13) objective knowledge about the inflation rate, (14) objective knowledge about the OCR, (15) objective knowledge about the government bond rate, (16) objective knowledge about the conduct of monetary policy, (17) objective knowledge about the government's fiscal position as envisaged in the Strategy Report, (18) objective knowledge about the debt-to-GDP ratio
(iii) Information Search	(19) Importance of being informed about the RBNZ and its policies, (20) no inclination to use any source of information to keep up with the RBNZ, obtaining monetary policy information from the media ((21) newspapers, (22) radio, (23) TV), (24) Internet sources), (25) friends and family, (26) colleagues, (27) their bank, (28) other financial-sector institutions
(iv) Trust	(29) Trust in RBNZ, (30) institutional trust, (31) general trust
(v) Politicians and Government	(32) Most politicians in New Zealand act with the general public's best interests in mind vs serve the interests of particular groups, (33) most politicians are concerned about their country's long-term well-being vs are concerned only with the next election, (34) the government conscientiously manages the revenue it collects in taxes vs wastes the revenue it collects in taxes, (35) the respondent has confidence in her country's politicians vs does not have confidence in her country's politicians, (36) people's incomes should be more equal vs the difference between people's incomes should be greater, supporting (37) the National Party, (38) the Labour Party, (39) New Zealand First, (40) the Green Party
(vi) Socio-Demographic and Psychological Indicators	(41) Age, (42) female, (43) children in household, ethnic background ((44) NZ European, (45) Maori, (46) Asian), (47) married, region ((48) Auckland, (49) North Island), community size ((50) rural, (51) town), education ((52) secondary school qualification, (53) polytechnic qualification or trade certificate, (54) Bachelor's degree or higher), employment category ((55) self-employed full time, (56) self-employed part time, (57) employed full time, (58) employed part time, (59) unemployed, (60) beneficiary, (61) homemaker, (62) student, (63) retired)), (64) risk preferences, time preferences ((65) future-oriented time preference and (66) short-run impatience)), (67) time spent on survey.

Key characteristics of the sample are quite close to those of the underlying New Zealand population, but there are some differences (see Hayo and Neumeier 2016). Thus, in Model 4 of Table 4 we re-estimate the reduced model using population weights. Yet again, results are unaffected.

Finally, we use a different way of coding the dependent variable. Rather than coding all people opting for removal of the respective clause in the PTA as 1 and everybody else as 0, we now specify three possible outcomes. Model 5 of Table 5 contains the results of estimating a multinomial logit model where we differentiate between the outcomes ‘Agree’ (i.e., the government should have the right to over-ride the RBNZ) and ‘Don’t know’, with ‘Disagree’ as the reference category. Qualitatively, the results across the two equations are relatively similar, but when we look at statistical significance, there are two exceptions. First, the significance of ‘Subjective knowledge of RBNZ’ in the previous logit models is mainly driven by those who answered ‘don’t know’. Second, the significant effect of ‘Institutional trust’ found above is primarily due to those who explicitly agree with the current version of the PTA.

Our results suggest that attitudes towards CBI appear to be associated with subjective and objective knowledge, political preferences, and institutional trust. If people feel better informed about the central bank and are in fact better informed about its competence in conducting monetary policy, they are more likely to be in favour of granting more independence.

Quite the reverse is found for those who support a national-oriented party and those who have a high degree of institutional trust. Although the former result is in line with intuition—almost by definition, supporters of a national-oriented party would like to see a strong government—the latter is somewhat puzzling, as the RBNZ is an institution. Note that our indicator ‘Institutional trust’ is based on a principal component analysis involving people’s assessment of various national and international political and economic institutions (see Hayo and Neuenkirch 2014); here, we use trust in (i) government, (ii) parliament, (iii) the United Nations, and (iv) the International Monetary Fund. When we split up these variables and include them in our model individually, only trust in the government is significant.¹ Thus, our results make intuitive sense, as respondents who are particularly trusting in the government are against reducing its power by increasing CBI.

¹ Results are available on request.

Table 5: Explaining support for CBI using logit and multinomial logit regressions

Variables	Model 1		Model 2		Model 3		Model 4		Model 5			
	Robust SEs		Normal SEs		Larger sample		Population weights		Multinomial logit			
	Coef.	SEs	Coef.	SEs	Coef.	SEs	Coef.	SEs	Agree to over-ride		Don't know	
	Coef.	SEs	Coef.	SEs	Coef.	SEs	Coef.	SEs	Coef.	SEs	Coef.	SEs
i) Economic situation												
ii) Economic knowledge												
Subjective knowledge of RBNZ	0.29***	0.09	0.29***	0.09	0.30***	0.08	0.30***	0.08	-0.11	0.09	-0.51***	0.10
Responsibility for interest rate setting	0.54***	0.17	0.54***	0.17	0.58***	0.16	0.58***	0.16	-0.35**	0.18	-0.80***	0.18
iii) Interest and information search												
iv) Trust												
Institutional trust	-0.15***	0.05	-0.15***	0.05	-0.17***	0.05	-0.17***	0.05	0.27***	0.06	-0.06	0.06
v) Politicians and government												
Would vote for National Party	-0.84***	0.20	-0.84***	0.19	-0.83***	0.18	-0.83***	0.18	1.02***	0.19	0.42*	0.23
vi) Socio-demographic and psychological indicators												
Constant	-1.55***	0.25	-1.55***	0.25	-1.63***	0.24	-1.63***	0.24	0.29	0.28	1.29***	0.26
No. of observations	807		807		945		945		945			
Test of joint significance	Chi ² (4) = 52***		Chi ² (4) = 60***		Chi ² (4) = 60***		F(4, 941) = 15***		Chi ² (8) = 137***			
Pseudo-R ²	0.057		0.057		0.061		n.a.		0.077			

Notes: Estimator: logit, except Model 5, which uses multinomial logit. White (1980) robust standard errors are employed except for Model 2, which uses normal standard errors, and Model 4, which uses population weights. *, **, and *** indicate significance at a 10 per cent, 5 per cent, and 1 per cent level, respectively.

