**Appendix.**

**Deficit or austerity bias? The changing nature of Canadians’ opinion of fiscal policies**

Table of content

[Explanation of the approval series 3](#_Toc88907756)

[Description of the surveys included in figure 1. 6](#_Toc88907757)

[Description of the surveys included in figure 2 9](#_Toc88907758)

[Table A8. Models including total revenues and expenditures 14](#_Toc88907759)

[Table A9. Models with identical lag structures between the economic and fiscal variables. 15](#_Toc88907760)

[Long run multiplier tests 16](#_Toc88907761)

[Modelling the endogeneity between net lending and economic variables 17](#_Toc88907762)

[Rolling regressions for the economic variables 18](#_Toc88907763)

**Table A1.** Data references and descriptive statistics

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Variable |  Obs |  Mean |  Std.Dev. |  Min |  Max | Description | Reference |
| Net approval | 163 | 4.892 | 18.658 | -38.07 | 47.43 | Positive minus negative government approval | Executive approval project dataset |
| Net lending Δ  | 162 | .039 | .854 | -2.241 | 2.17 |  |  |
| GDP growth Δ  | 163 | .599 | .731 | -2.26 | 2.307 | Gross domestic product, expenditure-based | Statistics Canada Table: 36-10-0104-01 |
| Inflation Δ  | 163 | .809 | .815 | -1.52 | 3.29 | Consumer Price Index (CPI) quarter-over-quarter percentage change. The quarterly CPI is the mean of Statistic Canada’s All-items CPI for each period of three consecutive months. | Statistics Canada Table: 18-10-0004-01 |
| Unemployment rate Δ  | 162 | -.017 | .353 | -.73 | 1.7 | 3 months mean of the monthly unemployment rate (seasonally adjusted) for the Canadian population aged 15 and over. | Statistics Canada Table : 14-10-0287-01 |
| Honeymoon | 163 | .031 | .173 | 0 | 1 | Dummy variable coded 1 in the quarter during and after an election in which there is a change in governing party |  |
| Constitutional crises | 163 | .018 | .135 | 0 | 1 | Dummy variable coded 1 when a major constitutional crisis occurs during a quarter. Three crises are coded:* The 1982 Patriation of the Constitution
* The 1990 Meech Lake Accord
* The failure of the Charlottetown Accord in October 1992
 |  |
| Months since last election | 163 | 24.53 | 15.70 | 1 | 66 | Cumulative time in office (in months) of the elected government. The count restarts after every election  |  |
| Effective number of parties | 163 | 2.513 | .389 | 1.692 | 3.222 | Effective number of parties on the *seats* level according to the formula proposed by Laakso and Taagepera (1979). | Comparative political dataset |
|  |  |  |

## Explanation of the approval series

The executive approval dataset generates comparable series between countries and overtime. Executive approval is measured as a latent concept aggregating the marginals of different surveys that may have distinct question wording and response choices that all tap into the concept of approval. This modelling strategy has several advantages over using a single series. It starts with the premise that no survey question is perfect and that single measures are less reliable than multiple measures of the same concept. Firstly, series differ in coverage and continuity; there are no series of approval in Canada lasting from 1978-2018 (Environics has the longest, but it stops in 2009). Secondly, it helps to mitigate measurement problems: by focusing on how series with a constant measurement vary overtime, the researcher can isolate latent attitudes from its measurement. Thirdly, it helps to remove systematic errors from survey house effects and item effects (question wording). In brief, combining series increase coverage and reduce divergence between series. The policy mood in Erikson, Mackuen and Stimson (2002) is also modelled this way. This explanation of the executive approval dataset is inspired by the second chapter of the collective book *Economics and Politics Revisited* which is currently under review. The chapter is written by Ryan Carlin, Jonathan Hartlyn, Timothy Hellwig, Gregory Love, Cecilia Martinez-Gallardo and Matthew Singer.

The latent measure of executive approval is created with the dyads-ratio algorithm created by Stimson (1991). It creates a relative measure of approval by converting all series in ratios between each observation in each series and assesses the common variance among the ratios. Then, it produces reliability measures for each series to weight them in generating the latent measure of approval. It indicates if a unidimensional construct is supported and how strongly each series correlated with it. Each survey series thus correlates very highly (at least r=0.70) to a single latent dimension. The final step of the algorithm uses the weighted values of the original series to recode the ratios back into levels of approval.

As shown in table A2 below, the surveys are asking about a restrictive set of measures about the “impression”, “approval”, “favorability”, “satisfaction” of the prime minister (named or not) or the government’s “performance”, “job” or “management”.

