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**What Happens When Voting Rules Change?
The Case of New Zealand**

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Abstract

This paper examines the impact of New Zealand's 1996 adoption of a mixed member proportional (MMP) voting scheme on representation in the legislature, voter turnout, vote volatility and the likelihood of an incumbent party winning re-election. I then consider whether MMP has had any negative consequences for the effectiveness of government policy in relation to fiscal accountability and countercyclical intervention. The data used in the analysis begins from the formation of the party system in New Zealand (in 1890) and extends through the adoption of MMP to the present (2017). The data set covers 42 elections: 34 before 1996 and 8 after.

Key words: Institutional change, Mixed Member Proportional Voting, Vote turnout, Vote volatilities, Winning margins, New Zealand

JEL: D72, D78, H62

In this paper I present data on a number of characteristics of the New Zealand electoral system with a particular focus on the factors motivating, and thus expected to be affected by, the 1996 change in New Zealand's voting rule--the replacement of a single member plurality (SMP) voting system with a mixed-member proportional voting scheme (MMP).¹ My approach is historical, looking for longer run features of New Zealand's SMP voting system and questioning whether the changes that the new voting rule were expected to produce did actually arise. The analysis begins from the formation of the political party system in New Zealand (in 1890) and extends through the adoption of MMP to the present (2017). The data set covers 42 elections, 34 before 1996 and 8 after.

In section 1 the analysis is diagrammatic designed to illustrate visually some of the representational and exclusionary reasons given for turning from an SMP to a MMP voting system together with some of the more specific institutional trends that helped trigger that process in New Zealand. Changes in the pattern of movement after 1996 suggest an initial answer to whether the concerns arising under SMP were alleviated by MMP's adoption. Section 2 uses regression analysis to control for other expected influences on voter turnout, vote volatility, the likelihood that the incumbent will win and the size of its winning margin. The results modify somewhat the story told by the diagrams. Section 3 examines the potential downside to the adoption of MMP by asking whether there has been any observable diminution of government's effectiveness and/or fiscal accountability. Section 4 concludes by summarizing the most important findings.

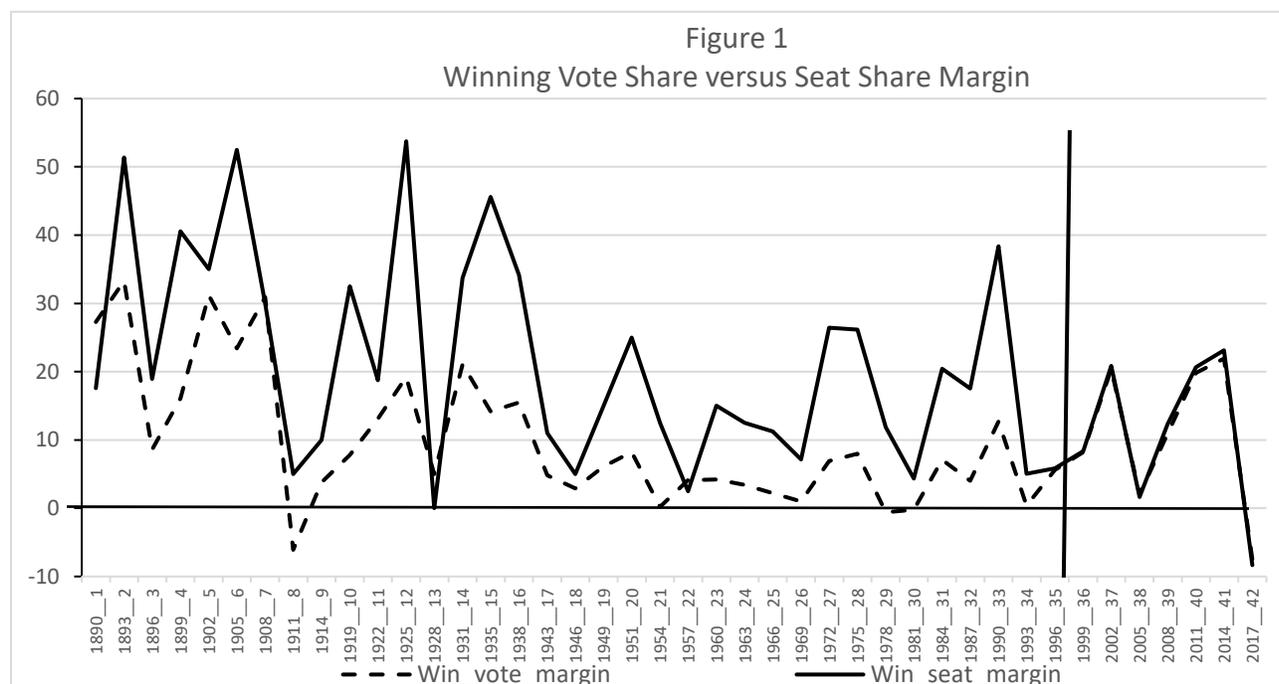
1. Proportional representation and minority interests

I begin by illustrating some of the reasons given for why a movement from single member plurality (SMP) voting rule to a mixed member plurality (MMP) voting rule was viewed as desirable in New Zealand. First in most general terms, New Zealand was viewed as sharing two of the key weaknesses of a SMP voting system relative to a proportional representation (PR) system: the distribution of seats across parties in a SMP system did not always reflect the wishes of the electorate as represented by the distribution of their votes, and the tournament nature of the SMP system was viewed as suppressing the diversity of electorate interests by discouraging voters from wasting their vote on unelectable minor parties. The latter

¹ The MMP system implemented in 1996 in New Zealand allowed each voter one ballot with 2 votes: one for a party and a second for a constituency representative. The constituency vote featured 65 geographically defined electorate seats (with 5 designated Maori-seats, the number depending on number of registered Maori voters) while the party vote resulted in 55 representatives from a closed list of party candidates, allocated to make the final distribution of seats mirror the vote percentages received by each represented party. The threshold for party representation was 5 percent of the vote or 1 electorate seat and the maximum governing term is 3 years. In the 2017 election the division was 71/49.

phenomenon, formalized into what is called Duverger's Law, is believed to be particularly relevant to a SMP system without the constraints imposed by federalism (Norris, 1997; Baker and McLeay, 2000).

The reasons for such concern in New Zealand and the changes that arose following the adoption of MMP in New Zealand can be seen by referring to Figures 1 and 2. In Figure 1 the percentage difference received by the first versus the second place finisher in both votes and seats are plotted relative to each other.² As Figure 1 demonstrates, New Zealand exhibited the SMP characteristic that the winning seat margin typically exceeded/exaggerated the winning vote margin, often by a large amount. This has sometimes been viewed as a strength of SMP (making it easier to 'throw the bums out') but more recently has been viewed as a weakness (magnifying the consequences for party representation of relatively small changes in vote intensity). In addition, because majoritarianism allows the seat and vote shares to differ, the SMP governing outcome sometimes misrepresents the voting outcome. In New Zealand's case, for example, the elections of 1911, 1978 and 1981 were all instances when the party that won the largest percentage of the seats and became the governing party was not the same as the party that received the largest percentage of the vote. Such a reversal in the latter two adjacent elections formed a particularly strong focal point for discussions over proposed changes in the voting rule.



source: [http:// www.elections.org.nz/events/past-events/](http://www.elections.org.nz/events/past-events/)

² The party receiving the second largest seat share has always placed either first or second in terms of vote shares.