Given the robustness of our results after increasing the sample size, we now concentrate on Model 3 of Table 5 to study the relevance of the estimated effects. Table 5 shows that average marginal effects range from 3 to 17 percentage points (pp) in absolute terms. However, these effects are not easily comparable, as some variables are dummies and others are continuous. Thus, in Table 6, we provide information about the impact of a one-standard-deviation change in the variable on the likelihood of being in favour of more CBI.

Table 6: Explaining support for CBI: Average marginal effects of Model 3

Variables	Average marginal effects	SEs	Dummy changes from 0 to 1	Change of one SD
Subjective knowledge of RBNZ	0.06	0.016	n.a.	5.8 pp
Responsibility for interest rate setting	0.11	0.031	11	n.a.
Institutional trust	-0.03	0.010	n.a.	-5.4 pp
Would vote for National Party	-0.17	0.036	-17	n.a.

We find that the magnitude of the estimated effects ranges from notable to large. A one-standard-deviation increase in subjective knowledge about RBNZ increases the likelihood of being in favour of more CBI by almost 6 pp. If respondents know that the RBNZ is responsible for interest rate setting, the probability of supporting CBI rises by 11 pp. A one-standard-deviation change in institutional trust is associated with a more than 5 pp lower probability of favouring more CBI. Finally, those who vote for the National Party have a 17 pp reduced likelihood of being in favour of more CBI.

4. The Population's View on Reforming the Monetary Policy Framework in New Zealand

In the course of 2018, the government set in motion a change in New Zealand's monetary policy framework. As a first indication of the changes to come, in March 2018 the PTA introduced employment as a second monetary policy objective. In December 2018, the Reserve Bank Act of 1989 was officially amended, with the last PTA being replaced by a 'remit' in April 2019. The first key change is to move away from a pure inflation target towards an explicitly dual mandate, with maximum sustainable employment as a second, equally important, objective. This change resulted in a monetary policy framework somewhat similar to that of the United States.² The inflation objective was slightly modified, too. It now specifies that the RBNZ's task is to stabilise the general level of prices over the medium term, which bears some resemblance to the clarification of this target by the Governing Council of the European Central Bank in 2003, namely, that the aim is to maintain inflation rates below, but close to, 2% over the medium term. The third notable change was establishing a monetary policy committee (MPC) to make decisions on monetary policy, thus replacing the governor as sole decision maker.

² However, since amendment of the Federal Reserve Act in 1977, the Federal Reserve really has a triple mandate, as moderate long-term interest rates are mentioned as a third objective. The Federal Reserve Act is less precise with regard to specifying the employment objective; it simply speaks of 'maximum employment', whereas the New Zealand government opted for the more nuanced 'maximum sustainable employment'.

The move toward a dual objective monetary policy regime was phased in by the PTA signed on 26 March 2018. In Section 1 b), the Minister of Finance, Grant Robertson, and the Governor Designate, Adrian Orr, already agreed on a dual mandate by stating: ‘The conduct of monetary policy will maintain a stable level of prices, and contribute to supporting maximum sustainable employment within the economy’.

We are interested in discovering whether this profound change in the PTA has been noticed by the population. Thus, in the 2019 survey, we included the following question:

The PTA changed in March 2018. Have you heard about the most important change? If yes, please select the appropriate answer. If not, please choose either ‘I know the PTA changed, but I don’t know the most important change’ or ‘I am not aware of what has been changed’?

We gave four possible changes, only one of which was actually implemented. In addition, respondents could indicate whether they were or were not aware of the change, without knowing any details. The answer frequencies are given in Table 7.

Table 7: What was the most important change in the March 2018 PTA?

Answer options	Relative frequencies
The mid-point inflation target has been increased	6%
The mid-point inflation target has been decreased	4%
Taking into account the value of the NZ dollar versus the US dollar as a monetary policy objective	3%
Including maximum sustainable employment within the economy as an objective	3%
I know the PTA changed, but I don’t know the most important change	9%
I am not aware of what has been changed	61%
Don’t know	15%

Notes: Unweighted sample values. Observations: 1,003 in 2019.

More than 75 per cent of the population did not know about the change, with 60 per cent of respondents claiming they were not aware of any change and 15 per cent selecting ‘don’t know’. Of the remaining 25 per cent, 9 per cent claimed to know that there was a change, but were unable to choose one of the given options. Most respondents giving a concrete answer chose a wrong one, so that, in the end, only 3 per cent provided a correct answer. We believe that this is evidence that whatever is fixed in the PTA is not taken into account by the vast majority of the population.

As briefly discussed above, on 20 December 2018, the Reserve Bank of New Zealand Act 1989 was amended. We provided some information about the changes and asked our respondents about their opinion with regard to the implications for RBNZ independence:

Under legislation passed in December 2018, the Reserve Bank of New Zealand Act has been changed. One important change is that a ‘remit’ issued by the Minister of Finance replaces the Policy Targets Agreement (PTA) between the Minister of Finance and Governor.

