Monetary Unions with Heterogeneous Fiscal Space

Marco Bellifemine
LSE

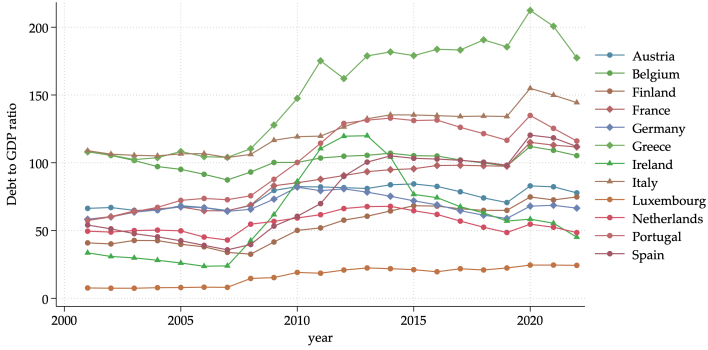
Adrien Couturier
LSE

Rustam Jamilov
Oxford

NBER International Seminar on Macroeconomics

June, 2024

Public Debt in the Eurozone



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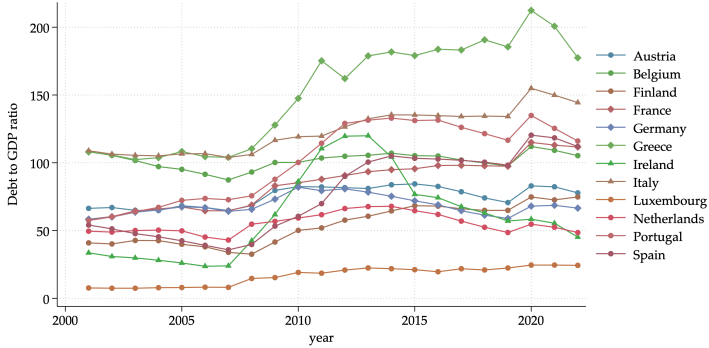

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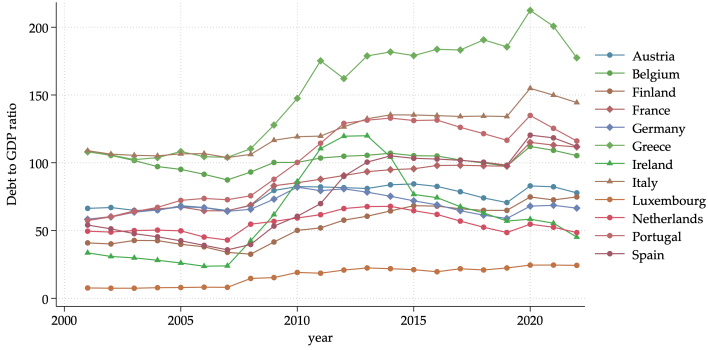

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What are the implications for monetary policy?

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- Central bank faces a stabilization-synchronization trade-off
  - Response of MP to shocks stabilizes average inflation but transmits differently to countries
  - What architecture can alleviate the trade-off? $\longrightarrow$ study policy proposals

- Currency union with countries j, within-country incomplete markets:

$$\max_{\{c_{jit},a_{jit}\}_{t\geq 0}} \mathbb{E}_0 \sum_{t\geq 0} \beta^t u(c_{jit},\ell_{jit}),\ \text{s.t. } c_{jit}+a_{jit} = (1-\tau)w_{jt}e_{jit}\ell_{jit} + t_{jt} + \frac{1+i_{t-1}}{1+\pi_{jt}}a_{jit-1},\ a_{jit}\geq \underline{a}$$

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- Two consumption goods, tradables & non-tradables:
  - Demand: $c_{jit} = \mathcal{D}\left(c_{jit}^{NT}, c_{jit}^{T}; \nu\right), \quad c_{jit}^{T} = \mathcal{T}\left(\left\{c_{jit}^{T}(j')\right\}_{j'}; \nu\right)$

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- Fiscal reaction function + heterogeneous SS public debt: (Only dimension of regional heterogeneity)