What Figure 1 also makes apparent is that following the adoption of MMP in 1996, the difference between the first and second place seat and vote winning margins has largely disappeared. It is no longer the case that the seat difference misrepresents the vote difference. This is by construction—list seats are allocated from closed party lists until the distribution of seats among parliamentary parties approximates party vote shares. What may seem counterintuitive is that MMP has not eliminated the possibility that the first versus second place vote margin will not signal the party in government. Such a case arose in the 2017 election where the dominant party in the governing coalition (the Labour Party) stood second in both the vote and seat count behind the National Party (36.9 versus 44.4 percent). In this case a governing coalition was formed among the Labour, New Zealand First and Green Parties which accounted for 52.5 percent of the seats from a majority 50.4 percent of the vote. That is, under MMP the governing criteria has become the majority coalition rather than the majority party. By closing the difference between seat representation and vote shares, governance is given to the party/coalition representing the majority of voters.³

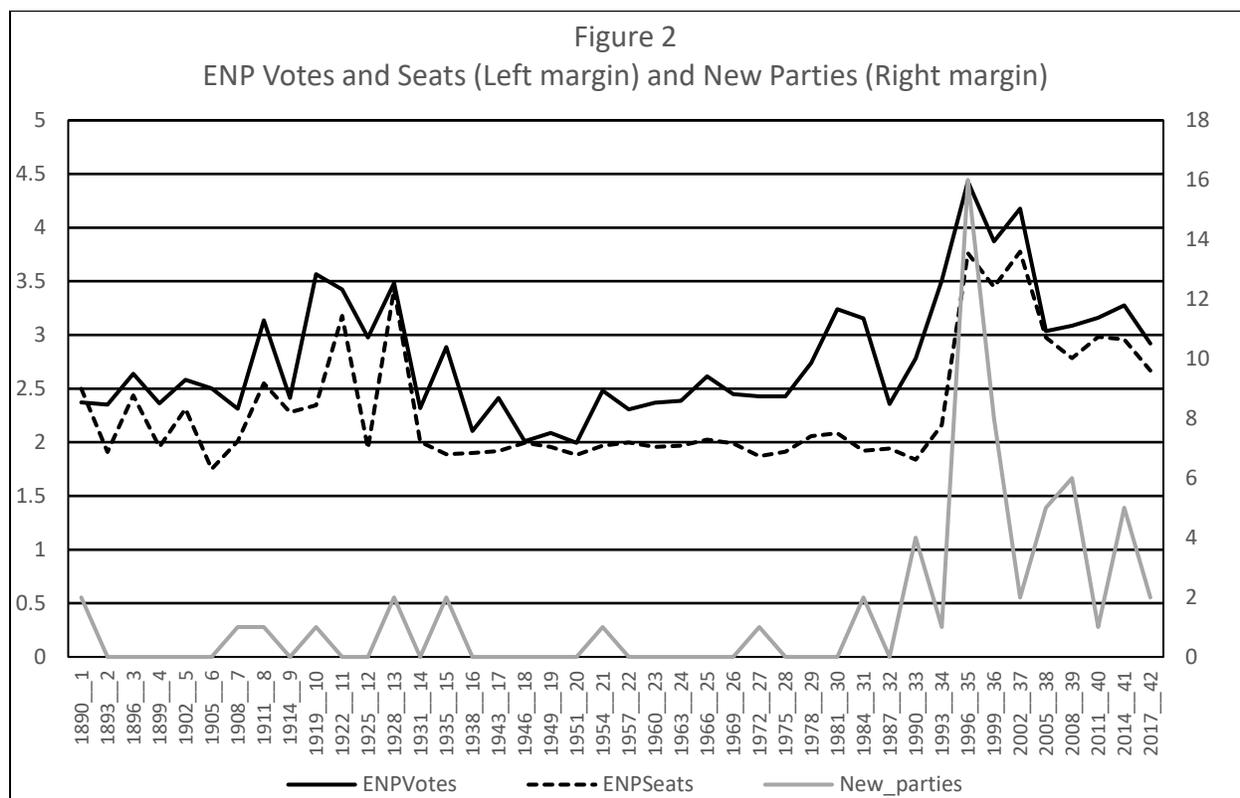
In Figure 2 we can clearly see the operation of Duverger's Law in New Zealand—the prediction that in SMP systems the expected number of political parties (ENP) will converge on 2.⁴ The diagram illustrates that a dominant two-party structure was present from the very beginning of party formation in New Zealand (then featuring Liberals versus Conservatives). However the 1910's saw the breakup of the long governing Liberal party (1890 – 1911) and the beginning of a period of party turbulence before the National Party emerged as the party representing more conservative interests and the Labour Party became their more liberal counterpoint. By 1928 the SMP system could again be characterized by two-party dominance with ENP(Seats) converging back again on 2 and remaining at that level until the introduction of MMP in 1996. It is of interest to note that New Zealand differs somewhat from other SMP countries in that the expected number of parties calculated on the basis of votes basis exceeds the expected number of parties on a seat basis.⁵ This implies the presence in each election of voter interests not reflected in the distribution of

³ While governing coalitions that exclude the first-place party can also arise under SMP, the likelihood of a minority party coalition under MMP is higher because new party entry typically results in a greater fragmentation of the vote and a decrease in the share of the vote going to the top two parties.

⁴ The expected number of parties takes into account differences in the strength of parties by weighting each party by its share of the vote or its share of seats won. More formally, $ENP(x) = 1/\sum(x_i^2)$, $i=1..N$ where x = vote or seat shares and N represents the total number of parties. When two parties share votes or seats equally, $ENP = 2$.

⁵ In other SMP countries like Canada and India, it is the presence of distinct regional parties in national elections that accounts for ENP(Seats) typically being larger than ENP(Votes). In New Zealand's case, the difference appears to reflect the small size of the plurality needed to win a constituency in SMP elections. Some prominent examples of parties winning votes but not seats include: the Social Credit Party in 1981 that received 21% of the vote and won only 2 seats, the New Zealand Party in 1984 that received 12.5% of the vote and no seats, and the Green Party in 1990 that received 6.8% of the vote and won no seats.

party seats, again illustrating the nonrepresentative nature of minority interests under SMP. The number of new party entrants in each election, shown as the bottom line in Figure 2, shows the virtual absence of new parties entering between 1938 and 1990, reinforcing the National-Labour Party dominance exhibited in the ENP measures.



