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

Abstract

Employing unique representative survey data from New Zealand collected in 2016, we study public knowledge about and attitude towards a specific monetary policy institution, the Policy Target Agreement (PTA). The PTA contains the inflation target for the Reserve Bank of New Zealand (RBNZ). First, we assess how much the population knows about the PTA, finding the level of knowledge to be low. Second, we ask whether our respondents support a clause in the PTA that allows the government to over-ride the RBNZ if it deems it necessary. We interpret responses to that question as attitudes towards central bank independence (CBI). The population does not appear to have a clear view on whether or not to expand CBI, as roughly one third supports the overriding clause in the PTA, one third is against it, and one third is unsure. 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. Policy implications are derived from our findings.

JEL code: E42, E52, E58, Z1
Keywords: Central bank independence, public attitude, policy target agreement, economic literacy, New Zealand, monetary policy, household survey

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1. Introduction

Many economists believe that central bank independence (CBI) lies at the heart of 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 granted independence to their central banks (Arnone et al. 2009). However, at least in democratic countries, CBI implies that central banks now have a potentially serious legitimacy problem, as an important part of economic policy is moved outside of even indirect electoral control.

The extant literature suggests that central banks may be able to legitimise their independence by providing 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.

Implementing 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 has emerged that 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, whereas the issue of central bank communication with the general public receives very little attention from researchers. Blinder (2009) explicitly notes that 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 Cruijsen 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 recent financial crisis, influential academics began criticising the performance and relevance of CBI (Stiglitz 2010; Alesina and Stella 2011; Benati and Goodhart 2011). 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 UK, 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, the 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, support for the central bank by the public can help 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 attempts by the government to undermine its independence. In many countries, such support appears to be needed again.

However, the extent to which central banks can enlist the public's help in keeping political influences under control is unclear. In fact, it is still debated whether central banks can actually improve communication with laypersons more generally. Blinder (2018) remains deeply sceptical about the

central bank's 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 the question 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 a 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, the degree of which is to some extent governed by the Policy Target Agreement (PTA). The PTA is an agreement between the Minister of Finance and the newly-appointed Governor of the RBNZ. It basically regulates the relationship between RBNZ and government. An important aspect of the agreement is fixing the inflation target at a certain level or fluctuation band. Conceptually, the PTA can 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 is 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 has the power to over-ride the PTA for a 12-month period, as long as any over-ride is done publicly and transparently. This rule is a practical example of the type of situation envisaged by Lohmann (1992). She argues that governments may prefer a legal environment where they are able to over-ride 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 is not conditioned on specific economic shocks, which potentially gives the government more discretionary power. Thus, when looking at widely-used CBI indicators, the RBNZ does not rank particularly highly. For instance, considering four alternative CBI measures, Dincer and Eichengreen's (2014, 217) rank the RBNZ 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 statutes, they may differ dramatically with respect to *de facto* CBI, depending 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 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). 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.

In our survey, we elicit answers to the question of whether New Zealanders support or oppose the restriction on CBI specified in the PTA overriding clause. We then use logit regression analysis to find out which type of people would opt for a 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.

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. Section 4 concludes.

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

Given that the PTA lies at the heart of the RBNZ's monetary policy design, in our questionnaire, 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? (absolute and relative number of respondents)

Yes	No
152 (15%)	848 (85%)

Note: Unweighted sample values.

Only 15 per cent of the population state that they have heard about the PTA, which is a clear minority. Arguably, for the PTA to have an economic impact through 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 focus on the inflation target.

A core argument in favour of inflation targeting is its presumed ability to make evaluating a central bank's performance much easier (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, pre-testing the survey question using this range suggested 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. Reflecting these considerations, in our survey, we opted for a simpler specification, generally asking about the inflation rate stated in the PTA. Thus, focussing 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? (absolute and relative frequencies)

Correct answer	Incorrect answer and don't know
55 (6%)	945 (94%)

Note: An answer to the PTA knowledge question is coded as correct if it lies between 1 and 3 per cent.

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. This suggests that the PTA is unlikely going to guide people's behaviour.

We then 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 slightly more than one-third of the population supports this PTA rule, about one-third is against it, and slightly less than one-third is unsure.

Table 3: Support for government over-ride power as stated in the PTA (absolute and relative number of respondents)

Yes	No	Don't know
358 (36%)	326 (33%)	316 (32%)

Note: Unweighted sample values.

Thus, the New Zealand population appears to be divided over this issue and a majority does not want a greater degree of CBI for the RBNZ.

3. Who Supports Central Bank Independence?

In a next step, we move from the aggregate level of analysis to the individual level, with the intent of discovering 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 appears to be quite complex (see Bunn et al. 2018). Thus, even though specifying *a priori* hypotheses based on an 'egotropic' perspective is common in the extant literature (see Berger et al. 2001; Hayo and Hefeker 2010), it appears to be problematic in the current context. We thus take an explorative approach, drawing on the wealth of individual-level information in the survey. We group our correlates into six categories. Table A1 in the Appendix contains precise definitions of the employed variables and Hayo and Neumeier (2016) provide the full questionnaire.

