

**Work in Progress**

## Are Political Budget Cycles different in Monetary Unions?

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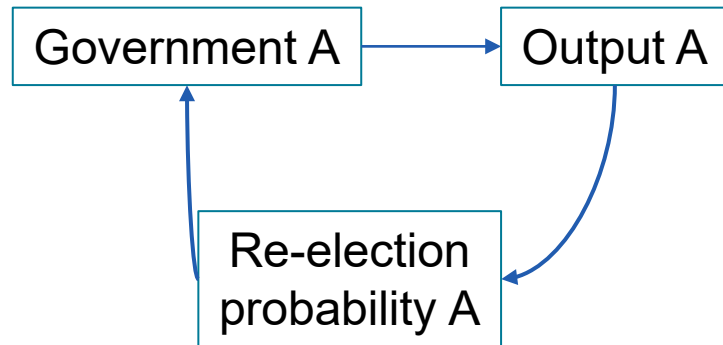
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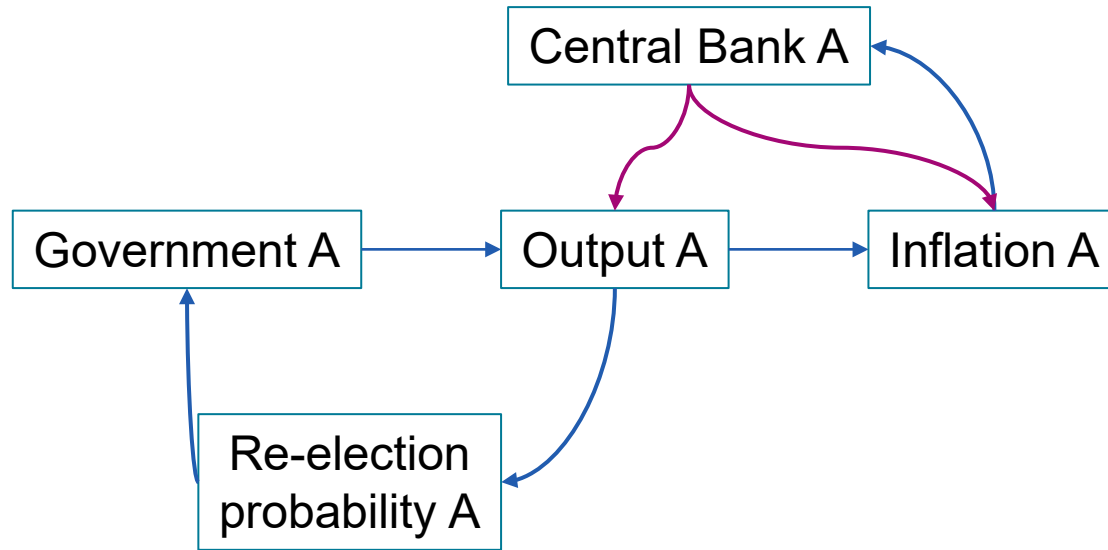
- Introduction & intuition
- Theoretical model
- Estimating monetary policy behaviour
  - for the ECB
- Estimating fiscal policy behaviour
  - for the euro area
  - for a larger sample of countries
- Concluding remarks / discussion

- Governments reduce their fiscal balances before elections to increase re-election chances
  - Nordhaus (1975): Older Political **Business** Cycle models assume backward-looking voters who evaluate the incumbent on the basis of its past track record
  - Modern Political **Budget** Cycle models use information asymmetries regarding politicians' competence level
    - Signalling is the driving force (Rogoff and Sibert, 1988; Persson and Tabellini, 2002; Shi and Svensson, 2006)
- The incentives of incumbents to engage in electioneering are (potentially) governed by several factors
  - Informedness of voters (Shi & Svensson, 2006; Veiga et al., 2017; Bohn, 2019; Bohn & Veiga, 2021)
  - Democracy (Akhmedov & Zhuravskaya, 2004; Brender & Drazen, 2005),
  - Checks & balances (Streb et al., 2009)
  - ...
  - Central Bank Independency (Drazen, 2000; Haga, 2015)
    - CBI has been shown to reduce budget deficits overall (De Haan & Sturm, 1992; Bodea & Higashijima, 2015), and especially in election years (Haga, 2015)
- Current literature is missing a theoretical and empirical analysis of this mechanism in a monetary union
  - We argue that an overarching CB must consider the fiscal policy decisions of all member states, some of which may be in an election year, while others are not