Source: <https://www.elections.org.nz/events/past-events/>

The arrival of MMP in 1996 is clearly indicated on the diagram by the spike produced in the number of new parties entering that year. After averaging less than one new entrant an election through 1993, 16 new parties entered in the first MMP election.⁶ In the years since entry has fallen off, but new party entry has continued to average over 3 per election. As a result of the new entry, the two ENP measures jumped upwards with the adoption of MMP and have only slowly fallen back. Yet while the pattern exhibited may suggest convergence back to 2, there are reasons for believing that the ENP(Seat) measure will not fully revert. That is, with the MMP system bringing together winning seat and vote shares, the average size of the winning seat share has permanently fallen (47 to 42 percent). The smaller winning share has resulted in no one party winning a governing majority in any of the eight elections of the MMP era. Electoral outcomes can now be characterized as competitions between two loose coalitions of parties: one grouped

⁶ The elections leading into the referendum (1990 and 1993) also witnessed a small jump in number of entrants who appeared to anticipate a representational role arising under MMP.

about the National Party, the other about the Labour Party.⁷ To the extent that a coalition of parties spans a wider range of political interests, more of the interests of the electorate are likely to be addressed and minority rights more likely to be reflected in government policy.⁸ The continued gap between the two ENP's, however, does represent some fraction of voters whose interests are not reflected in the governing alliance.

In New Zealand a more immediate reason precipitating institutional change was a trend towards party dealignment that, it was argued, reflected a growing lack of trust in politics and disillusionment with the political system.⁹ Its observable symptoms were a downturn in voter turnout, a reduction in the vote share going to the two (almost equal sized) dominant political parties and an increase in vote volatility. With party dealignment, new governments could now be elected with a smaller fraction of the vote, resulting in a series of 'landslide victories' that "initiated dramatic policies of economic change many of which were not signalled in previous policy statements. Neither were these policies accepted by many voters as consistent with traditional party objectives" (Vowles, p.113, 1995). This unrest led eventually to the binding referendum of 1993 that offered the choice between SMP versus MMP. While close, the vote favoured MMP and the preference for MMP was later re-confirmed in a 2011 referendum.

The data on voter turnout, the voting franchise and the share going to the two dominant political parties are shown in Figure 3. From a historical perspective, what stands out most strongly is the rapid drop in the vote share going to the dominant two political parties that went from 92% in 1987 to 69.8% in 1993. Interestingly enough, the adoption of MMP did not immediately change that downward trend, which fell further to 62% through the first and third MMP elections of 1996 and 2002. Since then the vote share received by the dominant two parties has risen back to average just below 80%.

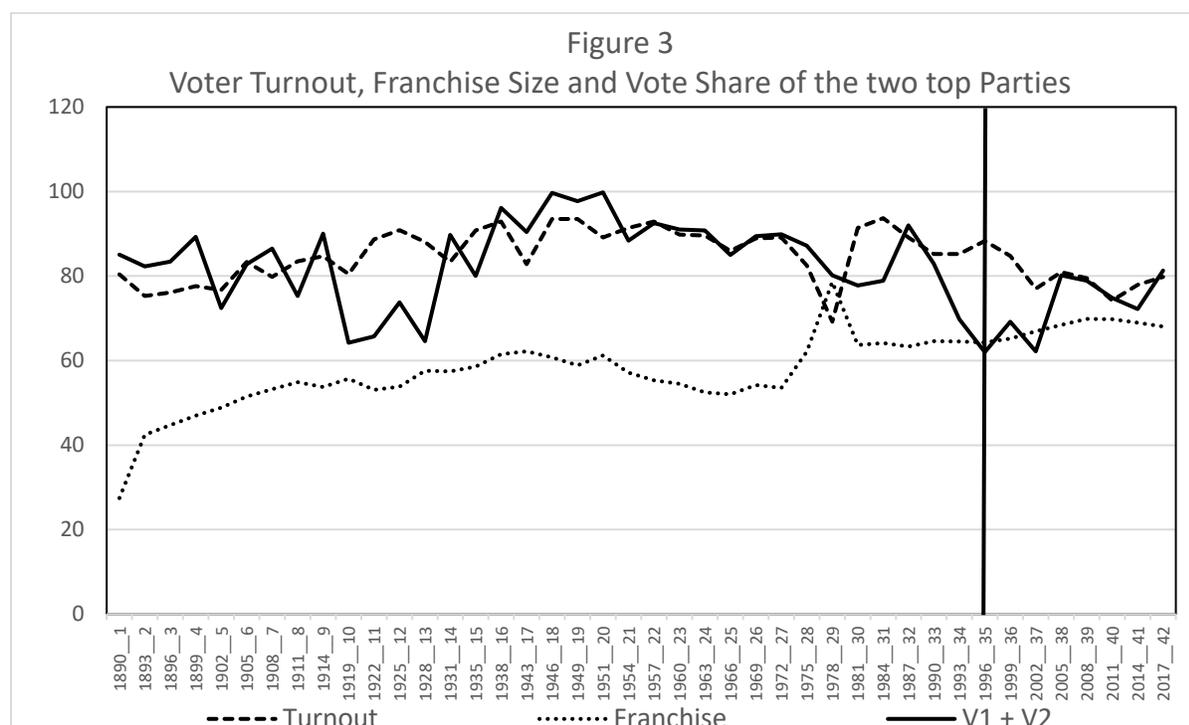
The case for a systemic fall in voter turnout leading into MMP appears much weaker. With the exception of 1978, when voter turnout was largely understated (because of an enrolment controversy that may have resulted in the double counting of up to 450,000 voters), voter turnout percentage has varied from the mid eighties through early nineties over the entire period between 1922 and 1996. Vowles (2010) among others has emphasized the turnout decline arising between 1981 and 1993 as evidence of a loss of trust

⁷ The looseness of parties in each governing coalition is indicated by the role of Winston Peters who as head of the New Zealand First Party has participated in both National (1996) and Labour (2005, 2017) governing coalitions.

⁸ There remains a concern that because only a small number of seats are needed to form a majority coalition that some minority concerns will be overrepresented while others ignored.