As a result of this change, the Minister of Finance sets the monetary policy targets unilaterally, after receiving advice from the Reserve Bank. Therefore, this expands the government’s control over monetary policy. What is your opinion on this reform?

The relative answer shares are given in Table 8.

Table 8: Support for the increase in government control over monetary policy (relative frequencies)

	Agree	Disagree	Don't know
2019	27%	33%	41%

Notes: Unweighted sample values. Observations: 1003 in 2019.

Less than one-third of the population is in favour of the reduction in CBI. About one-third explicitly disagrees with this aspect of the reform. The greatest share of respondents, more than 40 per cent, are undecided. The share of undecided is very similar to the one given in Table 3 in regard to support for government override power as stated in the PTA. Relative support for the amendment is less than what we found for the over-ride clause. Hence, the population appears to be divided on this issue, with some sort of status-quo bias.

To assess respondents' preference stability with regard to CBI, we cross-tabulate the questions from Tables 3 and 8. The results are displayed in Table 9.

Table 9: Association of respondents' position on CBI across questions (relative frequencies)

Row percentages		Government over-ride clause			
Increase in government control in 2018 amendment		Agree	Disagree	Don't know	
	Agree	80%	6%	14%	100%
	Disagree	24%	53%	23%	100%
	Don't know	18%	7%	75%	100%

Notes: Unweighted sample values. Observations: 1,003 in 2019.

The percentages on the main diagonal of Table 9 suggest a notable degree of association between the two answers. Respondents who agree (disagree) with the over-ride clause provided in the PTA also tend to support (oppose) the increase in government control over monetary policy introduced in the 2018 amendment to the Reserve Bank of New Zealand Act. Statistical tests support this finding: Pearson's contingency coefficient is significant at all reasonable levels ($\chi^2(4) = 605$) and its standardisation in the form of Cramér's V shows a value of 0.55, which is high for nominally scaled variables.

5. Conclusion

In this paper, we analyse New Zealanders' knowledge about the Policy Targets Agreement (PTA), a monetary policy institution governing the rights and duties of the Reserve Bank of New Zealand (RBNZ), as a base for assessing aspects related to central bank independence. Using representative survey data collected in 2016 and 2019, we find that being exposed to almost 30 years of inflation targeting, and with the target being specified in the PTA, does not mean that laypersons are aware of this important feature of the RBNZ. In 2016, only 15 per cent of New Zealanders had heard about the PTA, compared to almost 30 per cent in 2019. This change is likely due to public discussions throughout 2018 that revolved around amendment of the Reserve Bank of New Zealand Act of 1989. Having merely heard of a monetary policy institution may not suffice to influence people's economic actions or even their expectations. When enquiring about the inflation target specified in the PTA, we found that only 6 per

cent of the population gave a correct answer in 2016. The share increased only modestly to 9 per cent in 2019, which indicates that in spite of the public debate, ordinary people did not pay too much attention to the details. This conclusion is further corroborated by our finding that only 3 per cent of the population were aware of a change in the March 2018 PTA that instituted maximum employment as the RBNZ's second monetary policy objective.

The PTA also governs the degree of central bank independence (CBI) granted to the RBNZ. We asked whether respondents support a condition in the PTA that allows the government to over-ride the RBNZ for a period of one year if it so wishes. Our analysis reveals that in 2016, there was roughly a one-third split of the population on this issue: one-third thought the government should have that right, one-third thought the government should not have that right, and another one-third had no opinion on the subject. In 2019, the share of people objecting to the over-ride clause dropped to slightly more than 20 per cent, with the share of undecided rising correspondingly. Thus, the government seems to have been successful in its attempt to justify its influence in monetary policy. The PTA was replaced by a 'remit' from April 2019 onward and, following the amendment of the Reserve Bank of New Zealand Act, operational objectives for monetary policy are now set solely by the Minister of Finance. Arguably, this reduces the RBNZ's independence. About one-third of the respondents disagree with this part of the reform and 27 per cent support it. Again, the greatest share has no opinion (41%). Individual attitudes towards CBI with regard to the over-ride clause and the reduction of CBI following the amendment appear to be consistent.

Using the 2016 survey because of its large number of covariates and focusing on the group of people favouring an expansion of CBI, we use a logit regression approach to discover more about their characteristics. We find that the magnitude of the estimated associations is quite large. If subjective knowledge of RBNZ increases by one standard deviation, the probability of supporting more CBI rises by almost 6 percentage points (pp). Support for CBI increases by 11 pp when respondents know that the RBNZ is responsible for interest rate setting. In contrast, a one-standard-deviation hike in institutional trust is associated with a more than 5 pp lower likelihood of welcoming more CBI. A 17 pp lower probability of favouring more CBI is found for those respondents intending to vote for the National Party.

In line with other research on monetary policy literacy (see, e.g., van der Cruysen et al. 2015 on the Netherlands and Hayo and Neuenkirch 2018 on Germany), we conclude that laypersons have neither great interest in nor knowledge about important central bank institutions. Nevertheless, a public debate surrounding monetary policy reform does increase people's awareness with regard to these issues.

