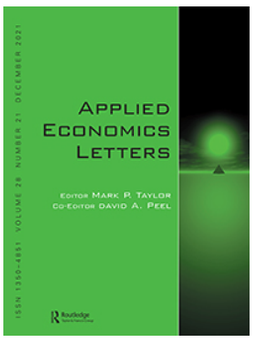

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ARTICLE

The discontinuous effect of economic performance on political turnover

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ABSTRACT
This paper re-examines the asymmetric marginal effect of economic variables on voting. By applying the comprehensive cross-country panel data of democracies from 1975 to 2016, the empirical results demonstrate that there is a striking discontinuity in the relationship between economic performance and political turnover, in the sense that voters are sensitive to incumbents' economic performance when the countries are during the economic prosperity but are less sensitive during the economic recession. The results are robust no matter we use the absolute growth rate or relative growth rate of the country, and no matter voters' reaction in response to political turnover is conditional on the institutional factor or not.

KEYWORDS
Political turnover; voting behaviour; economic growth; economic voting

I. Introduction

Following Kramer's (1971) seminal paper, one lasting research theme in both economics and political science is how macroeconomic fluctuations affect the distribution of political power. There is a large body of literature concerning so-called *economic voting*, i.e. voters' responses to macroeconomic performance at the polls in the retrospective voting sense.[1] In his foundational work on presidential elections in the United States, Mueller (1973) was the first to propose the *asymmetric* economic impact on politics; that is, *good* and *bad* economic performance have different effects on voting behaviour. However, the empirical evidence on asymmetric economic voting is mixed (Lewis-Beck and Stegmaier 2013). For example, Lau (1985) and Nannestad and Paldam (1994) show that voters react more to deterioration in the economy, while Lewis-Beck (1988) and Park (2019) do not find evidence of the asymmetry behaviour.

The traditional theoretical explanation for the asymmetric hypothesis of voters punishing the incumbent more for an economic recession is based on behavioural economics that a perspective loss has more weight than a perspective gain when it comes to decision-making (Tversky and Kahneman 1991). On the other hand, Giuliani and Massari (2017) analyse the election during the Great Recession in the EU and find that incumbents may share the blame during the economic crisis. They discuss a possible channel through unclear attributions of responsibility and exploiting their heresthetic capacities, e.g. incumbents' dominating presence in the media allows them to set public agendas to divert the responsibility. Therefore, the leader may gain from the progress of the economy but not suffer from the crisis. These two different theoretical cues also resonate with mixed empirical evidence.

In this paper, we apply comprehensive macro-level cross-country data, aiming to re-examine the asymmetric marginal effect of economic variables on voting. We use political leader turnover as a proxy for aggregate voting behaviour in the countries. Additionally, since it is shown in the literature that the effect of political institutions plays an important role in determining voter behaviour, we incorporate the institutional dimension[2] by adding the composite *Polity2* score to capture the level of democracy in each country.[3]

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[1]The detailed literature reviews on economic voting can be seen in Nannestad and Paldam (1994) and Lewis-Beck and Stegmaier (2013).

[2]Dix (1984) argues that the institutional factor is another important feature in determining voting behaviour. Especially in the economic voting literature, the institutional factor called the *clarity of responsibility* in Powell and Whitten (1993) has also gained strong support.

[3]The composite Polity2 score uses the mean of the measure of civil liberties and political rights of Freedom House and the polity score of Polity IV project. This score is widely used to measure the level of democracy in the previous literature (Giuliano, Mishra, and Spilimbergo 2013; Nunn, Qian, and Wen 2021). As

The remainder of this paper is organized as follows: Section II discusses our empirical model and the data we used in this work. Section III presents our empirical findings. Section IV discusses possible mechanisms for our empirical results and concludes.

II. Data and methodology

To examine the effect of economic performance on political turnover, our estimated model is as follows:

$$Turnover_{it} = \alpha_i + \beta_1 * D * Growth_{it-1} + \beta_2 * (1 - D) * Growth_{it-1} + \beta_3 X_{it} + \sigma_t + \varepsilon_{it}.$$

The dependent variable, *Turnover*, is an indicator variable of leader turnover in country i in year t. The primary independent variables are $D * Growth$ and $(1 - D) * Growth$, where *Growth* represents the economic growth rate of country i between years *t-1* and t, and D equals 1 if the growth rate is positive (the countries are in the periods of economic prosperity) and equals 0 if the growth rate is negative (the countries are in the periods of economic recession). Thus, the indicator variable D captures the state of the economy – either economic prosperity or economic recession – vis-à-vis political turnover. X_{it} is a vector of the control variables, including total population, real GDP per capita, inflation, composite *Polity2* score, a set of political control variables, including the political system and electoral system, and the incumbent's characteristics, including gender and age in that year. The composite *Polity2* score is an institutional factor to capture the level of democratic strength. Additionally, year fixed effects, denoted as σ_t, and country fixed effects, denoted as α_i, are considered. The term ε_{it} is a disturbance term, which is assumed to be correlated across years for the same country. This regression setting allows the *Growth* coefficients to differ, while constraining the year and country fixed effects to be the same across the cases. Note that logit estimation is applied.