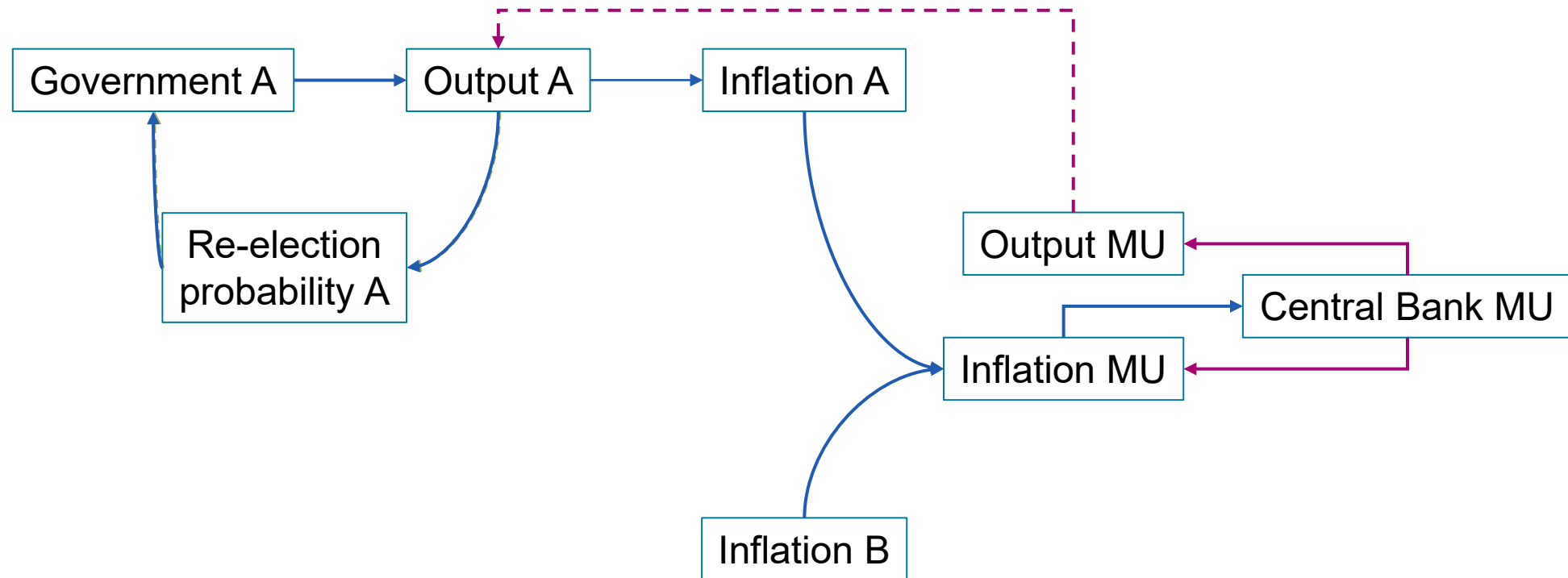
# Intuition – Political Business Cycle in a single country



# Intuition – impact of an independent central bank in a single country



# Intuition – impact of an independent central bank in a monetary union **KOF**



- Central bank loss function:  $L_{CB} = \frac{1}{2} [\pi^2 + \gamma Y^2]$ , where  $Y = sy_A + (1 - s)y_B$
- Government loss function:  $L_{Gi} = \frac{1}{2} [\pi^2 + \tau_i + \beta(y_i - \delta\psi_i)]$ ,  
where  $\psi_i = 1$  if there is an election in country  $i = A, B$ , and  $\psi_i = 0$  otherwise
- Country-specific output:  $y_i = \pi - \pi^e - \tau_i$

- Reaction functions of the central bank and each of the two governments (A & B):

$$\pi = \frac{\gamma}{1+\gamma} (s(\pi^e + \tau_A) + (1 - s)(\pi^e + \tau_B)) \quad \tau_i = \frac{\beta}{1+\beta} (\pi - \pi^e - \delta\psi_i)$$