There are noted difficulties in central bank communication with the broader public (see, e.g., Binder 2018; Blinder 2018), but it is often claimed that inflation targeting makes this task easier (see, e.g., Bernanke et al. 1999). We cannot say anything about whether inflation targeting makes communication 'easier', but from an absolute perspective, inflation targeting does not seem to have much of an effect on people's monetary policy knowledge. We also find that people's perceptions of last year's inflation rate do not have an impact on their support for more CBI, which raises doubts about the output-oriented view of legitimising CBI by achieving an inflation target. More generally, our findings raise some doubt that anchoring inflation rates among households via the PTA was entirely successful. This conclusion is in line with survey evidence reported by Kumar et al. (2015) for New Zealand firms. The authors discover that inflation targeting does not appear to anchor expected inflation rates very well.

Moreover, we do not discover evidence that the New Zealand population is keen on extending the degree of CBI, which is not particularly high based on widely used indicators for measuring CBI. In addition, trust in the RBNZ does not have any impact on support for increasing its independence, at least not after controlling for other variables. This raises further doubts about Bernanke et al.'s (1999) claim that a successful inflation targeting regime will legitimise CBI. However, reduction in CBI following amendment of the Reserve Bank of New Zealand Act is not supported either. When it comes to CBI attitudes, there appears to be a status-quo bias, which may be due to the fact that the greatest share of people neither show much interest in this topic nor have much factual knowledge about it.

We find it notable that none of our economic indicators are significant. Put differently, individual or household economic conditions do not appear to matter for people's attitudes toward CBI, which is not in line with the prevailing 'egotropic' view about monetary policy preferences in the economics literature. While there is little the RBNZ can—or even should—do with regard to political preferences, increasing monetary policy literacy appears to be an interesting channel through which the central bank might be able to increase public support for CBI. However, as emphasised by Blinder (2018), communication of any sort with the public remains a major challenge for central banks.

References

- Alesina, A. and A. Stella (2011), The Politics of Monetary Policy, in B. M. Friedman and M. Woodford (eds.), *Handbook of Monetary Economics*, Vol. 3B, Chapter 18, Amsterdam: Elsevier.
- Arnone, M. B. L., J. Segalotto, and M. Sommer (2009), Central Bank Autonomy: Lessons from Global Trends, *IMF Staff Papers* 56, 263–296.
- Benati, L. and C. Goodhart (2011), Monetary Policy Regimes and Economic Performance: The Historical Record, 1979–2008, in B. M. Friedman and M. Woodford (eds.), *Handbook of Monetary Economics*, Vol. 3B, Chapter 18, Amsterdam: Elsevier.
- Berger, H. and J. de Haan (1999) A State Within a State? An Event Study on the Bundesbank, *Scottish Journal of Political Economy* 46, 17–39.
- Berger, H., J. de Haan, and S. C. W. Eijffinger (2001), Central Bank Independence: An Update of Theory and Evidence, *Journal of Economic Surveys* 15, 3–40.
- Bernanke, B. S., T. Laubach, F. S. Mishkin, and A. S. Posen (1999), *Inflation Targeting: Lessons from the International Experience*, Princeton: Princeton University Press.
- Binder, C. (2018), Fed Speak on Main Street: Central Bank Communication and Household Expectations, *Journal of Macroeconomics* 52, 238–251.
- Blinder, A. S. (2009), Talking About Monetary Policy: The Virtues (and Vices?) of Central Bank Communication, *BIS Working Paper* 274, Basel: Bank for International Settlements.
- Blinder, A. S. (2018), Through a Crystal Ball Darkly: The Future of Monetary Policy Communication, *American Economic Review, Papers and Proceedings* 108, 567–571.
- Blinder, A. S., M. Ehrmann, M. Fratzscher, J. de Haan, and D.-J. Jansen (2008), Central Bank Communication and Monetary Policy: A Survey of Theory and Evidence, *Journal of Economic Literature* 46, 910–945.
- Blinder, A. S., M. Ehrmann, M. Fratzscher, J. de Haan, and D.-J. Jansen (2017), Necessity as the Mother of Invention: Monetary Policy After the Crisis, *Economic Policy* 32, 651–705.
- Bloomberg (2018), Erdogan Expands Clout Over Central Bank, as He Promised, <https://www.bloomberg.com/news/articles/2018-07-10/erdogan-gives-himself-power-to-appoint-central-bank-governor>, accessed 10 August 2018.
- Bodea, C. and R. Hicks (2015), Price Stability and Central Bank Independence: Discipline, Credibility and Democratic Institutions, *International Organization* 69, 35–61.
- Bunn, P., A. Pugh, and C. Yeats (2018), The Distributional Impact of Monetary Policy Easing in the UK Between 2008 and 2014, *Bank of England Staff Working Paper* No 720, March.
- Cukierman, A., S. Webb, and B. Neyapti (1992), Measuring the Independence of Central Banks and its Effect on Policy Outcomes, *World Bank Economic Review* 5: 353–398.
- de Jong, E. (2002), Why Are Price Stability and Statutory Independence of Central Banks Negatively Correlated? The Role of Culture, *European Journal of Political Economy* 18, 675–694.
- Dincer, N. and B. Eichengreen (2007), Central Bank Transparency: Where, Why and with What Effect? *NBER Working Paper* 13003, Cambridge, MA.