**Table A2.** List of survey series and questions used to construct the approval measure in Canada**.**

|  |  |  |  |
| --- | --- | --- | --- |
| Firm | Question | Length | N |
| Abacus Data Impressions of Prime Minister | Do you have a positive or negative impression of (Name of the Prime Minister)? | 2014-2018 | 27 |
| Abacus Data Approve Job of Gov led by PM | Overall, do you approve of or disapprove of the job the federal government led by [PM] is doing? | 2014-2018 | 28 |
| AngusReid (Prime Minister) | Do you approve or disapprove of [Name]? | 2007-2009 | 15 |
| AngusReid Favourability (Prime Minister) | [Prime Minister and leader of the XXX Party] Do you have an overall favourable or unfavourable view of the following people? | 2014-2018 | 23 |
| Campaign Research (Prime Minister) | Do you approve or disapprove of [Name]? | 2017-2018 | 15 |
| Comparative Study of Elective Systems | Now thinking about the performance of the government in Ottawa in general, how good or bad a job do you think the government has done over the past [number of years since last government took office] years?  | 1997; 2004; 2008 | 3 |
| Decima (Government) | Generally speaking, how satisfied are you with the performance of the federal government? Would you say you are very satisfied, somewhat satisfied, somewhat dissatisfied, or very dissatisfied? | 1980-1995 | 56 |
| Ekos Research (Prime Minister) | Do you approve or disapprove of the way [NAME] is handling his job? | 2009-2017 | 40 |
| Environics (Government) | Would you say you are very satisfied, somewhat satisfied, somewhat dissatisfied or very dissatisfied with the present federal government in Ottawa? | 1978-2009 | 122 |
| Environics (Prime Minister) | Do you approve or disapprove of the way [NAME] is handling his/her job as Prime Minister? | 1985-2009 | 83 |
| Forum Research (Prime Minister) | Do you approve of the job [NAME] is doing as Prime Minister | 2013-2018 | 70 |
| Gallup Canada | Do you approve or disapprove of the way [NAME] is handling their job as Prime Minister? | 1974-1980; 1989-2000 | 102 |
| Gallup World Poll | Do you approve or disapprove of the job performance of the leadership of this country? | 2007-2018 | 16 |
| Insights West (Prime Minister) | Do you approve or disapprove of Justin Trudeau’s performance as prime minister? | 2017 | 1 |
| IPSOS (Prime Minister) | Do you approve or disapprove of [NAME] performance as prime minister? | 1994-2018 | 56 |
| AmericasBarometer (Job) | Speaking in general of the current administration, how would you rate the job performance of Prime Minister Harper/Trudeau? | 2010;2012; 2014;2017 | 4 |
| Leger (Prime Minister) | Are you satisfied or dissatisfied with the performance of the federal government headed by Paul Martin? | 2004-2006 | 5 |
| Mainstreet Research (Prime Minister) | Do you approve of the job Justin Trudeau is doing as Prime Minister | 2016-2017 | 8 |
| Mustel Group | Do you approve or disapprove of Stephen Harper? | 2006 | 1 |
| Nanos Research | Would you describe the performance of the current [PARTY] Government led by Prime Minister [PM NAME] as very good, somewhat good, average, somewhat poor, or very poor? | 2007-2017 | 11 |
| SES-Sun Media | Would you describe the performance of the government led by Prime Minister [NAME] as very good, somewhat good, average, somewhat poor, or very poor? | 2004-2005 | 5 |
| Strategic Counsel | Do you approve or disapprove of the performance of Stephen Harper | 2006 | 3 |
| Zogby  | Do you approve or disapprove of Paul Martin's performance as prime minister? | 2004-2005 | 2 |

We are confident that the difference in question wording between prime ministerial and government approval doesn’t influence the variance of the main series we use nor the results of our regressions. Indeed, the correlation between the two long Environics series with different question wording is r=0.9 and the small difference between the two series is not systematic. Overall, series relying on approval (the Decima and the Environics series) are very strongly correlated with the main series (r=0.86 to 0.94). Finally, the correlation between the two Abacus series asking different questions is r=0.95.

The Chrétien-Martin (1993-2006) period is the only one allowing for a meaningful comparison of the effect of net lending on two series of questions, one based on prime ministerial approval and the other based on government approval. Two Environics series allow us to compare the two questions. In table A3 below, model 1 uses the government approval series, model 2 uses the prime ministerial approval series, whereas model 3 uses the main series we use in the main manuscript (model 6 of table 2). Clearly, the coefficient of net lending is almost the same in the three models.

**Table A3.** Models using different question wording of the dependent variable

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
|   | (1) | (2) | (3) |
|  | Net government approval | Net prime ministerial approval  | Net executive approval  |
|  |  |  |  |
| Lagged dependent variable  | 0.486\*\*\* | 0.676\*\*\* | 0.653\*\*\* |
|  | (0.166) | (0.123) | (0.137) |
| Net lending T-4 | 5.534\*\* | 5.408\*\*\* | 4.994\*\*\* |
|  | (2.109) | (1.848) | (1.509) |
| GDP growth T-2 | 0.0841 | -0.201 | 1.097 |
|  | (4.093) | (3.336) | (2.704) |
| Inflation T-1 | 1.505 | 1.360 | -0.240 |
|  | (4.016) | (3.315) | (2.791) |
| Unemployment rate T-4 | 5.221 | -0.811 | 1.792 |
|  | (7.607) | (6.918) | (5.925) |
| ENP | 3.635 | 0.458 | -0.418 |
|  | (7.370) | (6.587) | (5.149) |
| Months since entering office | 0.133 | -0.0247 | -0.0185 |
|  | (0.139) | (0.125) | (0.0977) |
| Constant | -10.17 | 1.172 | 4.826 |
|  | (20.70) | (18.85) | (14.68) |
|  |  |  |  |
| Observations | 45 | 45 | 45 |
| R-squared | 0.352 | 0.602 | 0.563 |
| Standard errors in parentheses |  |  |
| \*\*\* p<0.01, \*\* p<0.05, \* p<0.1 |  |  |
|  |  |  |