- Rational expectations leads to:  $\pi^e = \frac{-\gamma\beta}{1+\beta} (s\delta\psi_A + (1 - s)\delta\psi_B)$

- Resulting equilibrium inflation and fiscal balances are:

$$\pi^* = \frac{-\gamma\beta}{1+\beta} (s\delta\psi_A + (1 - s)\delta\psi_B) \quad \tau_i^* = \frac{-\beta}{1+\beta} \delta\psi_i \quad y_i^* = \frac{\beta}{1+\beta} \delta\psi_i$$

## 1. The Effect of Elections on the Optimal Inflation

$$\pi^* = \frac{-\gamma\beta}{1+\beta} (s\delta\psi_A + (1-s)\delta\psi_B)$$

- An election in one country reduces optimal inflation proportionally to the relative size of that country
- As elections incentivize governments to reduce their fiscal balances, output would rise above the central bank's target. To counteract this increase, the central bank increases rates (=decreases inflation)
- The maximum CB response occurs when both countries have elections

## 2. The Effect of Elections on the Optimal Fiscal Balance

$$\tau_i^* = \frac{-\beta}{1+\beta} \delta\psi_i$$

- Elections in one country reduces the optimal fiscal balance in that country
- Elections in the other country do not impact the optimal fiscal balance
- Country size is irrelevant in determining the election effect on the optimal fiscal balance
  - The central bank proportionally accounts for each individual manipulation
  - The private sector fully anticipates the government's manipulation and the central bank's response



1. The ECB reacts to national elections in euro area member countries
2. This reaction of the ECB increases with the relative size of the countries facing elections
3. The ECB reaction does not affect the PBC-behaviour of governments of member countries
4. Fiscal impulses are larger for EMU-member countries as compared to non-EMU countries
  - This holds especially for smaller member countries

- For each member country we produce an electoral pressure variable that equals 1 in the 12 months before and including a national election
  - To address concerns about endogeneity, we exclude snap elections  
(This does not qualitatively affect any of our results)
- The country-specific electoral pressure variables are aggregated capital shares of the member countries in the European Central Bank
  - As alternative weighting scheme, we use equal weights
  - As alternative we separate Germany and France (as the two largest countries) from all other countries

- Monetary policy instrument: Main Refinancing Rate (MRR =  $i_t$ )
- We use an augmented Taylor Rule to distinguish between ECB's
  - Rule-based reaction to (expected) inflation and economic growth deviations from target ( $i_t^{RB}$ )
  - Reaction to the overall electoral pressure within the monetary union ( $i_t^{PBC}$ )
  - Other discretionary decisions taken by the ECB ( $i_t^D$ )
- $$i_t = (r^* + \pi_t) + \alpha(\pi_t - \pi^*) + \gamma(y_t - y^*) + \delta ep_t + \varepsilon_t = (r^* - \alpha\pi^* - \gamma y^*) + \underbrace{(1 + \alpha)\pi_t + \gamma y_t + \delta ep_t + \varepsilon_t}_{\text{Taylor principle}}$$
- $$i_t = i_t^{RB} + i_t^{PBC} + i_t^D$$
- We follow Rathke et al. (2022), Sturm & De Haan (2011), Sauer & Sturm (2007) and estimate Taylor rules using forward-looking (and real-time) data
  - 12-months ahead inflation and growth expectations have been constructed from Consensus Economics forecasts
- Given the extraordinary actions of central banks (including the ECB) since the start of the financial crisis (in which the focus has moved towards financial stability and the effective lower bound on policy rates has been reached), we concentrate the empirical analysis on the period 1999-2006.

