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

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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 that motivated, and thus would 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 electoral 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 (1996) to the present (2017). The data set covers 42 elections, 34 before 1996 and 8 after.

In Section 1 the analysis is diagrammatic, illustrating visually some of the recurring reasons given for turning from an SMP to the 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 suggested 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 does not always reflect the wishes of the electorate as represented by the distribution of their votes and the tournament nature of the SMP system is viewed as suppressing the diversity of

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. The number of parties as used in the entry-exit analysis is the number of parties registered in each election. The parties used in the calculation of the effective number of parties ENP are all those registered parties that received a recorded vote share in the official results. The vote of an individual or party contesting without receiving a recorded vote share is included in the category 'other'.

electorate interests by discouraging voters from wasting their vote on unelectable minor parties. The latter phenomenon, formalized as 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 this 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 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.

--insert Figure 1 about here --

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 condition for governing has become a majority coalition rather than a majority party. By closing the difference between seat

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

representation and vote shares, governance is given to the party/coalition representing the majority of voters.³

-- Insert Figure 2 about here --

In Figure 2 we can clearly see the operation of Duverger's Law in New Zealand--the prediction that in SMP systems the effective 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 effective number of parties calculated on the basis of votes exceeds the effective number of parties on a seat basis.⁵ This implies the presence in each election of voter interests not reflected in the distribution of party seats, again illustrating the non-representative 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.

The arrival of MMP in 1996 is clearly indicated in 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

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 **effective** number of parties takes into account differences in the strength of parties by weighting each party by its share of the vote or 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, the presence of distinct regional parties in national elections accounts for ENP(Seats) typically being larger than ENP(Votes). In New Zealand's case, the difference appears to reflect the smaller 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.

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

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 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 precipitating reason for 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, producing 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 voter preference for MMP was later re-confirmed in a 2011 referendum.

Data on the size of the vote shares going to the leading political parties in each election are shown in Figure 3 and voter turnout in Figure 4. From a historical perspective, what stands out most strongly in Figure 3 is the rapid drop in the vote share going to the dominant two political parties (V1+V2) that went from 92% in 1987 to 69.8% in 1993. The decline in the largest vote share (V1) has been more gradual, averaging over 50% through the 1930's and 1940's, falling slowly through 40% by 1990 and into the 30's

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".

by 1993. The adoption of MMP does appear to have reversed these trends. Although the vote share received by the top two parties fell further to 62% through the first and third MMP elections of 1996 and 2002, the vote share has since risen back to reach 80% by 2017.

-- insert Figure 3 about here --

The case for a systemic fall in voter turnout leading into MMP and its expected reversal following the adoption of MMP is more complicated. While many writers have used the official figures, Nagel (1988) and later Vowles (2014) have pointed to inherent inconsistencies in the official measure and argue that the age-eligible proportion of the population is the more appropriate metric to be used. Vowles' (2014) extension of the Nagel construct then provides an alternative measure of voter turnout running over the shorter 1928 to 2011 time period. In Figure 4, I compare these two series, together with a third measure of the population's participation in elections (where total population rather than age-eligible or official enrollment is used as a base). The population's participation rate allows for continuous coverage across the entire 1890-2017 time period.

-- insert Figure 4 about here --

As can be seen from Figure 4, the three different measures of voter participation present slightly different trends leading into 1996 and the period following. With the exception of 1978, when official voter turnout was largely understated (because of an enrolment controversy that may have resulted in the double counting of up to 450,000 voters), the official voter turnout percentage has varied in the high eighties and low nineties over the entire period between 1922 and 1996 without much of a trend. The Nagel/Vowles measure, on the other hand, exhibits a slow gradual decline over the same period, with Vowles (2010) among others emphasizing the more rapid decline beginning in 1981 as evidence of a loss of trust in the political system that MMP might reverse. From a longer term perspective the decline in the Nagel/Vowles measure of voter turnout appears to be part of a longer decline that began before and has continued well into the MMP era. Finally, the participation rate tells yet a third story. From the perspective of the total population's participation in national elections there has been a more or less continuous rise in participation through WW2, with a downward dip through the 1960's before rising to a peak and stabilization following 1984. Of the three turnout measures, electoral participation exhibits the least amount of decline following MMP and the Nagel/Vowles measure the most.

That voter turnout did not rise in the period 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.”¹⁰ The expected rise in voter turnout has not materialized.¹¹

As part of partisan dealignment, observers have pointed to the increase in vote volatility as evidence of a period of party and policy instability arising in the final years of the SMP system. Vote volatility is shown in Figure 5 where total vote volatility, the solid upper 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 WW2, volatility arising from entry has been the exception rather than the rule. From a long-term historical horizon, however, interparty vote volatility may be 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 from its 1996 peak, both A and B volatilities have remained somewhat higher than in the period leading into MMP.