## Description of the surveys included in figure 1.

**Data provider:**

* Figure 1 is based on yearly averages based on quarterly data from Environics Focus Canada (89 obs.).

**Question:**

* In your opinion, what is the most important problem facing Canadians today? (“Canadians” is replaced by “Canada” in the 2013 edition)

**Responses:**

* Deficit/Public debt
* Number of categories provided varies between 16 and 34. Percentages of respondents saying public debt/deficit are not correlated with the number of categories.
* Don’t know are excluded from the percentage calculation.

**Sample size:**

* The sample size is around 2,000 respondents. Five observations have a smaller sample size (between 1,209 and 1,900 respondents).

**Table A4. Detailed survey results:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Year** | **Quarter** | **Sample size** | **Number choices** | **Deficit/Public debt (%)** |
| 1988 | Q3 | 2053 | 19 | 6.5% |
| 1988 | Q4 | 2022 | 19 | 1.4% |
| 1989 | Q1 | 1942 | 22 | 4.3% |
| 1989 | Q3 | 2003 | 26 | 6.3% |
| 1989 | Q4 | 2006 | 28 | 3.8% |
| 1990 | Q1 | 2002 | 26 | 3.6% |
| 1990 | Q2 | 2002 | 26 | 3.9% |
| 1990 | Q3 | 2028 | 26 | 3.0% |
| 1990 | Q4 | 1528 | 31 | 5.3% |
| 1991 | Q1 | 2220 | 30 | 2.8% |
| 1991 | Q2 | 2021 | 30 | 3.5% |
| 1991 | Q3 | 2012 | 31 | 2.7% |
| 1991 | Q4 | 1528 | 31 | 3.5% |
| 1992 | Q1 | 2001 | 31 | 1.4% |
| 1992 | Q2 | 1988 | 31 | 2.2% |
| 1992 | Q3 | 1999 | 31 | 1.4% |
| 1992 | Q4 | 2013 | 31 | 3.0% |
| 1993 | Q1 | 2023 | 31 | 6.6% |
| 1993 | Q2 | 1983 | 31 | 8.7% |
| 1993 | Q3 | 1980 | 31 | 7.1% |
| 1993 | Q4 | 1984 | 32 | 12.4% |
| 1994 | Q1 | 2020 | 32 | 10.6% |
| 1994 | Q2 | 2005 | 32 | 8.9% |
| 1994 | Q3 | 1982 | 32 | 10.4% |
| 1994 | Q4 | 1983 | 32 | 15.1% |
| 1995 | Q1 | 1986 | 32 | 17.2% |
| 1995 | Q2 | 2037 | 32 | 11.2% |
| 1995 | Q3 | 2022 | 32 | 8.6% |
| 1995 | Q4 | 2005 | 32 | 9.8% |
| 1996 | Q1 | 2034 | 32 | 8.3% |
| 1996 | Q2 | 2015 | 32 | 6.2% |
| 1996 | Q3 | 2015 | 32 | 7.4% |
| 1996 | Q4 | 2000 | 32 | 5.7% |
| 1997 | Q1 | 2014 | 32 | 5.2% |
| 1997 | Q2 | 2001 | 32 | 4.7% |
| 1997 | Q3 | 2008 | 32 | 4.1% |
| 1997 | Q4 | 2022 | 32 | 5.2% |
| 1998 | Q1 | 2013 | 32 | 4.4% |
| 1998 | Q2 | 2021 | 32 | 2.8% |
| 1998 | Q3 | 2002 | 32 | 3.7% |
| 1998 | Q4 | 2000 | 32 | 2.6% |
| 1999 | Q1 | 2049 | 32 | 2.5% |
| 1999 | Q2 | 2018 | 32 | 2.2% |
| 1999 | Q3 | 2061 | 16 | 2.4% |
| 1999 | Q4 | 1941 | 18 | 2.9% |
| 2000 | Q1 | 1935 | 18 | 3.1% |
| 2000 | Q2 | 1938 | 18 | 1.9% |
| 2000 | Q3 | 1999 | 20 | 4.6% |
| 2000 | Q4 | 2026 | 20 | 2.4% |
| 2001 | Q1 | 1945 | 20 | 1.6% |
| 2001 | Q2 | 1954 | 20 | 1.8% |
| 2001 | Q3 | 1959 | 21 | 1.3% |
| 2001 | Q4 | 1929 | 21 | 2.4% |
| 2003 | Q1 | 2012 | 25 | 1.5% |
| 2003 | Q2 | 2016 | 25 | 1.7% |
| 2003 | Q3 | 2000 | 25 | 1.1% |
| 2003 | Q4 | 2002 | 26 | 2.4% |
| 2004 | Q1 | 2014 | 26 | 1.6% |
| 2004 | Q2 | 2020 | 26 | 1.4% |
| 2004 | Q3 | 2027 | 26 | 1.9% |
| 2004 | Q4 | 2020 | 27 | 1.3% |
| 2005 | Q1 | 2022 | 27 | 1.7% |
| 2005 | Q2 | 2022 | 28 | 1.8% |
| 2005 | Q3 | 2024 | 28 | 1.3% |
| 2005 | Q4 | 2044 | 28 | 1.5% |
| 2006 | Q1 | 2035 | 28 | 2.3% |
| 2006 | Q2 | 2036 | 28 | 1.7% |
| 2006 | Q3 | 2021 | 28 | 1.3% |
| 2006 | Q4 | 2045 | 29 | 1.8% |
| 2007 | Q1 | 2030 | 29 | 1.6% |
| 2007 | Q2 | 2021 | 29 | 0.8% |
| 2007 | Q3 | 2047 | 29 | 1.5% |
| 2007 | Q4 | 2032 | 29 | 0.9% |
| 2008 | Q1 | 2026 | 29 | 0.8% |
| 2008 | Q2 | 2025 | 29 | 0.5% |
| 2008 | Q3 | 2023 | 29 | 0.3% |
| 2008 | Q4 | 2021 | 30 | 0.2% |
| 2009 | Q1 | 2020 | 30 | 0.8% |
| 2009 | Q2 | 2023 | 30 | 1.6% |
| 2009 | Q3 | 1601 | 30 | 1.7% |
| 2009 | Q4 | 1209 | 30 | 1.2% |
| 2010 | Yearly | 2020 | 34 | 2.7% |
| 2011 | Yearly | 1500 | 24 | 3.3% |
| 2012 | Yearly | 1500 | 28 | 3.5% |
| 2013 | Yearly[[1]](#footnote-1) | 1501 | 21 |  3% |
| 2017 | Yearly1 | 2002 | 21 | 5% |
| 2018 | Yearly1 | 2000 | 26 | 3% |