Table 1: DESCRIPTIVE STATISTICS: MONETARY ANALYSIS

Variable	Observations	Mean	Std. Dev.	Minimum	Maximum
MRR	96	2.909	0.890	2.000	4.750
Forecasted Inflation	96	1.857	0.253	1.139	2.330
Forecasted Growth	96	2.096	0.568	1.273	3.347
Weighted EMU Electoral Pressure	96	18.42	14.55	0.000	56.18
Unweighted EMU Electoral Pressure	96	2.427	1.304	0.000	5

Table 3: MONETARY ANALYSES

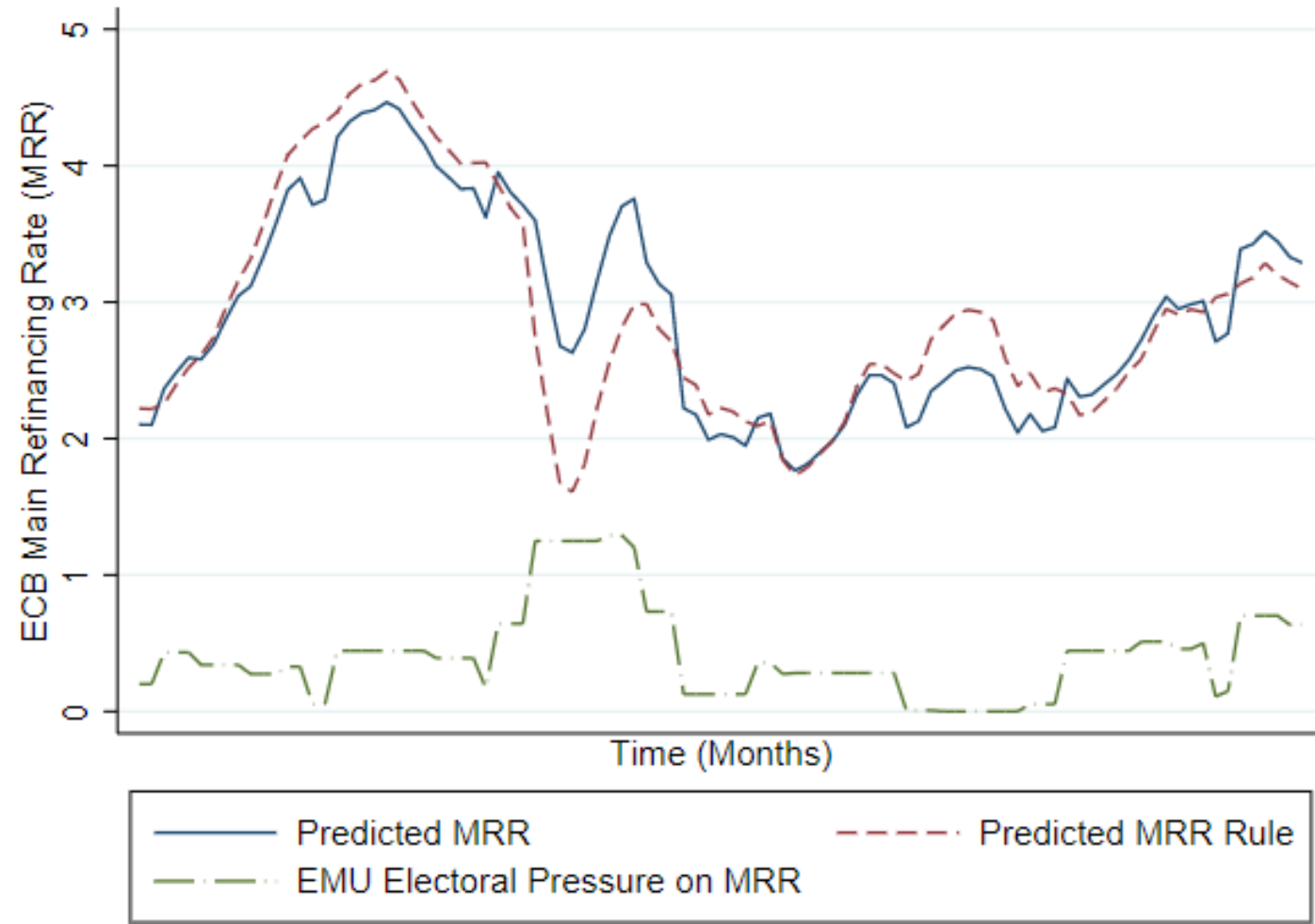
Dependent variable:	(1)	(2)	(3)
ECB Main Refinancing Rate <sub>m</sub>	Weighted	Unweighted	Germany & France
Forecasted Inflation <sub>m+12</sub>	1.055 <sup>***</sup> (5.22)	1.372 <sup>***</sup> (6.54)	1.097 <sup>***</sup> (5.26)
Forecasted Growth <sub>m+12</sub>	1.150 <sup>***</sup> (12.92)	1.183 <sup>***</sup> (12.17)	1.229 <sup>***</sup> (13.44)
EMU Electoral Pressure <sub>m</sub>	0.0231 <sup>***</sup> (6.48)	0.214 <sup>***</sup> (5.06)	
EMU Electoral Pressure Germany & France <sub>m</sub>			0.504 <sup>***</sup> (5.93)
EMU Electoral Pressure Germany & France Excluded <sub>m</sub>			0.0940 (1.87)
Constant	-1.886 <sup>***</sup> (-4.53)	-2.639 <sup>***</sup> (-5.57)	-2.062 <sup>***</sup> (-4.42)
# Observations	96	96	96
Adjusted R <sup>2</sup>	0.703	0.662	0.706