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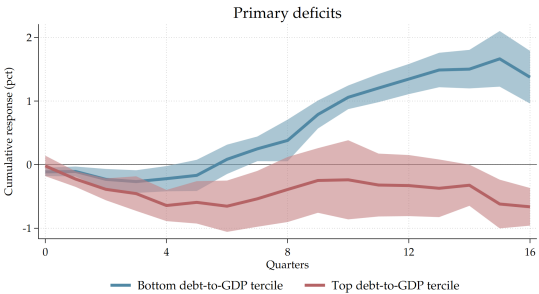

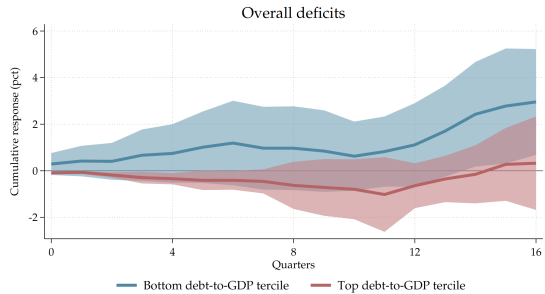

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$$\widehat{\boldsymbol{c}}_j \equiv \left(d\log c_{j1}, d\log c_{j2}, \dots\right)', \quad (\boldsymbol{M}^r)_{ts} = \frac{\partial \log c_{jt}}{\partial \log(1+r_{js})}, \quad (\boldsymbol{M}^t)_{ts} = \frac{\partial \log c_{jt}}{\partial \log t_{js}}, \quad (\boldsymbol{M})_{ts} = \frac{\partial \log c_{jt}}{\partial \log y_{js}}, \quad \widehat{\boldsymbol{s}}_j : \text{ToT}$$

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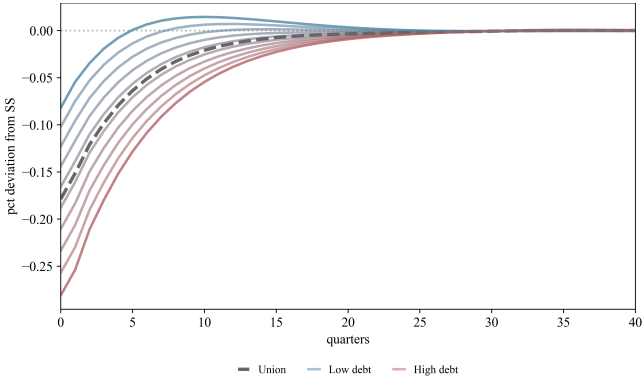
  - ◇ New Keynesian Phillips curve: larger consumption response ⟶ larger inflation response

Heterogeneous Monetary Transmission in the Union

- A monetary union with 10 countries, debt-to-GDP ratios of 8%-180% ($\approx$ EZ)

Heterogeneous Monetary Transmission in the Union

- A monetary union with 10 countries, debt-to-GDP ratios of 8%-180% (≈ EZ)
  - Large dispersion in the consumption response
  - Low public debt countries less responsive ⟵ more space for primary deficits



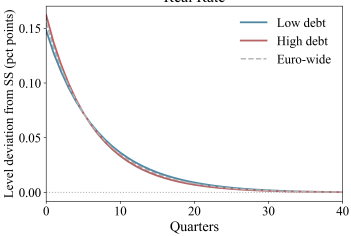
Note: consumption resp. to a shock increasing interest rates i_t by 1 p.p. (annualized) on impact, with quarterly persistence 0.85.