Description of the surveys included in figure 2**, proportion of Canadians saying it is very important that the federal government try to reduce the deficit.**

**Data provider:**

* Yearly data from Environics Focus Canada (11 obs.).

**Question:**

* “In your opinion, is it very important, somewhat important, not very important or not at all important that the federal government try to reduce the deficit?”

**Responses:**

* Very important
* Somewhat important
* Not very important
* Not at all important
* DK/NA

**Sample sizes:**

* Sample sizes of around 2,000 respondents.

**Table A5. Detailed survey results.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Year** | **Quarter** | **Sample size** | **Answer choices** | **Percentage** |
| 1987 | Q2 | 2019 | Very importantSomewhat importantNot very importantNot at all importantDK/NA | 51.6%33.9%7.5%2.9%4.1% |
| 1988 | Q3 | 2053 | Very importantSomewhat importantNot very importantNot at all importantDK/NA | 53.2%33.4%7.5%1.7%4.2% |
| 1989 | Q4 | 2006 | Very importantSomewhat importantNot very importantNot at all importantDK/NA | 60.7%30.9%5.0%1.1%2.3% |
| 1990 | Q4 | 2019 | Very importantSomewhat importantNot very importantNot at all importantDK/NA | 63.8%28.3%4.4%1.4%2.0% |
| 1991 | Q4 | 2003 | Very importantSomewhat importantNot very importantNot at all importantDK/NA | 65.9%27.3%4.4%1.1%1.3% |
| 1992 | Q4 | 2022 | Very importantSomewhat importantNot very importantNot at all importantDK/NA | 67.3%26.0%4.5%1.0%1.2% |
| 1993 | Q4 | 2002 | Very importantSomewhat importantNot very importantNot at all importantDK/NA | 73.7%21.2%3.0%1.0%1.1% |
| 1994 | Q4 | 1996 | Very importantSomewhat importantNot very importantNot at all importantDK/NA | 73.7%20.9%3.1%1.1%1.1% |
| 1995 | Q4 | 2005 | Very importantSomewhat importantNot very importantNot at all importantDK/NA | 69.5%23.5%2.5%1.2%1.6% |
| 1996 | Q4 | 2000 | Very importantSomewhat importantNot very importantNot at all importantDK/NA | 59.0%32.8%4.5%1.7%2.0% |
| 1997 | Q4 | 2022 | Very importantSomewhat importantNot very importantNot at all importantDK/NA | 56.5%35.4%4.7%1.6%1.8% |

**Figure 2, proportion of Canadians who approve the way the federal government is handling deficit and debt reduction**

**Data provider:**

* Yearly averages based on quarterly data from Environics Focus Canada (70 obs.).