t statistics in parentheses. \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001.

- Taylor rule principle holds
- ECB increases interest rate with the Electoral Pressure variable
  - A St.Dev. increase in *ep* leads to an *i*-increase of
    - (1): 0.34 bp
    - (2): 0.28 bp
  - Weighted model fits better
  - Reaction G&F is the largest
- Cannot reject hypotheses 1&2
  - ECB reacts to elections
  - This reaction increases with the relative size of the countries facing elections

# Decomposing the monetary policy rate

Figure 1: MAIN REFINANCING RATES OVER TIME



- The predicted MRR Rule ( $i_t^{RB}$ ) is rescaled to have the same average as the predicted MRR ( $i_t^{RB} + i_t^{PBC}$ )

- Use quarterly data on the 12 core countries forming the EMU during the period 1999-2006
- Dependent variable: Primary general government budget balance (as percentage of GDP)
  - Interest rate payments on existing debt can hardly be used as instrument to stimulate the economy
  - Although the central government does have only direct control of the central government budget balance, data availability force us to use general government data
    - Arguably some influence on more local public finances appears plausible
    - Arguably using general government data makes it less likely to find significant PBC effects
- Key independent variables:
  - Country-specific electoral pressure variable
  - ECB's reaction to elections

} It is the interaction effect that potentially matters
- Control variables:
  - General public debt to GDP ratio
  - Economic growth
  - Inflation

Table 2: DESCRIPTIVE STATISTICS: FISCAL ANALYSIS

Variable	Observations	Mean	Std. Dev.	Minimum	Maximum
Balance	260	0.651	3.83	-13.8	11.4
Electoral Pressure	260	0.165	0.372	0.00	1
Public Debt	260	65.4	29.4	6.80	112
Economic Growth	260	0.615	0.784	-1.50	4.6
Inflation	260	0.566	0.629	-1.38	2.47
ECB Main Refinancing Rate (MRR)	260	2.64	0.786	2	4.75



# Fiscal rule estimates

- (1): In election years the fiscal balance deteriorates by 0.5 pp
- (2)-(4): This effect does not depend on ECB behaviour
- We cannot reject hypothesis (3)
  - The PBC-behaviour of governments is not affected by the ECB