- Dincer, N. and B. Eichengreen (2014), Central Bank Transparency and Independence: Updates and New Measures, *International Journal of Central Banking* 10, 189–253.
- Easterly, W. and S. Fischer (2001), Inflation and the Poor, *Journal of Money, Credit & Banking* 33, 160–178.
- Express (2018), ‘The Euro Is WRONG!’ Lega Nord Deputy Slams EU Over Single Currency—Will Italy Leave? <https://www.express.co.uk/news/world/927978/Italian-election-Lega-Nord-Matteo-Salvini-euro-Eurozone-Lorenzo-Fontana-ECB-finance>, accessed 10 August 2018.
- Geraats, P. M. (2002), Central Bank Transparency, *Economic Journal* 112, F532–F565.
- Haldane, A. and M. McMahon (2018), Central Bank Communications and the General Public, *American Economic Review, Papers and Proceedings* 108, 578–583.
- Hayo, B. (1998), Inflation Culture, Central Bank Independence and Price Stability, *European Journal of Political Economy* 14, 241–263.
- Hayo, B. and C. Hefeker (2010), The Complex Relationship Between Central Bank Independence and Inflation, in P. L. Siklos, M. T. Bohl, and M. E. Wohar (eds.), *Challenges in Central Banking*, Cambridge: Cambridge University Press, 179–217.
- Hayo, B. and U. Mazhar (2014), Monetary Policy Committee Transparency: Measurement, Determinants, and Economic Effects, *Open Economies Review* 25, 739–770.
- Hayo, B. and E. Neuenkirch (2014), The German Public and its Trust in the ECB: The Role of Knowledge and Information Search, *Journal of International Money and Finance* 47, 286–303.
- Hayo, B. and E. Neuenkirch (2018), The Influence of Media Use on Laymen’s Monetary Policy Knowledge in Germany, *Scottish Journal of Political Economy* 65, 1–26.
- Hayo, B. and F. Neumeier (2016), Survey on New Zealanders’ Attitudes Towards and Knowledge of Macroeconomic Policy Issues: Documentation of Survey Methodology and Descriptive Results, *MAGKS Joint Discussion Paper Series* 30-2016, University of Marburg.
- Hayo, B. and F. Neumeier (2017), Explaining Central Bank Trust in an Inflation Targeting Country: The Case of the Reserve Bank of New Zealand, *MAGKS Joint Discussion Paper Series* 28-2017, University of Marburg.
- Hayo, B. and F. Neumeier (2018), Households’ Inflation Perceptions and Expectations: Survey Evidence from New Zealand, *MAGKS Joint Discussion Paper Series* 5-2018, University of Marburg.
- Hayo, B. and S. Voigt (2008), Inflation, Central Bank Independence, and the Legal System, *Journal of Institutional and Theoretical Economics* 164, 751–777.
- Hendry, D. F. (1993), *Econometrics: Alchemy or Science?* Oxford: Blackwell.
- Huffpost (2016), Jacob Rees-Mogg Interview: Bank of England’s Mark Carney Should Be Fired Over ‘Brexit’, https://www.huffingtonpost.co.uk/entry/jacob-rees-mogg-brexit_uk_574dc7a5e4b0089281b4d95d, accessed 10 August 2018.
- Issing, O. (1999) The Eurosystem: Transparent and Accountable or ‘Willem in Euroland’, *Journal of Common Market Studies* 37, 503–519.
- King, G. and M. E. Roberts (2015), How Robust Standard Errors Expose Methodological Problems They Do Not Fix, and What to Do About It, *Political Analysis* 23, 159–179.

- Kumar, S., H. Afrouzi, O. Coibion, and Y. Gorodnichenko (2015), Inflation Targeting Does Not Anchor Inflation Expectations: Evidence from Firms in New Zealand, *Brookings Papers on Economic Activity* 2, 151–225.
- Lohmann, S. (1992) Optimal Commitment in Monetary Policy: Credibility Versus Flexibility, *American Economic Review* 32, 273–286.
- Moser, P. (1999), Checks and Balances, and the Supply of Central Bank Independence, *European Economic Review* 43, 1569–1593.
- Persson, T. and G. Tabellini (1993), Designing Institutions for Monetary Stability, *Carnegie-Rochester Conference Series on Public Policy* 39, 53–84.
- Posen, A. S. (1993), Why Central Bank Independence Does Not Cause Low Inflation, in R. O’Brian (ed.), *Finance and the International Economy* 7, Oxford: Oxford University Press, 40–65.
- Reserve Bank of New Zealand (2009), *Explaining New Zealand’s Monetary Policy*, Wellington: Reserve Bank of New Zealand. <https://www.rbnz.govt.nz/research-and-publications/fact-sheets-and-guides/factsheet-explaining-new-zealands-monetary-policy>, accessed 1 June. 2019.
- Stiglitz, J. E (2010), *Free Fall*, New York: W. W. Norton & Company.
- Trump, D. (2016), Twitter message, 22 February 2016, 12:37, <https://twitter.com/realDonaldTrump/status/701868541545295872>, accessed 10 August 2018.
- Van der Cruysen, C. A. B., D.-J. Jansen, and J. de Haan (2015), How Much Does the Public Know About the ECB’s Monetary Policy? Evidence from a Survey of Dutch Households, *International Journal of Central Banking* 11, 169–218.
- Van Lelyveld, I. (1999), Inflation or Unemployment? Who Cares? *European Journal of Political Economy* 15, 463–484.
- Walsh, C. E. (1995a), Is New Zealand’s Reserve Bank Act of 1989 an Optimal Central Bank Contract? *Journal of Money, Credit, and Banking* 27, 1179–1191.
- Walsh, C. E. (1995b), Optimal Contracts for Central Bankers, *American Economic Review* 85, 150–167.
- White, H. (1980), A Heteroskedasticity–Consistent Covariance Matrix Estimator and a Direct Test for Heteroskedasticity, *Econometrica* 48, 817–838.