**Questions:**

* Until 1999 (Q2): Generally speaking, do you approve or disapprove of the way the current federal government is handling: deficit reduction.
* Starting on 1999 (Q3): Generally speaking, do you approve or disapprove of the way the current federal government is handling: Debt and deficit reduction.

**Response choices:**

* Approve
* Disapprove
* DK/NA
* Figure 2 uses the proportion of approve on the total of approve + disapprove

Sample size :

* Sample sizes of around 2,000 respondents before 2001 and around 1,300 respondents starting in 2001.

**Table A6. Detailed survey results**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Year** | **Quarter** | **Sample size** | **Approve (%)** | **Disapprove** | **Don’t knows** | **Approve/****(approve +disapprove)** |
|  1989 | Q3 | 2002 | 23.8% | 65,9 | 10,3 | 26,53 |
|  1990 | Q1 | 2002 | 17.0% | 75,1 | 7,9 | 18,46 |
| Q2 | 2002 | 18.4% | 71,7 | 9,9 | 20,42 |
| Q3 | 2028 | 17.6% | 72,6 | 9,8 | 19,51 |
| Q4 | 2019 | 15.2% | 76,6 | 8,1 | 16,56 |
|  1991 | Q1 | 2220 | 16.6% | 73,6 | 9,9 | 18,40 |
| Q2 | 2021 | 16.5% | 74,2 | 9,3 | 18,19 |
| Q3 | 2012 | 14.6% | 78,1 | 7,3 | 15,75 |
| Q4 | 1545 | 11.2% | 80,2 | 8,6 | 12,25 |
|  1992 | Q1 | 2001 | 13.8% | 77,4 | 8,8 | 15,13 |
| Q2 | 2005 | 11.5% | 80,6 | 7,9 | 12,49 |
| Q3 | 2019 | 12.8% | 79,1 | 8,1 | 13,93 |
| Q4 | 2022 | 7.3% | 84 | 8,7 | 8,00 |
|  1993 | Q1 | 2042 | 10.0% | 82,2 | 7,8 | 10,85 |
| Q2 | 2002 | 10.4% | 84,2 | 5,4 | 10,99 |
| Q3 | 2001 | 12.0% | 83 | 5 | 12,63 |
| Q4 | 2002 | 18.1% | 68,9 | 12,9 | 20,80 |
|  1994 | Q1 | 2020 | 23.2% | 69,5 | 7,3 | 25,03 |
| Q2 | 2026 | 16.7% | 75,8 | 7,5 | 18,05 |
| Q3 | 2001 | 20.3% | 69,7 | 10 | 22,56 |
| Q4 | 1996 | 16.9% | 76,8 | 6,3 | 18,04 |
|  1995 | Q1 | 2003 | 25.4% | 68,5 | 6,1 | 27,05 |
| Q2 | 2037 | 19.5% | 73,7 | 6,8 | 20,92 |
| Q3 | 2022 | 19.4% | 71,9 | 8,7 | 21,25 |
| Q4 | 2005 | 23.5% | 67,5 | 9 | 25,82 |
|  1996 | Q1 | 2034 | 29.6% | 63,4 | 7 | 31,83 |
| Q2 | 2015 | 27.4% | 63,8 | 8,8 | 30,04 |
| Q3 | 2015 | 37.7% | 53,8 | 8,4 | 41,20 |
| Q4 | 2000 | 35.3% | 56,5 | 8,2 | 38,45 |
|  1997 | Q1 | 2014 | 36.3% | 52,7 | 11 | 40,79 |
| Q2 | 1949 | 48.1% | 43,6 | 8,3 | 52,45 |
| Q3 | 1962 | 49.2% | 43,6 | 7,1 | 53,02 |
| Q4 | 1952 | 50.5% | 41,9 | 7,5 | 54,65 |
|  1998 | Q1 | 1944 | 54.1% | 37,1 | 8,8 | 59,32 |
| Q2 | 1948 | 48.7% | 42,3 | 9 | 53,52 |
| Q3 | 1944 | 60.9% | 31,6 | 7,5 | 65,84 |
| Q4 | 1929 | 51.7% | 37,2 | 11,1 | 58,16 |
|  1999 | Q1 | 1989 | 51.2% | 37,1 | 11,7 | 57,98 |
| Q2 | 1931 | 46.4% | 39,6 | 14 | 53,95 |
| Q3 | 1965 | 50.0% | 37,5 | 12,5 | 57,14 |
| Q4 | 1925 | 60.9% | 39,1 | 0 | 60,90 |
|  2000 | Q1 | 1954 | 53.9% | 42,2 | 3,81 | 56,09 |
| Q2 | 1988 | 54.5% | 40,8 | 4,7 | 57,19 |
| Q3 | 2028 | 51.3% | 43,3 | 5,3 | 54,23 |
| Q4 | 2048 | 56.6% | 37,6 | 5,8 | 60,08 |
|  2001 | Q1 | 1310 | 59.2% | 40,8 | 0 | 59,20 |
| Q2 | 1441 | 53.0% | 41,8 | 5,2 | 55,91 |
| Q3 | 1240 | 61.4% | 31,9 | 6,7 | 65,81 |
| Q4 | 1291 | 55.1% | 41,4 | 3,5 | 57,10 |
|  2003 | Q1 | 1320 | 52.8% | 44 | 3,2 | 54,55 |
| Q2 | 1364 | 54.2% | 40,1 | 5,8 | 57,48 |
| Q3 | 1302 | 56.1% | 38,8 | 5,2 | 59,11 |
| Q4 | 1280 | 57.5% | 37,7 | 4,8 | 60,40 |
|  2004 | Q1 | 1312 | 51.7% | 43,1 | 5,2 | 54,54 |
| Q3 | 1335 | 55.5% | 38,6 | 5,9 | 58,98 |
| Q4 | 1345 | 51.8% | 41,6 | 6,6 | 55,46 |
|  2005 | Q1 | 1013 | 47.4% | 43,5 | 9 | 52,15 |
| Q3 | 1328 | 55.1% | 39,9 | 5,1 | 58,00 |
|  2006 | Q1 | 1333 | 44.0% | 40,6 | 15,4 | 52,01 |
| Q2 | 1258 | 50.2% | 37,6 | 12,2 | 57,18 |
| Q3 | 1257 | 56.0% | 33,7 | 10,3 | 62,43 |
| Q4 | 1279 | 51.2% | 39,2 | 9,6 | 56,64 |
|  2007 | Q1 | 1250 | 50.4% | 41,9 | 7,7 | 54,60 |
| Q2 | 1293 | 46.8% | 41,3 | 11,9 | 53,12 |
| Q3 | 1286 | 60.8% | 29,5 | 9,7 | 67,33 |
| Q4 | 1261 | 62.0% | 32,1 | 5,9 | 65,89 |
|  2008 | Q1 | 1324 | 50.8% | 38,7 | 10,5 | 56,76 |
| Q2 | 1335 | 47.9% | 39,8 | 12,3 | 54,62 |
|  2009 | Q1 | 1374 | 45.2% | 46,3 | 8,5 | 49,40 |
| Q2 | 1027 | 34.6% | 55,8 | 9,6 | 38,27 |