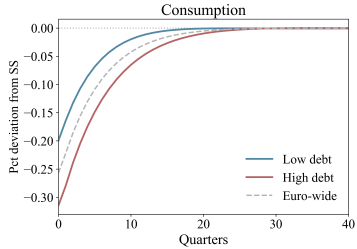
INSPECTING THE MECHANISM

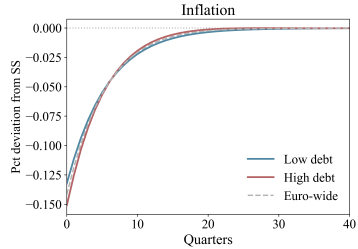
- Two-countries calibration: Germany and Italy
  - Only differ in SS debt-to-GDP ratios (60% and 134%), identical in all other parameters

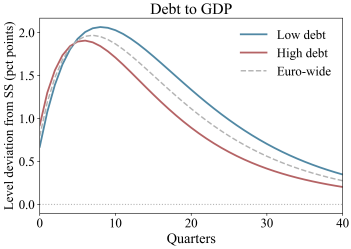
- Calibrate fiscal rules based on Galí and Perotti (2003) $\longrightarrow \gamma^L = 1$ and $\gamma^B = 0.07$ Calibration

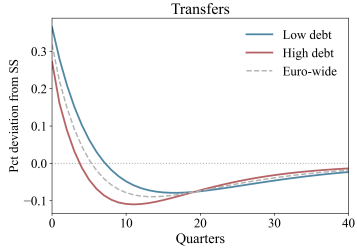
INSPECTING THE MECHANISM

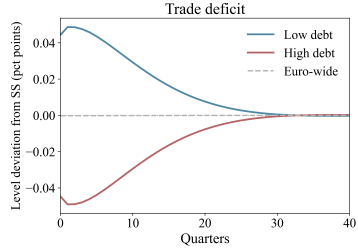












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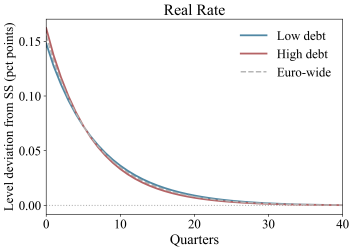

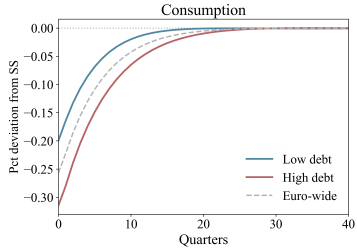

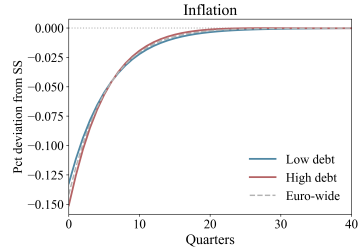

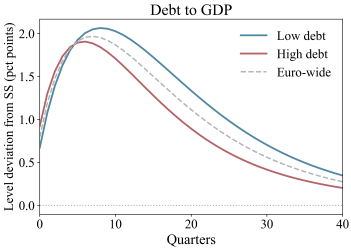

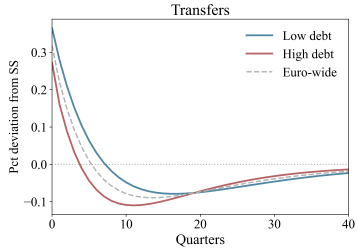

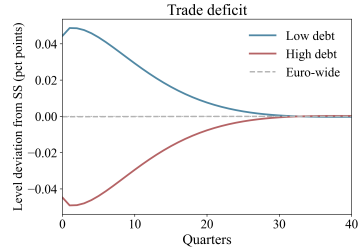

Same interest rate change induces different effects across countries

BUSINESS CYCLE PROPERTIES FOR DIFFERENT MONETARY STANCES

- Business cycle properties
  - Discount factor shocks
- MP stabilizes EZ inflation
  - $i_t = \phi \pi_t + \varepsilon_t^i$
- Dove vs Hawk

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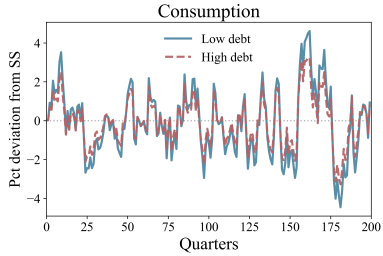

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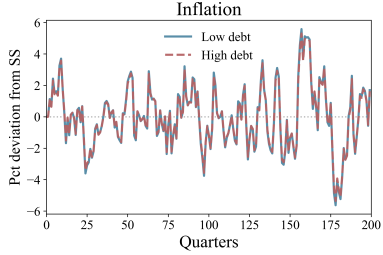