We construct a cross-country panel data of democratic countries from 1975 to 2016. The classification of democratic regimes is based on Cheibub, Gandhi, and Vreeland (2010). Following Brender and Drazen (2013) and Nunn, Qian, and Wen (2021), the dependent variable, political turnover, is an indicator variable and is measured by the leader turnover normalized on a yearly basis. Specifically, we check whether the ruler at the end of the fiscal year is the same as at the beginning of the year. The measure of political turnover is computed from the Archigos database (Goemans, Gleditsch, and Chiozza 2009), in which the data cover all effective primary rulers in all independent states.[4] In general, the prime minister is considered as the ruler in parliamentary regimes, whereas the president is considered as the ruler in presidential regimes. The detailed discussion of the data and the descriptive statistics are reported in Appendix A.

III. Empirical framework

Baseline estimates

The effect of economic performance on political turnover is reported in Table 1. Columns 2–3 of Table 1 show the relationship between economic performance and political turnover. The estimated coefficients of the interaction term between economic prosperity and economic growth rate are negative and significant at the 1% level (Columns 2–3). The empirical results suggest that during periods of economic prosperity, the increase in economic growth leads to lower political turnover. In Columns 4–5 of Table 1, we further add the interaction terms between economic prosperity/economic recession and the *Polity2* score to capture the effect of economic performance on voting conditional on the institutional factor. Both the estimated coefficients of the interaction terms between economic prosperity/economic recession and the *Polity2* score are negative and significant,

a robustness check, we apply the electoral democracy index from the Varieties of Democracy (V-Dem) database (Coppedge et al. 2017) and contestation and inclusiveness variables from Coppedge, Alvarez, and Maldonado (2008) to capture the strength of democracy. The empirical results are consistent with our baseline model and are shown in Table B2 of Appendix B.

[4]As a robustness check, we sorted the political turnover into two types: turnovers with regular exit and irregular exit. We found that turnovers with regular exit are more elastic with respect to economic fluctuations, specifically during periods of economic prosperity. The detailed discussion and empirical results are reported in Table B1 of Appendix B.

Table 1. The effect of economic performance on political turnover.

	Dependent variable: Political turnover			
Prosperity*Growth	−5.190***	−5.690***	−4.819**	−5.148**
	(1.703)	(2.083)	(1.950)	(2.378)
Prosperity*lagged Polity2			−0.200***	−0.368***
			(0.043)	(0.079)
Recession*Growth	−0.087	−2.385	0.434	−1.721
	(1.795)	(2.175)	(1.869)	(2.251)
Recession*lagged Polity2			−0.190***	−0.355***
			(0.044)	(0.079)
lagged Polity2	−0.197***	−0.365***		
	(0.043)	(0.079)		
Control Variables	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Country FE	No	Yes	No	Yes
Observation	2711	2669	2711	2669
R-squared	0.0436	0.1106	0.0438	0.1108

Note: Control variables include population(t-1), gdp(t-1), inflation(t-1), political system(t), electoral system(t), incumbents' age(t) and gender(t). Robust standard errors are in parentheses. ***, **, * represent statistical significance at the 1%, 5%, and 10% levels.

suggesting that voters react more actively to economic performance in more advanced democratic countries, which is consistent with the results in the previous literature (Dix 1984). Additionally, such effects are significant no matter countries are in periods of prosperity or recession, showing the importance of institutional factors on voter behaviour. However, the estimated coefficients of $Recession * Growth$ are found to be insignificant under different econometric specifications (Columns 2–5), suggesting that incumbents share the blame when they experience an economic recession, so voters tend to be insensitive to the incumbents' economic performance.

We also consider the relative economic performance of each country rather than using an absolute measurement. The relative growth is defined as the difference between a country's economic growth rate and the average growth of all other countries in the sample in that year. The empirical results are reported in Table 2. The findings here are similar to those found in Table 2.

In summary, our baseline result suggests that voters tend to reward the incumbent for economic growth. Contrary to Lau (1985) and Nannestad and Paldam (1994), we do not find a significant negative effect on the re-election rate during an economic downturn. This result echoes the argument in Giuliani and Massari (2017) that the incumbent may share the blame in an economic downturn and gain from the growth.[5]

Table 2. The effect of relative economic performance on political turnover.