Table A7 presents the interaction between all the independent variables and the two time dummies. It confirms that the effect of net lending is negative and significant before 1993 and positive and significant after 1993. *C*oefficients and standard errors are calculated using the *lincom* function in Stata.

**Table A7. Effect of fiscal and economic variables (first differenced) on net government approval in Canada.** Interactions between time dummies and all variables.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
|   | (1) | (2) | (3) | (4) |
|  | Full | Pre 1993 | Post 1993 | Chrétien-Martin |
|   |   |   |   |   |
| Lagged dependent variable  | 0.856\*\*\* | 0.890\*\*\* | 0.734\*\*\* | 0.698\*\*\* |
|  | (0.0503) | (0.0766) | (0.656) | (0.123) |
| Net lending T-4 | -0.0370 | -2.773\*\* |  |  |
|  | (0.886) | (1.218) |  |  |
| Net lending T-4 \*post 1993 |  |  | 2.205\*\* |  |
|  |  |  | (1.100) |  |
| Net lending T-4 \*Chrétien-Martin |  |  |  | 5.260\*\*\* |
|  |  |  |  | (1.600) |
| GDP growth T-2 | 1.521 | 1.743 |  |  |
|  | (1.048) | (1.437) |  |  |
| GDP growth T-2\* post 1993 |  |  | 0.453 |  |
|  |  |  | (1.361) |  |
| GDP growth T-2\*Chrétien-Martin |  |  |  | 1.766 |
|  |  |  |  | (2.681) |
| Inflation T-1 | -1.331 | 0.463 |  |  |
|  | (0.972) | (1.618) |  |  |
| Inflation T-1\* post 1993 |  |  | 2.306 |  |
|  |  |  | (1.618) |  |
| Inflation T-1\*Chrétien-Martin |  |  |  | -1.259 |
|  |  |  |  | (2.768) |
| Unemployment rate T-4 | -2.013 | -4.898\* |  |  |
|  | (2.392) | (2.900) |  |  |
| Unemployment rate T-4\*post 1993 |  |  | 1.478 |  |
|  |  |  | (3.507) |  |
| Unemployment rate T-4\*Chrétien-Martin |  |  | 6.979 |
|  |  |  |  | (5.788) |
| Honeymoon T-0 | 13.62\*\*\* | 12.74\*\*\* |  |  |
|  | (3.057) | (4.141) |  |  |
| Honeymoon T-0 \*post 1993 |  |  | 15.386\*\*\* |  |
|  |  |  | (3.952) |  |
| Honeymoon T-0 \*Chrétien-Martin |  |  |  | 17.039\*\* |
|  |  |  |  | (5.778) |
| ENP | 2.342 | -4.863 |  |  |
|  | (1.938) | (3.340) |  |  |
| ENP\*post 1993 |  |  | 1.127 |  |
|  |  |  | (2.269) |  |
| ENP\*Chrétien-Martin |  |  |  | 3.117 |
|  |  |  |  | (2.284) |
| Months since last election  | 0.0926 | 0.266\*\*\* |  |  |
|  | (0.0598) | (0.0901) |  |  |
| Months since last election \* post 1993 |  |  | -0.695 |  |
|  |  |  | (0.07) |  |
| Months since last election \* Chrétien-Martin |  |  | 0.537 |
|  |  |  |  | (0.091) |
| Constitution T-4 | 9.413\* | 12.14\*\* |  |  |
|  | (5.628) | (5.452) |  |  |
|  |  |  |  |  |
| Observations | 157 | 157 | 157 | 157 |
| R-squared | 0.798 | 0.831 | 0.652 | 0.595 |
| Standard errors in parentheses |  |  |  |  |
| \*\*\* p<0.01, \*\* p<0.05, \* p<0.1 |  |  |  |  |