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Dove, $\phi = 1.01$

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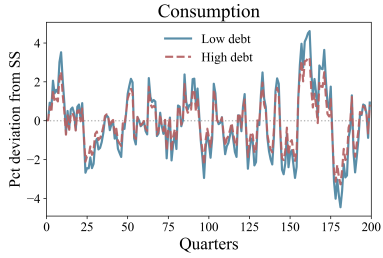
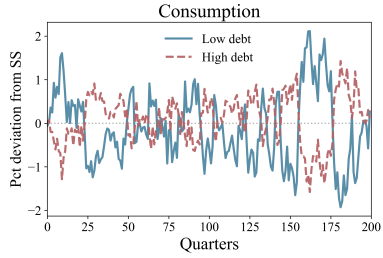
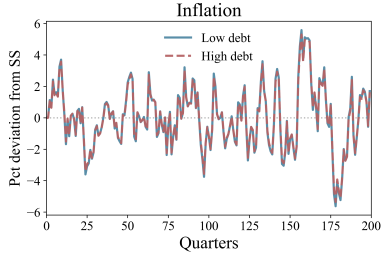
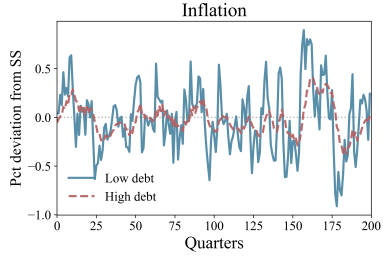


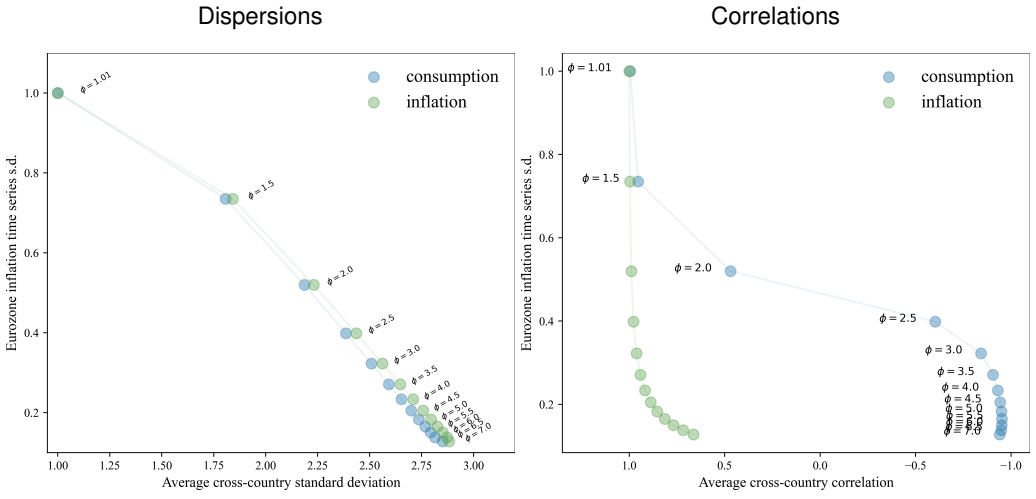






Dove, $\phi = 1.01$ Hawk, $\phi = 7$

Stabilization-Synchronization Trade-Off



Note: we normalize all std measures to one for the smallest Taylor coefficient. Correlation measures are not normalized.