	Dependent variable: Political turnover			
Relative Prosperity*Relative Growth	−4.727***	−5.433***	−4.882**	−4.976*
	(1.552)	(1.823)	(2.254)	(2.632)
Relative Prosperity*lagged Polity2			−0.199***	−0.368***
			(0.043)	(0.079)
Relative Recession*Relative Growth	−0.561	−2.629	0.027	−2.155
	(1.560)	(1.885)	(1.781)	(2.187)
Relative Recession*lagged Polity 2			−0.195***	−0.359***
			(0.043)	(0.080)
lagged Polity2	−0.198***	−0.365***		
	(0.043)	(0.079)		
Control Variables	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Country FE	No	Yes	No	Yes
Observation	2711	2669	2711	2769
R-squared	0.0436	0.1107	0.0437	0.1107

Note: Control variables include population(t-1), gdp(t-1), inflation(t-1), political system(t), electoral system(t), incumbents' age(t) and gender(t). Robust standard errors are in parentheses. ***, **, * represent statistical significance at the 1%, 5%, and 10% levels.

[5]Hernández and Kriesi (2016) find that the negative impact of the Great Recession is much weaker in Central and Eastern Europe.

IV. Conclusion

This paper provides empirical evidence of the discontinuous marginal effect of economic variables on voting, which contributes to the debate on the existence of asymmetric economic voting. The empirical results suggest that, in general, voters are insensitive to the incumbents' economic performance during the economic recession while they react positively in the poll when the economy is booming.

We conclude by providing two additional theoretical explanations for our results. Based on recent retrospective voting models in Ashworth, de Mesquita, and Friedenberg (2017, 2018), when economic shock and the incumbent's quality complement each other, a good economic performance serves as a signal to the voter about the high quality of the incumbent. Therefore, the reelection rate increases. However, when the economy is deteriorating, how voters perceive the uncertainty in the economic signal may offset the negative effect of the economic recession, leading to an indeterminate result. The second one includes the abstention effect that, instead of voting for the opponent, some voters may choose to abstain during the bad time, which has an ambiguous effect on the turnover rate and the reelection rate as well (Weschle 2014).

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Disclosure statement

No potential conflict of interest was reported by the author(s).

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Appendixes

Appendix A

We construct a panel of democratic countries from 1975 to 2016 by merging different data sets and manually updating the data to 2016. Our political turnover measure is based on the Archigos database (Goemans, Gleditsch, and Chiozza 2009), in which the data cover all effective primary rulers in all independent states. As for the control variables, the measure of real GDP per capita is based on the Maddison Historical Statistics Project (Bolt et al., 2018 in Appendix). The real GDP per capita of each country is measured in 2011 US dollars. The population and inflation data are taken from the world development indicators of the World Bank. The political system data is from Cheibub, Gandhi, and Vreeland (2010); it is equal to 0 if the country is a parliamentary democracy, 1 if semi-presidential democracy, and 2 if presidential democracy. The electoral system data comes from Bormann and Golder (2013 in Appendix); it equals 1 if the country is under the majoritarian electoral system, 2 if the proportional electoral system, and 3 if the mixed electoral system. The composite *Polity2* score comes from Freedom House and the Polity Project (Marshall et al., 2018 in Appendix). The scale range is from 0 to 10, in which 0 is the least democratic and 10 is the most democratic. The descriptive statistics are reported in Table A1.

Appendix B

As robustness checks, firstly, we sorted the political turnover into two types: turnovers with regular exit and irregular exit.[6] The regular exit is one where the ruler is removed based on explicit rules or established conventions in the country. Specifically, in a democracy, turnovers with a regular exit include voluntary retirement, term limits, and defeat in elections. The turnover with irregular exit is one where the ruler is removed in contravention of rules and established conventions. The possible common causes of irregular exits incorporate coups, (popular) revolts, and assassinations. Thus, turnovers with a regular exit should be more elastic with respect to economic fluctuations than with irregular exit (Nunn, Qian, and Wen 2021). Thus, we should expect that the effects of economic performance on political turnover should be trivial if focusing on irregular ruler exits. Note that irregular exits are rare in democratic countries; in our data, only approximately 5% (157 out of 2883) of political turnovers are irregular.

To test the proposition, the interaction terms between the dummy variable of irregular exit and economic prosperity/recession are added to the baseline model. The results are reported in the top panel of Table B1. All the estimated coefficients of interaction terms of irregular exit dummy and economic prosperity/recession are insignificant. A clear pattern between the two different turnovers can be found if applying the test of general linear restriction, in which the results are reported in the bottom panel of Table B1. The results show that turnovers with irregular exit are inelastic with respect to economic fluctuation, while turnovers with regular exit are elastic only with respect to economic

Table A1. Summary Statistics.