⁹ Vowles (p. 95, 1995) writes, "New Zealanders were responding to the destabilizing effects of party system dealignment, increasing disproportionality of election outcomes, and a succession of governments which many believed had ignored public opinion in their efforts to reform the economy".

in the political system that MMP might reverse, but from a longer perspective that period of decline appears to be part of a longer decline that began before and has continued well into the MMP era.¹⁰



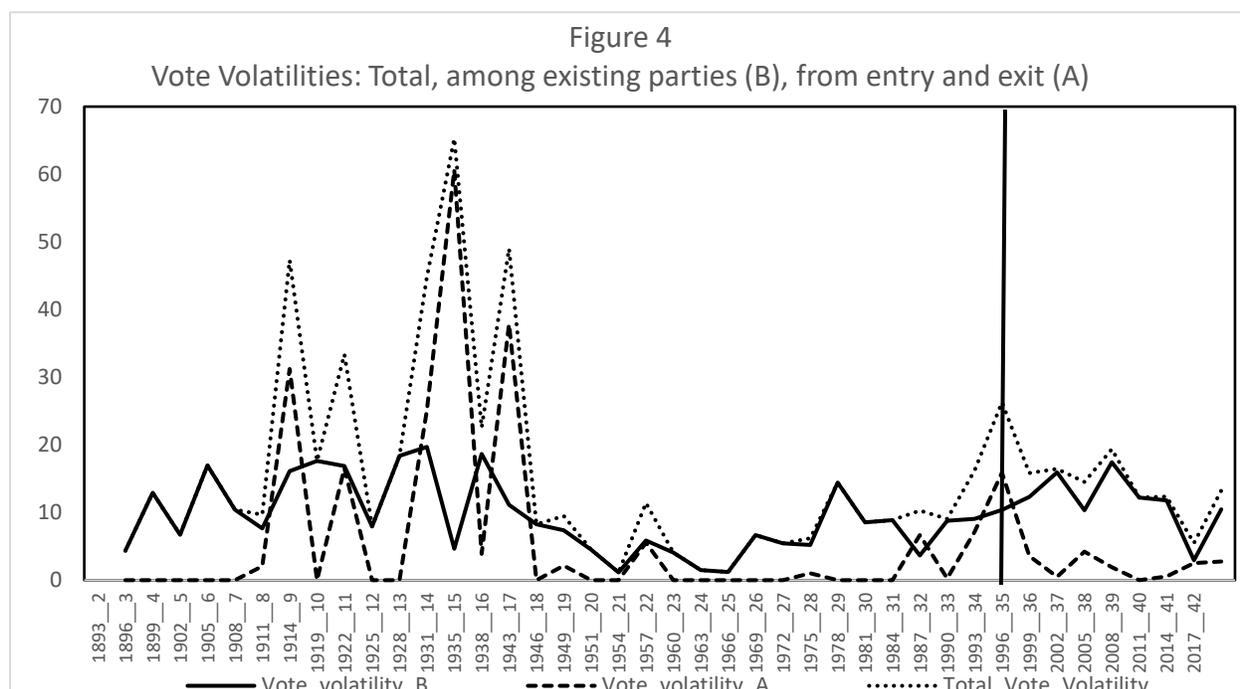
Source: <https://www.elections.org.nz/events/past-events/>

The fact that turnout has continued to fall following the adoption of MMP has itself posed a challenge to the expectations of political analysts (Blais and Carty, 1990; Lijphart, 1999; Ladner and Milner, 1999). As Karp and Banucci (1999, pp.363-4) write, “[b]y increasing the effective impact of individual votes, PR rules might be expected to increase attachment to and trust in a political system. Consequently, an electoral system that ensures that the fewest votes are wasted will presumably motivate more people to vote.” The expected rise has not materialized.

As part of partisan dealignment, observers have pointed to an increase in vote volatility as part of the party and policy instability period that arose in the final years of the SMP system. Vote volatilities are shown in Figure 4 where total vote volatility, the upper dotted line, can be seen as rising steadily from a low in the early 1960’s through the first MMP election in 1996. The figure also shows the decomposition of volatility into vote shifting among established political parties (volatility B) and vote shifting arising from existing and exiting parties to new party entrants (volatility A) and illustrates that in the period following

¹⁰ Vowles (2010) attributes the fall in turnout to a decline in political competition and the age-cohort structure of the New Zealand population in this period.

WW2, volatility arising from entry has been the exception rather than the rule. From a long-term historical horizon, however, interparty vote volatility may have been returning to its historical average from a period of exceptional partisan stability that arose from WW2 through the early 1970s. The period since MMP shows no strong trend. While volatility has fallen off its 1996 peak, both A and B volatilities are somewhat larger than in the period leading into MMP.



Source: <https://www.elections.org.nz/events/past-events/>

Rather than seeing the adoption of MMP as a cure for party instability, the transition from SMP to MMP is more often believed to produce a perverse effect by increasing vote switching. That is, to the extent that an MMP system fragments party structure by easing the entry of new parties, vote volatility would be expected to rise with a larger proportion of that increase coming from the volatility associated with the greater entry and exit of parties. In New Zealand's case, the verdict is still out. As we have seen, the adoption of MMP did produce a dramatic period of new party entry that is reflected in both Type A and total volatility. Yet in the period since, volatility arising from entry/exit has fallen off substantially whereas interparty vote volatility has fallen only somewhat from its MMP high.

2. The effect of MMP on Voter Turnout and Vote Volatility

While diagrams are useful for visualizing the change in the movement of variables before and after the adoption of MMP, diagrams can mislead when the variables are influenced by other influences that are

not constant over time. In this section we examine whether controlling for other expected influences effects our tentative conclusions. We begin with voter turnout and vote volatility.

As we have seen, there was an expectation that the adoption of a proportional over a majority voting rule would increase voter turnout. Individuals now have a greater incentive to vote for party platforms that more closely respond to interests and concerns that were underrepresented under SMP. But while the adoption of MMP was expected to increase the expected return from participating in the election, voter turnout fell following MMP and has remained lower ever since. However, the observation that voter turnout began before MMP and has continued thereafter suggests that other factors may have been in play and those factors may well provide the explanation for why the expected rise in turnout did not materialize. Similarly making a vote for a non-dominant political party more meaningful, was expected to increase the share of the vote going to minor parties and thus increase vote volatility. Figure 4 suggests that while this appears to be the case, volatility may also have been influenced by other factors. In the tables below I present a number of multiple regressions designed to explain the effect of MMP on both of these variables after controlling for other potentially important influences.

The literature on voter turnout and vote volatility suggest a number of characteristics of the electoral process that help to explain voter turnout and/or vote volatility (recent examples include Geys, 2006; Bischoff, 2013; Cancela and Geys, 2016; Wilford, 2017; Ferris and Voia, 2019). They include such characteristics of the electoral system as: the district size of the voting pool, the heterogeneity of the electorate, the entry of new competitors, and the expected closeness of the election as factors that also influence the likelihood that a registered voter will turnout to vote. In the tables below these controlling factors are represented by: average seat size (the average number of registered voters in a constituency); the percentage of the population that is Maori; the number of new party entrants; electoral closeness (as represented by the volatility adjusted winning vote margin); and the intensity of government intervention undertaken by the incumbent government (as represented by the average size of its fiscal deficit). The time period covering the adoption of MMP voting is represented by the discrete variable, `MMP_1996` onward, that takes the value 1 for all years from 1996 onwards and 0 before. Finally, a dummy variable, `D1978`, is used to account for problems arising with the mis-enrollment of voters in 1978 (producing the dramatic one-time dip in voter turnout appearing as the outlier in Figure 3). A table of descriptive statistics and their sources is included in the Data Appendix at the end of the paper.