Dependent variable:	(1)	(2)	(3)	(4)
Balance <sub>q</sub>	Base	Weighted	Unweighted	Germany & France
Balance <sub>q-4</sub>	0.732*** (10.58)	0.733*** (10.56)	0.729*** (10.15)	0.736*** (10.35)
Electoral Pressure <sub>q</sub>	-0.523*** (-3.38)	1.952 (0.84)	1.820 (0.68)	1.601 (0.71)
Public Debt <sub>q-4</sub>	-0.0102 (-0.55)	-0.0161 (-0.74)	-0.0131 (-0.62)	-0.0114 (-0.54)
Economic Growth <sub>q-4</sub>	-0.105 (-0.50)	-0.0945 (-0.46)	-0.0907 (-0.44)	-0.101 (-0.49)
Inflation <sub>q-4</sub>	-0.594** (-2.78)	-0.572** (-2.31)	-0.607** (-2.59)	-0.538** (-2.27)
MRR Rule <sub>q</sub>		0.352 (0.59)	0.286 (0.53)	0.160 (0.30)
MRR Political <sub>q</sub>		-0.311 (-0.34)	-0.340 (-0.39)	-0.779 (-1.14)
MRR Residual <sub>q</sub>		-0.541 (-1.22)	-0.592 (-1.16)	-0.273 (-0.55)
Electoral Pressure <sub>q</sub> * MRR Rule <sub>q</sub>		-0.523 (-1.07)	-0.491 (-1.00)	-0.496 (-1.07)
Electoral Pressure <sub>q</sub> * MRR Political <sub>q</sub>		-0.531 (-0.93)	-0.0254 (-0.03)	0.166 (0.28)
Electoral Pressure <sub>q</sub> * MRR Residual <sub>q</sub>		0.260 (0.42)	0.0232 (0.05)	-0.0700 (-0.12)
Constant	0.677 (0.45)	-0.0620 (-0.02)	0.0270 (0.01)	0.513 (0.19)
# Observations	260	260	260	260
# Countries	12	12	12	12
Overall R2	0.731	0.727	0.730	0.732
Year FE	Yes	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes	Yes

t statistics in parentheses. \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

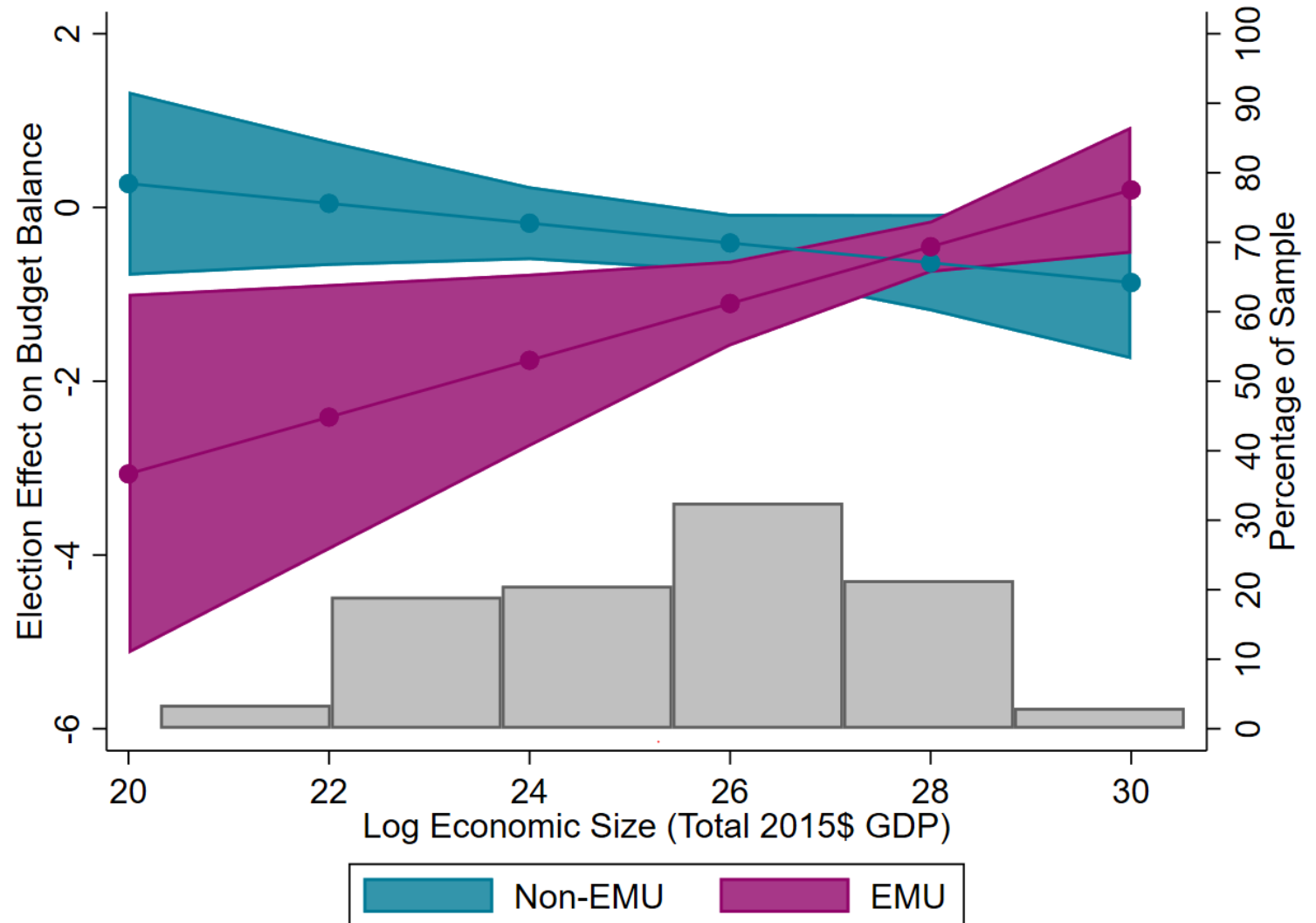
# Fiscal rule estimates incl. non-EMU countries