Appendix

Appendix A: 2019 survey

The survey was implemented by Research New Zealand.

The fieldwork took place between 28 February 2019 and 3 March 2019. In total, 1,003 New Zealanders aged 18 years or more were interviewed. The maximum margin of error associated with a sample of this size is 3.1 per cent (at the 95 per cent confidence level).

Table A1 illustrates the unweighted demographic profile of the sample compared with the profile of the New Zealand adult population (based on the 2013 Census of Population & Dwellings, Statistics New Zealand). It shows that the sample is almost perfectly aligned with the Census data. Thus, the sample is representative of the New Zealand population and no weighting has been applied to the survey data.

Table A1: Representativeness of the 2019 survey

	Census 2013	Survey 2019
Gender		
Male	48	48
Female	52	52
Age		
18 to 24	13	13
25 to 34	16	16
35 to 44	18	18
45 to 54	19	19
55 to 64	15	15
65+	19	19

The questions of the survey are provided in Hayo and Neumeier (2016).

Appendix B: 2016 survey

See Hayo and Neumeier (2016) for more information about the survey and the questionnaire.

Table A2: Variable definitions and descriptive statistics for the 2016 survey

Variable	Coding and Comments	Mean	Std. Dev.	Min	Max
<i>(i) 'Economic Situation'</i>					
(1) Income	Per capita household income in NZD1,000. We added 184 observations through 10 rounds of imputations using: Age, Age squared, Education dummies, Saver, Future-oriented time preference, Self-employed full time, Employed full time, Employed part time, Retired, Student, Unemployed, Beneficiary. Descriptive statistics for imputation 10.	34.0	27.1	2.7	240
(2) Net personal wealth	In NZD1,000. We added 224 observations through 10 rounds of imputations using: Age, Age squared, Education dummies, Saver, Future-oriented time preference, Self-employed full time, Employed full time, Employed part time, Retired, Student, Unemployed, Beneficiary. Descriptive statistics for imputation 10.	35.2	88.0	-375	500
(3) Saver	Dummy	0.63	0.48	0	1
(4) Debtor	Dummy	0.30	0.46	0	1
(5) Satisfaction with financial situation	Very dissatisfied (coded 1) Dissatisfied (coded 2) Neither satisfied nor dissatisfied (coded 3) Satisfied (coded 4) Very satisfied (coded 5) Don't know (coded 3)	3.31	1.12	1	5

<i>(ii) 'Economic Knowledge'</i>						
(6) Feels informed about RBNZ	Very poor (coded 1), Poor (coded 2), Neither poor nor good (coded 3), Good (coded 4), Very good (coded 5)	2.72	0.96	1	5	
(7) Feels informed about inflation	Very poor (coded 1), Poor (coded 2), Neither poor nor good (coded 3), Good (coded 4), Very good (coded 5)	3.42	1.17	1	5	
(8) Feels informed about OCR	Very poor (coded 1), Poor (coded 2), Neither poor nor good (coded 3), Good (coded 4), Very good (coded 5)	3.10	1.34	1	5	
(9) Heard of PTA	Dummy. Coded 1 if respondent has heard of the Policy Targets Agreement.	0.15	0.36	0	1	
(10) Knowledge: RBNZ main policy objective	Dummy. Coded as 1, i.e., correct, if answer is 'maintain price stability'.	0.41	0.49	0	1	
(11) Knowledge: Responsibility interest rate setting	Dummy. Coded as 1, i.e., correct, if answer is 'interest rate set by RBNZ'.	0.56	0.50	0	1	
(12) Knowledge: Inflation rate agreed in PTA	Dummy. Coded as 1, i.e., correct, if it lies between 1 and 3 per cent (mid-value PTA = 2%).	0.06	0.23	0	1	
(13) Knowledge: Inflation rate last year	Dummy. Coded as 1, i.e., correct, if the inflation rate given lies between 0 and 1 per cent (correct value 0.3%).	0.15	0.36	0	1	
(14) Knowledge: Official Cash Rate	Dummy. Coded as 1, i.e., correct, if it lies between -1.75 and 2.75 per cent (correct value 2.25%).	0.36	0.48	0	1	
(15) Knowledge: Government bond rate	Dummy. Coded as 1, i.e., correct, if it lies between 2 and 2.75 per cent (correct value 2.6%).	0.19	0.39	0	1	
(16) Knowledge: Monetary policy setting	Dummy. Coded as 1, i.e., correct, if answer is 'increase interest rates'.	0.33	0.47	0	1	
(17) Knowledge: Fiscal strategy report	Dummy. Coded as 1, i.e., correct, if it lies between 15 and 25 per cent (correct value 20%).	0.05	0.21	0	1	

(18) Knowledge: Debt-to-GDP ratio	Dummy. Coded as 1, i.e., correct, if it lies between 22 and 32 per cent (correct value 27%).	0.07	0.25	0	1
<i>(iii) 'Interest and Information Search'</i>					
(19) Desire to be informed about RBNZ	Not at all important (coded 1), Unimportant (coded 2), Neither important nor unimportant (coded 3), Important (coded 4), Very important (coded 5), Don't know (coded 3)	3.18	1.06	1	5
(20) Does not keep up with RBNZ	Dummy	0.12	0.32	0	1
(21) Information through newspaper	Dummy	0.11	0.31	0	1
(22) Information through radio	Dummy	0.08	0.27	0	1
(23) Information through TV	Dummy	0.18	0.39	0	1
(24) Information through Internet	Dummy	0.22	0.42	0	1
(25) Information through friends	Dummy	0.12	0.32	0	1
(26) Information through colleagues	Dummy	0.07	0.26	0	1
(27) Information through own bank	Dummy	0.06	0.24	0	1
(28) Information through financial sector	Dummy	0.06	0.24	0	1
<i>(iv) 'Trust'</i>					
(29) Trust in RBNZ	5-point Likert scale ranging from (1) 'No trust and confidence at all' to (5) 'Complete trust and confidence'; Don't know (coded 3)	3.30	0.96	1	5