Table 1
The Effect of the Change from SMP to MMP on Voter Turnout:
(absolute value of t-statistic in brackets)

	(1) Turnout	(2) Turnout	(3) Turnout
MMP_1996 onwards	-9.731*** (3.81)	-9.343*** (3.88)	-4.674** (2.42)
Average Seat Size (1000s)	1.45*** (6.45)	1.47*** (6.26)	2.96*** (8.26)
Change in Average Seat Size		-0.726 (1.66)	
Average Seat Size Squared			-0.0714*** (4.76)
New Parties	1.313*** (7.65)	1.138*** (5.24)	0.752*** (4.68)
Average prior governing deficit	0.524*** (2.63)	0.373* (1.78)	0.631*** (4.01)
Maori	-2.63*** (4.86)	-2.659*** (4.89)	-1.370*** (2.96)
Volatility adjusted winning margin	-0.063 (0.24)	0.0287 (0.10)	0.020 (0.13)
D1978	-26.44*** (18.80)	-23.34*** (10.64)	-16.48*** (7.34)
Constant	85.80*** (40.24)	86.35*** (40.60)	-71.27 (1.31)
Number of Observations	41	41	41
R ²			
ADF	.735 -5.34	.748 -5.48	.839 -7.46

Note: * p < 0.1, ** p < 0.05, *** p < 0.01.

In Table 1 the results of regressing voter turnout on these covariates are presented. As a set they explain more than three quarters of the variation in turnout over the 1890 – 2017 time period. The three versions of this test correspond to three different treatments of the way that the constituency size of the voting franchise is expected to influence voter turnout. That is, as the percentage of the population that is registered to vote in a district rises, engagement and participation in the election are expected to grow, but as ever larger portions of the population are included, participation at the margin is expected to decrease (Downs 1957). Because the relationship between constituency size and turnout may then be nonlinear, I present two alternative representations: the first distinguishes between the level and the change in the franchise while the second treats the relationship as quadratic. While both equations find a negative marginal effect, the best fitting version of the test is the quadratic one and presents the view that as the franchise grows in size, voter turnout increases but at an ever-decreasing rate. Here the finding of a diminishing marginal effect is consistent with the implication from Downs that the expected return from voting should fall as the size of the voting pool increases (decreasing the rate of increase in turnout).

The highly significant coefficient estimates found for New Zealand (2.96 and -0.0714) imply that the effect of franchise size will peak when registration hits roughly twenty-one thousand voters.¹¹ Unlike the findings of Matsusaka and Palda (1999) for Canada, and Geys (2006) and Cancela and Geys (2013) more generally, the data for New Zealand do not reject the Downsian prediction that turnout will fall because of the diminished significance of individual votes as voter numbers and their concentration increases.

While increases in constituency size will likely increase voter heterogeneity, our model includes a second measure of voter heterogeneity, the percentage of the population that is Maori. Here the regressions indicate that an increase in the percentage of the vote that is Maori is associated with a significant decrease in overall voter turnout.¹² The arrival of new parties, on the other hand, signals the entry of new ideas and different policy options. The result that voter turnout increases with new party entry is then consistent with the hypothesis that newer parties and greater intra-party competition increases interest in the election and hence the expected benefit from participating in the electoral process. Alternatively, the possibility of reflecting a wider range of voter interests in the legislature may solicit the entry of new parties to take advantage of this electoral potential, resulting in both new entry and greater electoral participation.

To the extent that previous central government deficits signal the existence of economic difficulties in the prior governing period and/or a lack of fiscal discipline, the significant rise in voter turnout found in the data is consistent with the hypothesis that potential voters do respond to fiscal and/or economic circumstances for which they hold incumbent governments responsible. On the other hand, electoral closeness, measured here through the volatility adjusted winning vote margin is found to have no significant effect on voter turnout. While this result was unexpected, it is not an unusual finding.¹³

With these controls reflecting the other important influences on voter turnout, the impact of MMP on vote turnout is still found to be negative and significantly so. In all forms of the test, voter turnout is indicated as being lower following MMP than before, with the first two forms of the test implying almost a 10 percent reduction in turnout, both of which are significant at the 1 percent significance level.¹⁴ The

¹¹That is, $\frac{\partial \text{Turnout}}{\partial \text{Size}} = 2.96 - .1428 * \text{Average_Seat_Size}$, or $\text{Size} = 20.727$ when $\frac{\partial \text{Turnout}}{\partial \text{Size}} = 0$.

¹² When Maori is interacted with MMP_1996 the coefficient is found to be positive but with a large standard error. That is, there is very weak support given to the hypothesis that the adoption of MMP has increased the involvement of the Maori in the electoral process.

¹³ Geys (2006, p.648) finds 132 successes out of 259 estimates testing for a positive effect of ex post electoral closeness on turnout, or a 51 percent success rate. Cancela and Geys (2013) find a 68 percent success rate.

¹⁴ To the extent that voter turnout rises with the average age of the population (Wolfinger and Rosenstone, 1980; Endersby and Kriekhaus, 2008), the rising average age (documented in every Census since 1970) is one further

weakest case for a fall after MMP is found in the quadratic version of the test where the discrete MMP effect is both weaker in size (now 5 percent) and significantly different from zero at the 5 percent significance level.

In Table 2 I present the results of regressing the control variables and MMP_1996 on three versions of vote volatility: total vote volatility as defined by Pederson (1979), Volatility A defined as vote switching from established parties to new entrants, and Volatility B defined as vote switching among established parties. In all three cases the coefficient sign of MMP_D1996 is found to be positive, but only in the case of vote volatility among established parties is volatility found to be significantly positive, and only at the 10 percent significance level. In relative terms, the variables used to control for other influences are less helpful in explaining volatility than they were explaining voter turnout. Within the category of volatilities, the regressions provide the best support for total volatility, allowing the explanation of thirty five percent of the variation in total volatility as compared to 29 and 22 percent of the variation in the two subcomponents. Overall the data are only weakly consistent with the hypothesis of a rise at conventional levels of significance.

Table 2
The Effect of the Change from SMP to MMP on Vote Volatility: New Zealand, 1890 – 2017
(absolute value of t-statistic in brackets)

	(1) Total Vote Volatility	(2) Vote Volatility A	(3) Vote Volatility B
MMP_1996 onwards	9.67 (1.57)	4.196 (0.77)	5.474* (1.81)
Average Seat Size	0.0019* (1.88)	0.0019* (1.84)	0.00003 (0.08)
New Parties	1.085* (1.97)	0.764* (1.74)	0.321 (1.14)
Unemployment rate	3.293** (2.34)	2.686 (1.67)	0.608* (1.71)
Previous central government deficit ratio	0.486 (0.92)	0.343 (0.82)	0.143 (0.52)
Maori	-6.832** (2.31)	-5.886* (1.88)	-0.946 (0.94)
Constant	29.75*** (3.56)	16.01* (2.02)	13.73*** (4.58)
Elections R ²	41 0.349	41 .291	41 .217

Note: * p < 0.1, ** p < 0.05, *** p < 0.01.

factor that would have tended to counter the fall in turnout experienced in New Zealand since the adoption of MMP.