## Table A8. Models including total revenues and expenditures

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
|   | (1) | (2) | (3) | (4) |
|  | Pre 1993 |  | Post 1993 |  |
|   |   |   |   |   |
| Lagged dependent variable  | 0.914\*\*\* | 0.956\*\*\* | 0.724\*\*\* | 0.716\*\*\* |
|  | (0.0679) | (0.0785) | (0.0686) | (0.0690) |
| Net lending T-0 |  |  | 2.502\*\* | 2.222\* |
|  |  |  | (1.160) | (1.129) |
| Net lending T-4 | -2.358\*\* | -2.708\*\* |  |  |
|  | (0.964) | (1.147) |  |  |
| Total expenditures T-0 | -7.257 |  |  |  |
|  | (4.655) |  |  |  |
| Total expenditures T-2 |  |  |  | -14.82\* |
|  |  |  |  | (7.528) |
| Total revenues T-1 |  |  | 0.472 |  |
|  |  |  | (4.475) |  |
| Total revenues T-4 |  | 0.407 |  |  |
|  |  | (5.943) |  |  |
| GDP growth T-2 | 2.027\* | 2.172 |  |  |
|  | (1.199) | (1.342) |  |  |
| GDP growth T-3 |  |  | -3.109\* | -1.959 |
|  |  |  | (1.686) | (1.484) |
| Inflation T-3 |  | 0.0539 | 4.218\*\* | 0.847 |
|  |  | (1.519) | (2.011) | (1.655) |
| Inflation T-4 | 3.454\*\* |  |  |  |
|  | (1.402) |  |  |  |
| Unemployment rate T-1 |  |  |  | -6.435\* |
|  |  |  |  | (3.851) |
| Unemployment rate T-4 | -7.354\*\*\* | -5.624\* | -5.586 |  |
|  | (2.580) | (2.944) | (4.008) |  |
| Honeymoon T-0 | 10.65\*\*\* | 13.00\*\*\* | 12.61\*\*\* | 12.92\*\*\* |
|  | (3.402) | (4.016) | (4.376) | (4.346) |
| Constitution T-4 | 4.863 | 16.06\*\*\* |  |  |
|  | (5.084) | (4.993) |  |  |
| ENP | -0.373 | 2.131 | 2.410 | -0.491 |
|  | (3.958) | (4.517) | (2.997) | (3.037) |
| Months since entering office | 0.279\*\*\* | 0.359\*\*\* | -0.133\* | -0.0931 |
|  | (0.0790) | (0.0912) | (0.0777) | (0.0776) |
| Constant | -14.63 | -17.52\* | -4.635 | 5.970 |
|  | (8.899) | (10.10) | (9.052) | (9.092) |
|  |  |  |  |  |
| Observations | 56 | 58 | 96 | 97 |
| R-squared | 0.926 | 0.895 | 0.670 | 0.661 |
| Standard errors in parentheses |  |  |  |
| \*\*\* p<0.01, \*\* p<0.05, \* p<0.1 |  |  |  |