(30) Institutional trust	Principal component based on trust in government, trust in parliament, trust in United Nations, and trust in International Monetary Fund	-3e-09	1.55	-3.50	4.38
(31) General trust	Dummy	0.34	0.47	0	1
<i>(v) 'Politicians and Government'</i>					
(32) Politicians act in public's best interest	5-point Likert scale ranging from (1) 'Most politicians in New Zealand serve the interests of particular groups' to (5) 'Most politicians in New Zealand act with the general public's best interests in mind'	3.02	0.93	1	5
(33) Politicians long-term oriented	5-point Likert scale ranging from (1) 'Most politicians are only concerned about the next election' to (5) 'Most politicians are concerned about New Zealand's long-term well-being'	2.38	1.15	1	5
(34) Politicians fiscally competent	5-point Likert scale ranging from (1) 'The Government wastes the revenue it collects in taxes' to (5) 'The Government conscientiously manages the revenue it collects in taxes'	2.73	1.11	1	5
(35) Confidence in politicians	5-point Likert scale ranging from (1) 'I do not have confidence in New Zealand politicians' to (5) 'Overall, I have confidence in New Zealand politicians'	2.59	1.12	1	5
(36) Egalitarian attitude	5-point Likert scale ranging from (1) 'To encourage individual effort, the difference between people's incomes should be greater' to (5) 'People's incomes should be more equal'	3.32	1.20	1	5
(37) National Party	Dummy	0.29	0.45	0	1
(38) Labour Party	Dummy	0.23	0.42	0	1
(39) New Zealand First	Dummy	0.08	0.28	0	1
(40) Green Party	Dummy	0.14	0.34	0	1
<i>(v) 'Socio-Demographic and Psychological Indicators'</i>					
(41) Age	5-year intervals starting from 18 years	6.58	3.33	1	13

(42) Female	Dummy	0.52	0.50	0	1
(43) Children	Dummy	0.31	0.46	0	1
(44) NZ European	Dummy	0.68	0.47	0	1
(45) Maori	Dummy	0.04	0.19	0	1
(46) Asian	Dummy	0.10	0.30	0	1
(47) Married	Dummy	0.62	0.48	0	1
(48) Auckland	Dummy	0.32	0.47	0	1
(49) North Island	Dummy	0.43	0.50	0	1
(50) Town	Dummy	0.28	0.45	0	1
(51) Rural	Dummy	0.20	0.40	0	1
(52) Secondary school qualification	Dummy	0.26	0.44	0	1
(53) Polytechnic qualification or trade certificate	Dummy	0.20	0.40	0	1
(54) Bachelor's degree or higher	Dummy	0.41	0.49	0	1
(55) Self-employed full time	Dummy	0.06	0.24	0	1
(56) Self-employed part time	Dummy	0.05	0.22	0	1
(57) Employed full time	Dummy	0.38	0.49	0	1
(58) Employed part time	Dummy	0.11	0.32	0	1
(59) Unemployed	Dummy	0.05	0.21	0	1
(60) Beneficiary	Dummy	0.04	0.20	0	1
(61) Homemaker	Dummy	0.06	0.24	0	1

(62) Student	Dummy	0.08	0.27	0	1
(63) Retired	Dummy	0.12	0.33	0	1
(64) Risk propensity	Continuous variable that varies between -1 (maximum risk aversion) and +1 (maximum risk propensity). We assessed the interviewees' risk preferences by confronting the interviewees with the choice of either receiving a safe payoff or taking part in a lottery.	0.03	0.65	-1	1
(65) Future-oriented time preference	Continuous variable running from 0 (completely impatient) to 1 (completely patient). Two experiments were conducted to assess the respondents' time preferences in order to account for the fact that many people are more patient in the long run than in the short run.	0.61	0.28	0.29	1
(66) Short-run impatience	Continuous variable running from 0 (completely impatient) to 1 (completely patient). Two experiments were conducted to assess the respondents' time preferences in order to account for the fact that many people are more patient in the long run than in the short run.	0.56	0.27	0.29	1
(67) Time spent on survey	Time respondent needed to fill out the questionnaire (in hours)	1.62	11.3	0.06	194

Table A3: Explaining support for CBI: general and reduced model (estimator: logit)