-- insert Figure 5 about here --

Rather than seeing the adoption of MMP as a cure for instability, the transition from SMP to MMP may have had a perverse effect by encouraging vote switching. That is, to the extent that an MMP system fragments party structure by easing the entry of new parties, vote volatility could rise if party affiliations are weak and/or a larger proportion of vote switching comes from the turnover 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 outcomes are influenced by other influences that have

¹⁰ New Zealand’s MMP system features a closed rather than open party list. Sanc (2017) argues that this diminution of voter choice can account for voter turnout not rising as much as expected under MMP.

¹¹ 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.

not remained constant over time. In this section we examine whether controlling for other expected influences would affect 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. Under MMP individuals have a greater incentive to vote for party platforms that more closely respond to interests and concerns they felt were underrepresented under SMP. But while the adoption of MMP was expected to increase the expected return from participating in the election, both the official and the Nagel/Vowles' turnout measures have fallen following MMP and remained lower. The observation from Figure 4 that the fall in voter turnout began before MMP and has continued thereafter suggests that other factors may be in play and these factors may well provide the explanation for why the expected rise in turnout did not materialize. Similarly by making a vote for a non-dominant political party more meaningful, MMP was expected to increase the share of the vote going to minor parties and thus increase vote volatility. While Figure 3 questions whether this has been the case for the vote share of minority parties whereas Figure 5 suggests that volatility may now be higher, both may well be influenced by other important factors.¹² 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;¹³ 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, that takes the value 1 for all elections from 1996 onwards and 0 before. Finally, a dummy

¹² The average vote share received by the third and fourth placed parties following MMP is roughly the same as the average over the 1972-1993 pre-MMP period, although it is higher than that the average of the 1980's.

¹³ New Zealand sociologists have often noted that Maori participation in elections is somewhat lower than the rest of the population (see, for example, Sullivan, von Randow and Matiu, 2014).

variable, D1978, is used to account for the extreme miscounting of the enrollment of voters in the official results of 1978 (that produced the dramatic one-time dip in official voter turnout in Figure 4). A table of all descriptive statistics and their sources is included in the Data Appendix at the end of the paper.

-- insert Table 1 about here --

Table 1 presents the results of regressing the three measures of voter turnout on these covariates. All three models of voter turnout perform well, each explaining more than eighty percent of the variation in its version of voter turnout. Moreover the covariates perform as expected, with a remarkable degree of consistency in coefficient sign and size across each form of the test. In relative terms, the Nagel/Vowles measure explains more variation, but the fact that its time series is nonstationary and the Adjusted Dickey Fuller (ADF) statistic of its equation's residuals is relatively low suggests that the estimated relationship may not be as reliable.¹⁴

None of the three models suggest that the introduction of the MMP has increased voter turnout. The effect of MMP on the official turnout rate is found to be significantly negative while the other two estimated effects are found to be insignificantly different from zero. The positive coefficient found in the participation case does, however, provide some support to Vowles' (2014) suggestion that the introduction of MMP may have slowed, if not reversed, an underlying downward trend in voter turnout.

In terms of the control variables, the data is consistent with the hypothesis that as the average size of the constituency grows voter turnout, however measured, increases. The data also suggest however that with larger size, turnout decreases at the margin. 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 should fall because of the diminishing significance of each individual vote as voter numbers and their concentration rise. The highly significant official turnout coefficient estimates found for New Zealand (3.26 and -0.088) imply that the effect of constituency size on turnout peaks at roughly eighteen and a half thousand voters.¹⁵

All versions of the turnout model concur in finding significance in our second measure of voter heterogeneity, the percentage of the population that is Maori.¹⁶ Here the regressions indicate that an

¹⁴ The official turnout ratio and the participation rate are stationary.

¹⁵ That is, $\frac{\partial \text{Official Turnout}}{\partial \text{Size}} = 3.26 - .176 * \text{Average_Seat_Size}$, or $\text{Size} = 18.523$ when $\frac{\partial \text{Turnout}}{\partial \text{Size}} = 0$. The corresponding peaks are 25.326 and 31.220 for the Nagel/Vowles and participation rate models.

¹⁶ Age is another form of heterogeneity that could be used. 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

increase in the percentage of the vote that is Maori is associated with a significant decrease in overall turnout. The effect is strongest in the Nagel/Vowles version of the model but is significantly negative in the other two cases as well. The arrival of new parties means the entry of new ideas and different policy options. The finding that voter turnout increases with new party entry is then consistent with the hypothesis that new parties and greater intra-party competition increases interest in the election and hence the benefits derived from participating in the electoral process.