- Move to annual frequency
- (1): For the larger sample, on average the fiscal balance deteriorates by 0.3 pp in election years
- (2): The average PBC effect appears larger for EMU countries
- Hypothesis (4) cannot be rejected
- (3): On average, country size does not matter for how governments react when facing elections
- (4): Within the EMU, governments of smaller countries do react stronger
  - This is not inline with our current simple theoretical model, but inline with the intuitive idea/model

Dependent variable:	(1)	(2)	(3)	(4)
Balance	Base	EMU	Country Size	EMUxCountry Size
Balance <sub>t-1</sub>	0.327*** (3.23)	0.321*** (3.21)	0.317*** (3.05)	0.287*** (2.79)
Election <sub>t</sub>	-0.288* (-1.87)	-0.237 (-1.36)	2.643 (1.17)	2.554 (1.07)
Growth <sub>t</sub>	0.151*** (2.97)	0.153*** (2.99)	0.117** (2.17)	0.0950* (1.79)
Inflation <sub>t-1</sub>	0.00490 (0.27)	0.00445 (0.24)	0.0125 (0.70)	0.0177 (1.02)
Public Debt <sub>t-1</sub>	0.0219** (2.14)	0.0226** (2.18)	0.0292** (2.20)	0.0283** (2.13)
EMU <sub>t</sub>		-3.062*** (-7.24)		240.2** (2.17)
Election <sub>t</sub> * EMU <sub>t</sub>		-0.417 (-1.61)		-12.16*** (-2.98)
ln(TotalGDP <sub>t</sub> )			5.647* (1.80)	5.750* (1.90)
Election <sub>t</sub> * ln(TotalGDP <sub>t</sub> )			-0.117 (-1.35)	-0.114 (-1.22)
EMU <sub>t</sub> * ln(TotalGDP <sub>t</sub> )				-9.313** (-2.20)
Election <sub>t</sub> * EMU <sub>t</sub> * ln(TotalGDP <sub>t</sub> )				0.441*** (2.90)
Constant	-1.138* (-1.93)	-0.613 (-1.10)	-144.0* (-1.81)	-144.8* (-1.88)
# Observations	493	493	493	493
# Countries	70	70	70	70
Year FE	Yes	Yes	Yes	Yes

t statistics in parentheses. \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

- Outside of the EMU, country size does not matter for how governments react when facing elections
- Within the EMU, governments of smaller countries do react stronger
  - This is not inline with our current simple theoretical model, but inline with the intuitive idea/model



- This paper looks into PBC dynamics within a monetary union
- The argument is that PBCs will be more prevalent within a monetary union, as governments are held less accountable due to ECB's focus on entire monetary union
- We find the ECB to react stronger to elections that take place in larger or more countries
- The ECB's reactions do not limit the degree of fiscal manipulation in election years
- Governments of small EMU member countries manipulate more than their non-EMU counterparts
  
- As such, countries in monetary union require
  - more stringent alternative measures to curb PBCs, and/or
  - develop mechanisms that keep election dates closer together to allow the CB to fully accommodate (and thereby prevent?) the PBC behaviour of governments

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