In terms of the alternative hypotheses tested, the results support the hypotheses that vote volatility will rise with average seat size, the number of new parties entering and with the unemployment rate arising in the incumbent's governing period. All of these results, however, are only weakly significant at the 10 percent significance level, unlike the similar effects found earlier for voter turnout. Finally, higher proportions of Maori in the electorate are associated with significantly less total vote switching, particularly less switching among the established parties. Once again, however, these results are significant only at the 10 percent level.

Before turning to the efficacy of government performance, I explore the effect of the voting rule switch to MMP on: a) the probability that the incumbent party wins the upcoming election; b) the incumbent's share of the vote in the upcoming election; and c) the incumbent's winning margin (i.e., margin conditional on winning the election). The regression model used to do so adds as additional variables the number of terms that an incumbent party has already been in office, the average growth rate arising in the incumbent's last term, the corresponding changes in both government size and outstanding government debt (both as ratios of GDP). The results are presented in Table 3.

Table 3
MMP's Effect on the Probability of Incumbent Winning, Incumbent's Vote and Winning Margin
(absolute value of t-statistic)

	(1) Prob (Incumbent wins) Probit	(2) Incumbent's share of the Vote	(3) Incumbent's Winning Margin
MMP_1996 onwards	-1.375 (1.14)	5.828* (1.93)	9.165* (1.87)
Turnout	-0.151*** (2.65)	-0.101 (0.71)	-0.581** (2.60)
Number of consecutive terms in government	0.685** (1.99)	0.562 (0.72)	1.670 (1.62)
Number of New Parties	-0.060 (0.55)	-1.652*** (3.76)	-0.910** (2.14)
Average Seat Size	0.00003 (0.63)	-0.0004** (2.33)	-0.0006*** (2.53)
Average growth rate in the incumbent's term	0.203 (1.38)	0.288 (0.66)	0.454 (0.77)
Growth in Govt Size in incumbent's term	-0.012 (0.78)	-0.081 (1.54)	-0.027 (0.45)
Growth in Central Govt debt in the previous term	-0.015 (0.86)	-0.152** (1.99)	-0.146 (1.32)
Constant	11.71** (2.54)	57.91*** (4.23)	61.87*** (3.31)
Number of elections (pseudo R ²) and R ²	41 .403	41 .585	41 .601

Note: * p < 0.1, ** p < 0.05, *** p < 0.01.

The story told by Table 4 as a whole is broadly consistent with prior expectations while explaining roughly fifty percent of the variation in the winning percentages. The probability of an incumbent winning the upcoming election, increasing its share of the vote overall and/or the size of its winning margin are affected by institutional and organizational dimensions of the electoral process: a) falling with an increase in voter turnout; b) increasing with the number of terms the party has been in office; and c) falling with the average voting size of electoral districts. Not all of these coefficient estimates are significant, but each hypothesis has at least one significant coefficient and many of those that are not come close. Electoral outcomes are also found to be affected by economic circumstance and policy choices made by the incumbent government, but much less significantly so. That is, there is only the suggestion in the data that electoral outcomes for the incumbent government are benefited by higher economic growth rates arising in the governing term, while falling with increases made to the size of government and government's outstanding debt.

After accounting for these alternative influences on the incumbent's electoral performance, the imposition of MMP is found to have had no significant effect on the probability that an incumbent will win. On the other hand, the data does suggest that the incumbent's vote share has risen following the adoption of MMP and, given an incumbent victory, the size of its winning margin has also risen. The estimated 6 percent overall increase in vote share and the 9 percent increase in the winning margin are significant, however, only at the weaker ten percent level.

3. The effect of MMP on Policy

In summarizing the choice between SMP and proportional voting systems, Norris (1997, p.298) writes, "the core debate concerns whether countries should adopt majoritarian systems which prioritize government effectiveness and accountability, or proportional systems which promote greater fairness to minority parties and more diversity in social representation." As we have seen the adoption of MMP in New Zealand has brought seat representation into line with vote representation, encouraged the entry of new parties and broadened policy representation through the encouragement of new parties and larger governing coalitions. It has also tended to increase vote volatility and been associated with decreased voter turnout with marginally positive effects on the incumbent party's electoral fortunes. We turn now to see if the arrival of MMP is associated with any detectable fall-off in the effectiveness of government policy and/or fiscal accountability.

The possibility that the voting system switch could have adversely affected government policy, perhaps most strongly in the timing response of policy response, is suggested by the recent research of Ash, Morelli and Osnabrugge (2018). In their analysis of 300,000 political speeches made between 1987 and 2002, they found that the period following the adoption of MMP in New Zealand was characterized by an increase in parliamentary attention given to party politics at the cost of policy-oriented topics. This suggests that with attention elsewhere, political response to such traditional government concerns such as fiscal intervention with respect to the business cycle and the maintenance of fiscal stability may be delayed or lacking.

In Table 4 below I examine the response of fiscal policy to the business cycle following the adoption of MMP, where the business cycle is defined in terms of variations in the growth rate of real GDP. Fiscal policy is defined in the first two columns as the ratio of the central government's operating deficit to GDP and in the third column as the change in the expenditure size of central government (Ferris, 2014). All three regressions control for the possibility of partisan differences in fiscal response to the cycle (using the dummy variable, LIBERAL, defined as 1 if the governing party was the more liberal of the two dominant political parties; 0 otherwise), the rate of population growth and, as a small open economy subject to external shocks, New Zealand's openness to trade ($\text{openness} = [\text{exports plus imports}] / \text{GDP}$).¹⁵ The two deficit equations show a progression of explanatory variables, adding in the second version of the test a control for outstanding central government debt as a ratio of GDP (because the ability to run a larger deficit could be constrained by its perceived ability to issue new debt). As can be seen from the results presented in columns (2) and (3), the size of central government debt does not appear to have been a significant constraint on either deficit spending or government size (at least on average). Table 4 includes in column (3) changes in government expenditure size as a separate measure of fiscal policy (covering the additional case when intervention consists of expenditure changes are matched by tax changes leaving deficits largely unchanged).

Beginning with the model in columns (1) and (2) explaining central government deficits, Table 4 indicates that the set of explanatory variables can explain roughly half of the variation in central government deficits. In terms of the individual hypotheses being tested, the deficit ratio is found to be inversely related to the growth rate of real GDP as expected. This indicator of countercyclical fiscal intervention is significant in both deficit equations at the one per cent significance level. The data also indicate the presence of a significant partisan effect. Governments in New Zealand that have featured relatively more

¹⁵ Liberal corresponds to the Liberal Party (1890-1914) and the Labour Party (1919 through the present).

liberal policy platforms (Liberal/Labour) produce significantly larger deficits on average than those arising under more conservative party governments (Reform/National). On the other hand, periods with higher population growth rates are associated with significantly lower sized deficits while changes in openness are positively related with deficit sizes but only weakly so.