We use indicators for:

(i) Economic Situation

(1) Household net income, (2) household net wealth, (3) saver, (4) debtor, (5) subjective economic situation.[1]

(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 being 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 not having 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.

[1] Given that about 20 per cent of the observations are missing values for income and wealth, we impute the missing values using a regression approach and 10 rounds of imputations.

Using these 67 variables, we run logit regressions on a dummy variable coded 1 when people are in favour of extending CBI beyond what is 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 A2 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 4 summarises the outcome for various reduced models.

Model 1 of Table 4 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. Reflecting 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 4 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 the sample size to check whether our model is robust with respect 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.

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 4 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.

Thus, 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.

Table 4: Explaining support for CBI using logit and multinomial logit regressions

	Model 1		Model 2		Model 3		Model 4		Model 5			
									Agree to over-ride		Don't know	
Variables	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 of 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%, 5%, and 1% level, respectively.

Quite the reverse is found for those who support a national-oriented party and those who are characterised by a high degree of institutional trust. While 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 assessments 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.[2] Thus, our results make intuitive sense, as respondents who are particularly trusting in the government are against reducing its power by increasing CBI.

Given the robustness of our results after increasing the sample size, we now concentrate on Model 3 of Table 4 to study the relevance of the estimated effects. Table 5 shows that average marginal effects range from 3 pp to 17 pp in absolute terms. However, these effects are not easily comparable, as some variables are dummies and others are continuous. Thus, in Table 5, 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 5: 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 of 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 percentage points (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. Conclusion

In this paper, we analyse New Zealanders' knowledge about the Policy Target Agreement (PTA), a monetary policy institution governing the rights and duties of the Reserve Bank of New Zealand (RBNZ). Using representative survey data collected in 2016, 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. Only 15 per cent of New Zealanders have heard about the PTA. Having merely heard of a monetary policy institution may not suffice to influence people's

[2] Results are available on request.

economic actions or at 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. 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 there is roughly a one-third split of the population on that issue: one-third thinks that the government should have that right, one-third thinks the government should not have that right, and another one-third has no opinion on the subject.

Focussing on the group of people favouring an expansion of CBI, we use a logit regression approach to discover more about their characteristics. Respondents' characteristics are captured by employing six groups of indicators, namely, (i) Economic Situation, (ii) Economic Knowledge, (iii) Information Search, (iv) Trust, (v) Politicians and Government, and (vi) Socio-Demographic and Psychological indicators. We proceed in a consistent general-to-specific modelling approach, starting with 67 individual variables. After a number of robustness checks, we conclude that only three groups of indicators matter: (ii) Economic Knowledge, (iv) Trust, and (v) Politicians and Government, represented by subjective knowledge about RBNZ, objective knowledge about the RBNZ's responsibility for interest rate setting, institutional trust (especially trust in the government), and supporting the National Party. 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.

We interpret our findings as follows. In line with other research on monetary policy literacy (see, e.g., van der Cruijsen 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.

In spite of noted difficulties in central banks' communication with the broader public (see, e.g., Binder 2018; Blinder 2018), 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.

Moreover, we do not discover evidence that the New Zealand population is keen on extending the degree of CBI, which is not particularly high when looking at 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 after controlling for other variables. This raises further doubts about the claim by Bernanke et al (1999) and others that a successful inflation targeting regime will legitimise CBI.

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 towards CBI, which is not in line with the more 'egotropic' view about monetary policy preferences prevailing in the economics literature. Sixth, while there is little the RBNZ can - or even should - do with regard to political preferences, increasing monetary policy literacy appears to be a potentially interesting channel through which the central bank might be able to increase public support for CBI. However, as

emphasised by Blinder (2018), communication with the public remains a major challenge for central banks.

Our results suggest that laypersons with information relevant for understanding the core competences of a central bank, in our context the RBNZ's interest rate setting power, are likely going to support an expansion of the RBNZ's independence. In addition to the public's objective knowledge, its subjective assessment of how much it knows about the RBNZ appears to be relevant, too. This conclusion is in line with findings from consumer research (see, e.g., Moorman et al. 2004) and monetary policy (see Hayo and Neuenkirch 2018). Interpreting our findings in light of Lohmann's (1992) model suggests that an over-ride of the RBNZ by the New Zealand government would not result in major protests from the public and, hence, would not make it a costly political move. Assuming the implications of that model are correct, it would follow that the RBNZ is unlikely to engage in major controversies with the government.

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Appendix

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

Table A1: Variable definitions and descriptive statistics

Variable	Coding and Comments	Mean	Std. Dev.	Min	Max
(i) 'Economic Situation'					
(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)	3.31	1.12	1	5
	Dissatisfied (coded 2)				
	Neither satisfied nor dissatisfied (coded 3)				
	Satisfied (coded 4)				
	Very satisfied (coded 5)				
	Don't know (coded 3)				

(ii) 'Economic Knowledge'					
(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
(iii) 'Interest and Information Search'					
(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
(iv) 'Trust'					
(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
(v) 'Politicians and government'					
(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
(v) 'Socio-Demographic and Psychological indicators'					
(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 A2: 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
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%, 5%, and 1% level, respectively.

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