To the extent that a period of central government deficits signals 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.¹⁷ On the other hand, electoral closeness, measured here through the volatility adjusted winning vote margin is found to have had no significant effect on voter turnout.¹⁸ There is some suggestion, however, that this has been affected by the introduction of MMP. In both the official and Nagel/Vowles versions of the model there is a significantly greater turnout found the more secure was the previous election in the period following the introduction of MMP. While this result was unexpected, it is not an unusual finding.¹⁹

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

(documented in every Census since 1970) that would be expected to counter the fall in turnout experienced in New Zealand since the adoption of MMP.

¹⁷ The use of central government debt (as a fraction of GDP) to represent the same type of effect works almost as well.

¹⁸ The results are unchanged if the size of the winning margin is used instead. The volatility adjusted margin is preferred since the meaning of the winning margin is dependent upon the underlying scale of voter volatility.

¹⁹ 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.

subcomponents. Overall the data are only weakly consistent with the hypothesis of a rise at conventional levels of significance.

--insert Table 2 about here --

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.

-- insert Table 3 about here --

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.²⁰

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.

²⁰ Dropping debt from the equation results in the previous term's growth rate becoming significantly positive (at 10 percent).

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 ($\text{openness} = [\text{exports plus imports}] / \text{GDP}$).²¹ 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 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.

-- insert Table 4 about here --

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.

²¹ Liberal corresponds to the Liberal Party (1890-1914) and the Labour Party (1919 through the present).

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.²² 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 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.²³ 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* attention has been directed away from spending towards deficits and taxation as ways of dealing with the business cycle.

²² 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.

²³ That is, $\frac{\partial \text{Deficit}}{\partial (\text{growth rate})} = -0.363 + 2.569 \text{ MMP}$, reversing sign following the adoption of *MMP*.

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 a 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 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.

--insert Table 5 about here --

The first row in Table 5 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.²⁴ 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, official voter turnout is found to be significantly lower in the post 1996 period than in the earlier SMP period. The other measures suggest only that MMP has not significantly countered an ongoing process of decline. 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 adoption of a Fiscal Responsibility Act (in

²⁴ The threshold is either receiving 5 percent of the vote or winning one electorate seat.

1994) and/or 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 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
Official Franchise	58.236	8.935	27.44	78.59	-3.844
Participation	49.31	7.86	22.06	60.09	-4.312
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
Official Voter turnout percentage	84.71	6.20	69.2	93.7	-3.441 -8.24
Nagel/Vowles voter turnout (28 observations)	82.05	5.83	68.2	92.3	-0.718 -5.276
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://elections.nz/democracy-in-nz/historical-events/18901993-general-elections>

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

Election results include registered voters, votes cast, and turnout.

Franchise = registered voters/population

Turnout = votes cast/registered voters

Participation = votes cast/population

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.

Source: New Zealand Electoral Commission and Data Appendix

Source: New Zealand Electoral Commission and Data Appendix

Source: New Zealand Electoral Commission and Data Appendix

Source: New Zealand Electoral Commission and Data Appendix

Source: New Zealand Electoral Commission and Data Appendix

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

	(1) Official Turnout 1980-2017	(2) Nagel/Vowles Turnout 1928-2011	(3) Participation 1980-2017
MMP_1996 onwards	-6.287*** (3.73)	-0.532 (0.22)	2.913 (0.97)
Average Seat Size (1000s)	3.26*** (8.25)	4.66** (6.26)	2.56*** (5.77)
Average Seat Size Squared	-0.088*** (5.62)	-0.092** (2.17)	-0.041** (2.71)
New Parties	0.778*** (5.26)	0.937*** (4.74)	0.733*** (4.11)
Average deficit in prior governing period	0.778*** (5.26)	0.686*** (4.60)	0.693*** (3.76)
Maori	-0.960** (2.06)	-4.012*** (3.91)	-1.778*** (3.16)
Lagged Volatility adjusted winning margin	0.031 (0.16)	-0.484 (1.71)	-0.389 (1.37)
D1996*Lagged volatility adjusted winning margin	1.575*** (3.19)	2.196 (1.71)	0.148 (0.23)
D1978	-13.70*** (7.51)		
Constant	67.86*** (20.28)	67.38*** (4.84)	36.20*** (10.94)
Number of Observations	40	28	40
R ²	.839	.853	.825
ADF	-7.318	-3.43	-3.77

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

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.

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.

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.

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 1%

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