Table 4
The Effect of MMP on Central Government Deficits
(absolute value of t-statistic)

	(1) Central government deficit to GDP ratio	(2) Central government deficit to GDP ratio	(3) Changes in Central Government Expenditure to GDP ratio
Real GDP growth rate	-0.206*** (2.69)	-0.245*** (3.04)	-0.363** (2.51)
MMP 1996 onwards	0.579 (0.41)	-0.308 (0.21)	-8.44* (1.84)
Interacted growth rate and MMP_1996 onward	-2.340*** (2.98)	-2.471*** (3.19)	2.569 (1.30)
Partisan (Liberal)	2.160*** (2.86)	2.169*** (2.94)	-1.083 (0.89)
Population growth rate	-0.639** (2.48)	-0.605** (2.61)	-0.126 (0.47)
Openness	7.685 (1.63)	11.26* (1.97)	3.534* (1.70)
Central Government Debt to GDP ratio		-0.020 (1.46)	-0.025 (1.68)
Constant	-0.491 (0.17)	-0.559 (0.19)	3.028 (0.75)
N	40	40	40
R ²	.492	.529	.289

Note: * p < 0.1, ** p < 0.05, *** p < 0.01.

Holding these alternative influences on central government deficits constant, the data indicate that the adoption of MMP has itself had no significant effect on the average size of central government deficits. Neither MMP_1996 coefficient is close to being significantly different from zero. However, what is of greater interest is the interaction effect of MMP and the growth rate on deficits. This is found to be large, negative and significantly so. The result implies the countercyclical use of fiscal policy expanded rapidly following MMP, with government deficits increasing (decreasing) in size in response to a contraction in (expansion of) the business cycle more aggressively than previously.¹⁶ In this sense the data is inconsistent with the hypothesis that MMP has distracted the political process from effective economic policy, at least in relation to countercyclical policy. Rather, the data is more in line with the hypothesis that proportional

¹⁶ The marginal effect on the deficit of a change in the growth rate from column (1) is $\frac{\partial \text{Deficit}}{\partial (\text{growth rate})} = -0.206 - 2.34 \text{ MMP}$, a deficit response that is ten times larger in the post MMP period from 1996 onward.

representation makes a coalition government more responsive to minority interests that are more adversely affected by the cyclicity of the business cycle.

The story told in column (3) for changes in the expenditure size of government, is somewhat weaker in its overall significance and different in important details. The expenditure size of government is found to vary inversely and significantly so with changes in real output (and thus consistent with countercyclical spending), the equation's explanatory power is relatively weak, explaining only thirty percent of the changes in government size with few of the control variables finding significance even at the 10 percent level. The data indicate that the period following the adoption of MMP is associated with significantly smaller changes in government size, but only at the low ten percent significance level. The results also suggest that interaction effect between expenditure changes and the business cycle has not only decreased but reversed following the adoption of MMP. By itself, the coefficient estimate on the interaction term (2.569) suggests that fiscal intervention through expenditure changes has fallen off following the adoption of MMP and yielding a result consistent with the hypothesis that the decline in attention to policy over politics has reduced the efficiency of fiscal policy.¹⁷ The small t-statistic, however, cannot exclude the likelihood the coefficient estimate is equal to zero. It follows that evidence in favour of the hypothesis that the observed fall-off in attention given to economic policy over politics translated into a deterioration of fiscal policy is weak for the case of countercyclical changes in government spending and contradicted for fiscal deficits. The new suggestion arising from the data is that following the adoption of MMP more attention has been directed from spending to deficits and taxation as ways of dealing with the business cycle.

With the greater use of deficits in response to the business cycle, is there any evidence to suggest that greater deficit use has crossed over into accumulating government debt and thus greater fiscal instability? That is, the spreading of fiscal responsibility and hence accountability for fiscal stability over the larger number of political parties involved in post-MMP governing coalitions raises the concern that inter-coalition differences will be resolved through the running of deficits that eventually lead to escalating government debt. An Augmented Dickey Fuller test for the stationarity New Zealand central government debt over our time period yields a test statistic of -5.417, which allows rejects the hypothesis of a unit root at the 1 percent level (-3.648). This implies that the debt to GDP ratio has been stationary over the entire 1890-2017 time period. To see whether the adoption of MMP has had any significant effect on the

¹⁷ That is, $\frac{\partial Deficit}{\partial (growth\ rate)} = -0.363 + 2.569\ MMP$, reversing sign following the adoption of MMP.

debt to GHDP ratio, I treat the central government debt ratio as a first order difference equation and ask to what extent, if any, did the introduction of MMP make either the stationary long run level of central government debt to GDP ratio larger or the rate of convergence on that stationary debt to GDP ratio slower. The results are presented in Table 5.

Table 5
Central Government Debt to GDP First Order Difference Equation
(absolute value of t-statistic in brackets)

	Constant	Central Govt debt ratio lagged	MMP_1996	MMP_1996 x CG debt ratio lagged	No. of Obs	R ²	Implied Long Run Value
Central Govt debt ratio	5.961 (0.80)	.922*** (12.62)			33	.837	76.4 of GDP
Central Govt debt ratio	5.961 (0.86)	.922*** (13.58)	31.98 (0.93)	-0.849 (1.63)	41	.887	76.4 before 1996 40.9 after MMP

*** significantly different from zero at a 1%

The first row in Table 6 presents the results for the first 34 elections prior to the adoption of MMP (1890 to 1993). The coefficient on the lagged debt ratio (.922) indicates considerable persistence in changes in central government debt and thus a very slow rate of convergence on a steady state value over the SMP period. The ratio of the regression constant to the persistence coefficient implies a long run debt to GDP ratio of 76.4 percent for the SMP period.

The results in the second row are for the regression equation now run over the full 1890 to 2017 time period allow the incorporation of 8 additional elections. This form of the regression test includes both the discrete MMP_1996 variable, to allow for a break in the size of the stationary long run debt ratio following 1996, and an interaction term, MMP_1996 x CG debt ratio lagged, to allow for the possibility of a change in the rate of convergence following that date. The regression generates the same results for the early SMP time period (1890-1993). Convergence is again slow to a moderately sized level of the debt ratio (76.4 percent). However, a literal reading of the estimated results for the period following the adoption of MMP tells a quite different story. The combined coefficient estimates indicate much less persistence and thus a quite dramatic increase in the convergence rate onto a much smaller steady state debt ratio (41 percent). Unfortunately, the regression constant, the discrete MMP_1996 and interaction terms all have large standard errors meaning that the literal interpretation given above is subject to considerable error. To the extent that the results can be taken as indicative of a direction of change, the data give no support to the hypothesis that fiscal discipline is any less rigorous under MMP than it was under the previous SMP regime.