## Table A9. Models with identical lag structures between the economic and fiscal variables.

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
|   | (1) | (2) | (3) |
|  | Pre 1993 | Post 1993 | Chrétien and Martin |
|   |   |   |   |
| Lagged dependent variable  | 1.020\*\*\* | 0.736\*\*\* | 0.640\*\*\* |
|  | (0.0825) | (0.0685) | (0.118) |
| Net lending T-4 | -1.694 | 1.952\* | 4.946\*\*\* |
|  | (1.191) | (1.158) | (1.412) |
| GDP growth T-4 | 0.208 | 2.899 | 3.582 |
|  | (1.712) | (1.774) | (2.385) |
| Inflation T-4 | 1.205 | -3.054\* | -3.393 |
|  | (1.621) | (1.618) | (2.127) |
| Unemployment rate T-4 | -3.906 | 2.124 | 3.884 |
|  | (3.473) | (4.675) | (5.952) |
| Honeymoon T-0 | 14.19\*\*\* | 15.05\*\*\* |  |
|  | (4.195) | (4.382) |  |
| ENP | 2.135 | 1.749 | -0.842 |
|  | (4.821) | (2.945) | (4.416) |
| Months since entering office | 0.463\*\*\* | -0.0939 | 0.0137 |
|  | (0.0869) | (0.0783) | (0.0925) |
|  |  |  |  |
|  |  |  |  |
| Constant | -19.98\* | -1.217 | 5.035 |
|  | (10.86) | (8.909) | (12.82) |
|  |  |  |  |
| Observations | 58 | 97 | 45 |
| R-squared | 0.871 | 0.658 | 0.616 |
| Standard errors in parentheses |  |  |
| \*\*\* p<0.01, \*\* p<0.05, \* p<0.1 |  |  |

## Long run multiplier tests

Standard hypothesis tests produce unreliable results when assumptions about integration and cointegration of the series are not met. However, unit root tests are often unreliable in the short and bounded time series that are common in political science. As such, Webb et al. (2019, 2020) suggest centering the analysis on the long-run multiplier to test for a long-run relationship between two variables. They suggest using bounds testing to interpret the significance of the long run multiplier (LRM). If the t statistics of the LRM is smaller than the lower bound, then the analyst can confidently reject the presence of a long run relationship between the variable. In contrast, if the t statistic is higher than the identified upper bound, then we can conclude that there is a long run relationship between X and Y, regardless of the results of unit root tests. The analyst cannot confirm or reject the presence of a long run relationship if the test statistic is in between the bounds. Using the value provided by the simulations available in Webb et al. (2020, 283) at p=0.05, the upper bound of the t test is 3.61 for our full sample, 3.52 for the pre 1993 sample and the Chrétien-Martin sample and 3.59 for the post 1993 sample. The lower bounds are respectively 1.01, 1.11 and 1.07.

We run general error correction models to calculate long-run multipliers, based on the following equation:

$$∆Approval\_{t}=a0+a\_{1}approval\_{t-1}+∆β\_{0}lending\_{t-0}+β\_{1}lending\_{t-1}+∆β\_{2}economy\_{t-0}+β\_{3}economy\_{t-1}+ENP+Honeymoon+costofruling$$

The LRM of net lending is calculated with the Delta method as $-\frac{β\_{1}}{a\_{1}}$ (the results are similar when using the Bewley transformation). Table A10 shows the coefficients of the LRM. In all cases, the LRM isn’t significant. Hence, there is no long-run relationship between the level of net lending and approval. However, note that in all these GECM models (except in the full sample), $β\_{0}$ is significantly correlated with approval, thereby confirming that we have a short-term relationship between the first difference of net lending and government approval. Since we do not have an LRM between net lending and approval, it is preferable to use only the first difference of net lending in the equations of the main manuscript because including the level of net lending, which has a unit root, would bias the results.

**Table A10. Long run multipliers, based on the main models presented in table 1.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Coefficient | Standard error | T statistic | P value |
| Full sample | 0.423 | 0.57 | 0.75 | 0.456 |
| Pre 1993 | -18.20 | 23.80 | -0.76 | 0.445 |
| Post 1993 | 0.04 | 0.71 | 0.06 | 0,951 |
| Chrétien and Martin | -0.077 | 0.98 | -0.08 | 0,938 |

## Modelling the endogeneity between net lending and economic variables

We model the endogeneity between fiscal policies and the economy as well as between approval and economic variables by using vector autoregressive models (VAR). These are simultaneous equation models in which each variable is predicted by its own lagged values, plus past values of the other variables included in the model. Vector autoregressive models do not make any assumptions about the causal ordering of variables, allowing us to verify which variable “causes” the other (Box-Steffensmeier et al. 2014). Granger causality tests suggest that lending may predict GDP growth and unemployment, but that unemployment and growth do not predict net lending. There is no relationship between inflation and net lending.

## Rolling regressions for the economic variables

The rolling regressions of the economic variables are presented below (dashed lines represent 95% confidence intervals). They support our findings indicating that the effect of the economy was significant and in the expected direction in the 1970s and 1980s and tends to become insignificant when the moving window only includes data in the 1990s and 2000s. There is a clear drop in the effect of GDP around the moving window starting in 1993, but this effect largely disappears in a moving window of 30 and was not detected by a Wald test, suggesting that it mainly represents random fluctuations. Still, while the effect of growth was significant and positive in the 1970s and 1980s, it becomes insignificant or even negative afterwards. The effect of the unemployment rate is negative and significant especially in the 1970s and 1980s and its effect is closer zero from the moving window starting in 1990. As for the coefficient of inflation, it is significantly negative in the 1970s and 1980s and becomes positive in the most recent moving windows. In brief, the moving windows regressions confirm that the effect of the economy declines overtime.

  

1. Only rounded percentages are available for the years 2013 to 2018. [↑](#footnote-ref-1)