Variables	General model		Reduced model 1	
	Coefficients	Std. errors	Coefficients	Std. errors
i) Economic situation				
Income (in NZD1,000)	0.004	0.004		
Net personal wealth (in NZD1,000)	-0.001	0.001		
Saving position:				
Neither saver nor debtor			Reference	
Saver	-0.20	0.47		
Debtor	-0.57	0.49		
Satisfaction with financial situation	-0.23**	0.09		
ii) Economic knowledge				
Subjective knowledge:				
Feels informed about RBNZ	0.25	0.12	0.29***	0.09
Feels informed about inflation	0.13	0.12		
Feels informed about OCR	-0.03	0.10		
Heard of PTA	-0.14	0.29		
Objective knowledge:				
Inflation rate last year	-0.13	0.24		
Official Cash Rate	-0.28	0.23		
RBNZ main policy objective	0.12	0.18	0.54***	0.17
Responsibility interest rate setting	0.46**	0.20		
Monetary policy setting	0.11	0.19		
Mean inflation rate agreed in PTA	0.54	0.45		
Government bond rate	-0.004	0.22		
Fiscal position of the government	0.29	0.39		
Debt-to-GDP ratio	0.50	0.33		
iii) Information search				
Desire to be informed about RBNZ	0.002	0.10		
Information channels:				
Information through other means			Reference	
Information through newspaper	-0.12	0.33		
Information through radio	-0.07	0.35		
Information through TV	-0.23	0.26		
Information through Internet	-0.06	0.26		
Information through friends	0.35	0.29		
Information through colleagues	-0.39	0.38		
Information through own bank	0.60*	0.33		
Information through financial sector	-0.13	0.37		
Do not keep up with RBNZ	-0.24	0.33		
iv) Trust				
Trust in RBNZ	0.19	0.13		
Institutional trust	0.16**	0.08	-0.15***	0.05
General trust	-0.03	0.19		

v) Politicians and government				
Politicians act in public's best interest	-0.02	0.10		
Politicians long-term oriented	-0.07	0.10		
Politicians fiscally competent	-0.13	0.10		
Confidence in politicians	0.04	0.11		
Egalitarian attitude	-0.02	0.07		
Political party preferences:				
Other parties/no answer		Reference		
National Party	-0.65**	0.26	-0.84***	0.20
Labour Party	0.09	0.24		
Green Party	0.25	0.26		
New Zealand First	0.35	0.26		
vi) Socio-demographic indicators:				
Female	0.24	0.18		
Age	0.02	0.04		
Children	0.03	0.23		
Ethnic background:				
Other		Reference		
NZ European	0.31	0.25		
Maori	0.19	0.45		
Asian	-0.28	0.40		
Married	-0.16	0.20		
Educational attainment:				
No qualification/primary school		Reference		
Secondary school qualification	-0.71**	0.31		
Polytechnic qualification or trade certificate	-0.31	0.31		
Bachelor's degree or higher	-0.47	0.29		
Employment status:				
Other employment/no answer		Reference		
Self-employed full time	0.09	0.57		
Self-employed part time	-1.14*	0.65		
Employed full time	-0.08	0.51		
Employed part time	-0.41	0.57		
Homemaker	-0.36	0.64		
Student	0.11	0.61		
Retired	-0.84	0.58		
Unemployed	-0.68	0.61		
Beneficiary	-0.50	0.68		
Community size:				
City		Reference		
Town	0.06	0.21		
Rural	0.24	0.24		

Region:				
South Island			Reference	
North Island	0.18	0.21		
Auckland	0.24	0.25		
Risk and time preferences:				
Risk propensity	0.01	0.14		
Future-oriented time preference	0.54	0.55		
Short-run impatience	-0.78	0.14		
Time spent on survey	-1.2e ⁻⁶	2.2e ⁻⁶		
Constant	-0.84	1.01	-1.55***	0.25
<hr/>				
No. of observations	807		807	
Test of joint significance	F(67, 4.4e+07)=1.52***		Chi2(4)=51.7***	
Testing-down restriction	F(63, 3.7e+07)=0.81			

Notes: White (1980) robust standard errors are used. The general model is estimated taking into account that income and wealth are based on 10 imputations. *, **, and *** indicate significance at a 10 per cent, 5 per cent, and 1 per cent level, respectively.

Appendix C: Section 12 of the Reserve Bank of New Zealand Act 1989

'12. Bank may be directed to formulate and implement monetary policy for different economic objective

(1) The Governor-General may, from time to time, by Order in Council, on the advice of the Minister, direct the Bank to formulate and implement monetary policy for any economic objective, other than the economic objective specified in section 8 of this Act, for such period not exceeding 12 months as shall be specified in the order.

(2) Notwithstanding anything in section 8 of this Act, the Bank shall formulate and implement monetary policy in accordance with any economic objective specified in an Order in Council in force under subsection (1) of this section.

(3) The Governor-General may, by Order in Council, on the advice of the Minister, before the period specified in an Order in Council made under subsection (1) of this section expires, extend the period specified in that order for a period, which shall be specified in the order, not exceeding 12 months, and may in the same manner extend that period on successive occasions.

(4) Every Order in Council made under subsection (1) of this section shall expire with the close of the last day of the period specified in the order or any extension of that period.

(5) An Order in Council made under subsection (1) of this section may be revoked.

(6) The Minister shall, as soon as practicable after the making of an Order in Council under this section, publish a copy of the order in the Gazette and lay a copy of the order before the House of Representatives.

(7) While an Order in Council made under subsection (1) of this section remains in force,-

(a) The policy targets fixed under section 9 of this Act shall cease to have effect; and

(b) The Minister and the Governor shall,-

(i) Within 30 days of the making of the order, or the making of an Order in Council under subsection (3) of this section, as the case may be, fix new policy targets for the period that the order remains in force;

(ii) Within 30 days of the expiry or revocation of the order, fix new policy targets for the carrying out by the Bank of its primary function.

(8) Subsections (4) and (5) of section 9 of this Act shall apply in relation to any policy targets fixed under subsection (7) (b) of this section.'