	Observation	Mean	Std. Dev.	Min	Max
Political Turnover	2883	0.2317	0.422	0	1
Gender	2883	0.9279	0.2588	0	1
Age	2883	57.3819	9.7072	30	88
Real GDP per capita (thousand)	2883	16.3073	13.8435	0.645	81.923
Inflation (annual %)	2826	37.4161	384.423	−35.8367	11749.6
Population (billion)	2862	0.0418	0.1255	0.0002	1.3242
Polity2	2843	8.6051	1.49	2.0833	10
Political system	2873	1.0755	0.984	0	2
Electoral system	2841	1.8901	0.6457	1	3
Economic recession (growth<0%)	2883	0.248	0.4319	0	1
Relative economic recession (growth<average)	2883	0.4499	0.4976	0	1

[6]The coding comes from the Archigos database (Goemans, Gleditsch, and Chiozza 2009).

Table B1. Turnovers with regular exit and irregular exit.

	Dependent variable: Political turnover			
Prosperity*Growth	−5.624***		−5.365**	
	(2.180)		(2.446)	
Prosperity*lagged Polity2			−0.389***	
			(0.084)	
Prosperity*Irregular exit	2.036		2.024	
	(5.580)		(5.551)	
Recession*Growth	−3.768		−3.441	
	(2.303)		(2.417)	
Recession*lagged Polity2			−0.383***	
			(0.083)	
Recession*Irregular exit	9.410		9.282	
	(5.866)		(5.911)	
Lagged Polity2	−0.388***			
	(0.083)			
Control Variables	Yes		Yes	
Year FE	Yes		Yes	
Country FE	Yes		Yes	
Observation	2497		2497	
R-squared	0.1202		0.1202	
Test of general linear restriction				
	Positive Growth	Negative Growth	Positive Growth	Negative Growth
Regular Exit	−5.624***	−3.768	−5.365**	−3.441
	(2.180)	(2.303)	(2.446)	(2.417)
Irregular Exit	−3.588	5.642	−3.342	5.841
	(5.438)	(5.648)	(5.626)	(5.639)

Note: Control variables include population(t-1), gdp(t-1), inflation(t-1), political system(t), electoral system(t), incumbents' age(t) and gender(t). Robust standard errors are in parentheses. ***, **, * represent statistical significance at the 1%, 5%, and 10% levels.

prosperity. Such findings are consistent with our prediction and demonstrate the robustness of our results.

Additionally, we consider different measurements of democracy. Firstly, we use the electoral democracy index, which is formed by measuring freedom of association, suffrage, clean elections, elected executive and freedom of expression of the country, from the Varieties of Democracy (V-Dem) database (Coppedge et al. 2017) to capture the strength of democracy. The results are reported in Columns 2 and 3 of Table B2. While applying the V-Dem variable to replace Polity2 to capture the strength of democracy, the results do not change. Secondly, we apply two composite indexes from Coppedge, Alvarez, and Maldonado (2008) to capture two principal dimensions of polyarchy, contestation and inclusiveness. Coppedge, Alvarez, and Maldonado (2008) argue that these two indexes are able to capture 75% of variation in the most commonly used democracy indicators. The results applied these two measurements are reported in columns 4 to 7 of Table B2. These two indexes are collected from 1950 to 2000, so our sample size drops considerably. Even though the estimated coefficients of $Prosperity * Growth$ become marginally significant (Columns 4, 5, and 7 of Table B2), all the estimated coefficients of the interaction terms between economic prosperity/economic recession and contestation/inclusiveness indexes are negative and significant, consistent with the findings of our baseline model.

References

Table B2. Alternatives measurement of democracy.

	Dependent variable: Political turnover					
Different measurement of democratic variable	V-Dem		Contestation		Inclusiveness	
Prosperity*Growth	−5.311***	−4.765**	−5.644*	−5.931*	−4.906	−5.680*
	(2.074)	(2.372)	(3.052)	(3.315)	(3.107)	(3.336)
Prosperity *lagged democratic variable		−2.392***		−1.827***		−0.853***
		(0.674)		(0.307)		(0.237)
Recession*Growth	−2.566	−1.928	−1.561	−1.879	−0.940	−1.823
	(2.135)	(2.233)	(3.333)	(3.672)	(3.329)	(3.531)
Recession*lagged democratic variable		−2.236***		−1.872***		−1.059***
		(0.655)		(0.352)		(0.278)
lagged democratic variable	−2.344***		−1.842***		−0.928***	
	(0.662)		(0.309)		(0.211)	
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Observation	2667	2667	1377	1377	1377	1377
R-squared	0.1032	0.1034	0.1587	0.1587	0.1390	0.1395

Note: Control variables include population(t-1), gdp(t-1), inflation(t-1), political system(t), electoral system(t), incumbents' age(t) and gender(t). Robust standard errors are in parentheses. ***, **, * represent statistical significance at the 1%, 5%, and 10% levels.

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