4. Conclusion

While the 21 years and 8 elections that have followed the adoption of MMP in New Zealand may provide too short a period to allow a definite pronouncement about the consequences of switching from an SMP to MMP voting system in New Zealand, the elapsed time does seem long enough to posit some tentative conclusions. First the adoption of MMP in New Zealand did accomplish a major goal of aligning vote and seat representation across parties and has likely raised the rate of new party entry, the equilibrium expected number of political parties and hence widened the range of policies on which voters can exercise their choice. The former has arisen by construct, the MMP representation rules guarantee this result, at least for parties that have reached the minimum threshold for parliamentary representation.¹⁸ In relation to the latter, there is some weak evidence that New Zealand's MMP voting rules may have encouraged greater Maori participation. New party entry has also produced a greater fragmentation of the party system and the greater incidence of coalition governments, outcomes that are in line with prior expectations and what have arisen elsewhere (Dow, 2001; Nishikawa and Herron, 2004).

On the other hand, the switch from SMP to MMP in New Zealand has not brought about the hoped for rise in voter engagement and electoral turnout nor countered the dealignment of the party system that spurred MMP's adoption. After accounting for a number of alternative determinants, voter turnout is found to be significantly lower in the post 1996 period than in the earlier SMP period. Similarly, in line with the increased number of parties following the adoption of MMP, there has been a fall in vote shares going to the two dominant parties and a concomitant increase in voter volatility, reflected particularly in vote switching between established and new parties. The greater fragmentation of the party system and larger volatility suggest that greater electoral instability may be the cost of representing a wider and more general set of voter interests.

Finally, there is no suggestion in the data that MMP has brought with it a loss of fiscal responsibility nor has the development of coalition government with its division of specific party responsibility for policy brought about a diminution of policy response to the business cycle. In New Zealand's case the effects of the diffusion of fiscal responsibility may have been offset by the need of coalition leaders to be more aware of and responsive to the concerns of voters who were marginalized under SMP. Indeed, the results suggest that despite the greater use of deficit spending over the business cycle, the steady state debt ratio has become permanently lower. This is consistent with recent evidence on the evolution of the central

¹⁸ The threshold is either receiving 5 percent of the vote or winning one electorate seat.

government debt ratio. From the period immediately before the adoption of MMP, there has been a relatively large reduction in the central government debt ratio from the mid 60's to the mid 40's. In short it would appear that at least for New Zealand there has been no trade-off in policy effectiveness and/or financial accountability for greater fairness in seat representation and more diversity in social representation.

Data Appendix

A. Descriptive Statistics

Variable Name	Mean	Standard Deviation	Minimum	Maximum	ADF level (5% -2.961) first difference
Franchise	58.236	8.935	27.44	78.59	-3.844
Average seat size	15389.09	7293.3	2475.28	27483.41	-0.781 -7.086
Previous central gov't Deficit ratio	.7233	2.871	-4.143	9.214	-3.028 -5.417
Number of new parties	1.5	2.957	0	16	-4.198
Unemployment Rate	3.678	2.379	1.0	9.9	-2.231 -5.553
GDP per capita growth rate in election year	.940	3.818	-8.03	12.2	-6.412
Ave GDP growth rate over previous governing period	1.402	2.254	-3.348	7.887	-4.896
Population growth rate	4.83	2.097	.682	8.565	-3.377 -7.458
Voter turnout percentage	84.71	6.20	69.2	93.7	-3.441 -8.24
Central government debt to GDP ratio	85.359	37.965	32.776	170.23	-5.417
Previous Central Government deficit ratio					-3.063
Total vote volatility	15.377	13.99	1.15	65.28	-4.190
Volatility A	5.65	12.38	0	65.625	-5.384
Volatility B	9.721	5.275	1.15	19.7	-4.610
Volatility adjust winning vote margin					-7.467
Maori percentage of population	8.85	3.50	4.48	14.23	0.972 -3.654
Openness	.528	0.078	.402	.684	-4.014

B. Sources

1. Election data:

1890-1993, <https://www.elections.org.nz/events/past-events/general-elections-1890-1993>

1996 onward, https://www.electionresults.govt.nz/electionresults_1996/, individually through 2017

Registered voters and turnout, <https://www.elections.org.nz/events/past-events/general-elections-1853-2017-dates-and-turnout>

Franchise = registered voters/population

Turnout = votes cast/registered voters

Volatility = $\frac{\sum_{p=1}^{p=N} |v_{pt} - v_{pt-1}|}{2}$, where v_{pt} is the vote share of party p in election t and $N = 8$. This decomposes into:

Volatility A = vote volatility/switching arising from entry/exit.

Volatility B = vote switching among established parties.

Win_seat_margin = the percentage difference in seats of the first versus second place seat finisher.

Win_vote_margin = the percentage difference in votes of the first minus second place seat finisher.
 Vol_adjusted_winning_vote_margin = Win_vote_margin/volatility.

2. Economic Data: 1890 – 2001, downloaded Oct 20 2011; updated through 2017, January 2019.
http://www.stats.govt.nz/browse_for_stats/economic_indicators/NationalAccounts/long-term-data-series.aspx (LTDS)

RGDP = Real Gross Domestic Product (Table e1-2 column AH in 2000\$)

RGDPPC = Real Gross Domestic Product per capita (Table e1-2, column AK in 2000\$)

D(.) = first difference operator

Growthpc = D[log(RGDPPC)]

RCGDebt = consolidated real central government debt (Table d4-1 column AJ in 2000\$)

CGDebt_ratio = RCGDebt/RGDP

RCGE = Real Central government expenditures (Table d2-1 column AP in 2000\$)

GSize = RCGE/RGDP

CGRev = Central government revenues (Table d1-1, 1867 -2002 breakdown sheet, Column U)

RCGRev = Real Central Government Revenues/CPI_2000 (Table d1-1 data sheet column U 2000=100)

TSize = RCGRev/RGDP

CG_Deficit = GSize – Tsize

CGDeficitratio = CG_Deficit/GDP

Population, archive.stats.govt.nz/browse_for_stats/population/estimates_and_projections/historical-population-tables.aspx

Unemployment rate, downloaded from Te Ara The Encyclopedea of New Zealand, www.TeAra.govt.nz

Maori - percentage of the population that is Maori, Historical Population Estimates, Table 4 Total and Maori populations www.stats.govt.nz. Interpolated between census years.

Exports 1890 – 1988 (LTDS Overseas Trade and Payments Table H.1.1); 1988 on www.stats.govt.nz/ Gross Domestic Product: December 2018 quarter supplementary Tables: Table 1

Imports 1890 – 1988 (LTDS Overseas Trade and Payments Table H.2.1); 1988 on www.stats.govt.nz/ Gross Domestic Product: December 2018 quarter supplementary Tables: Table 1

GDP nominal: 1890 – 1988 (LTDS National Income Table E.1.1); 1988 on www.stats.govt.nz/ Gross Domestic Product: December 2018 quarter supplementary Tables: Table 1

Openness= (exports + imports)/GDP.

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