POLICY EXPERIMENTS

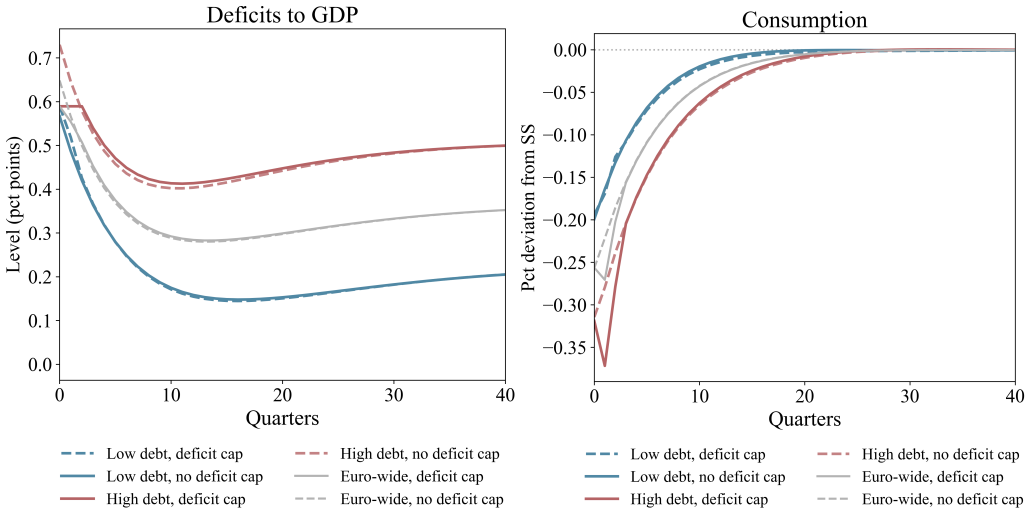
I Deficit caps

II Fiscal union

III Political Union

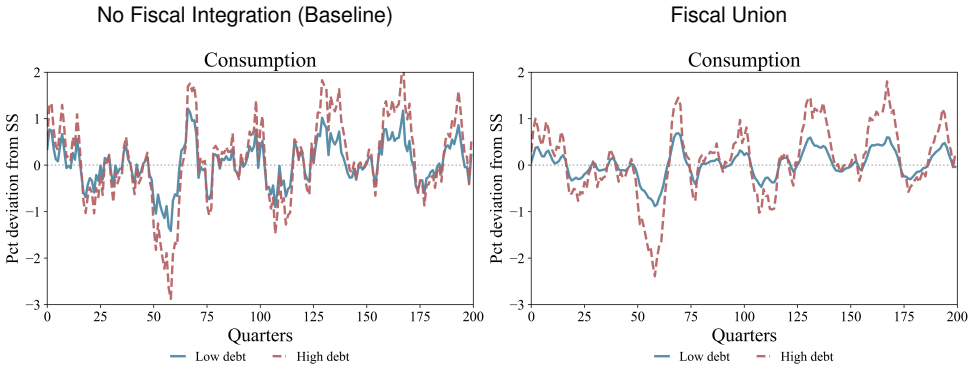
IV Augmented Taylor rule

Deficit Caps Amplify the Trade-Off



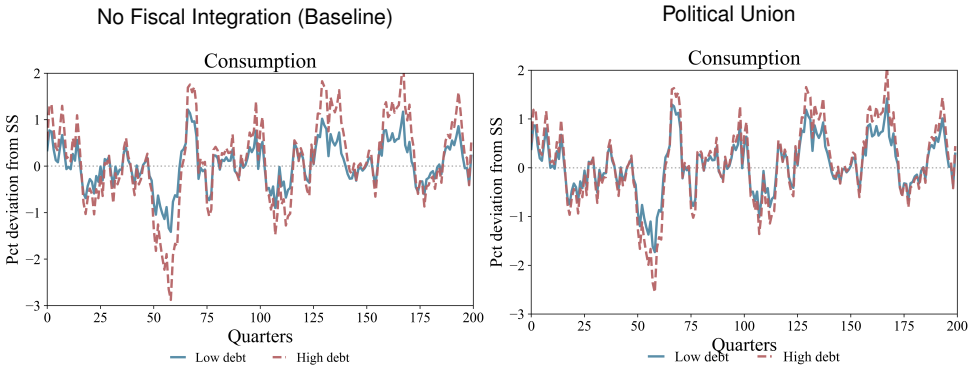
Fiscal Union

- Issue bonds to send lump-sum transfers equally across countries (€-bonds)
  - Stabilizes average activity
  - Does *not* improve synchronization ⟵ GE effects on interest rates



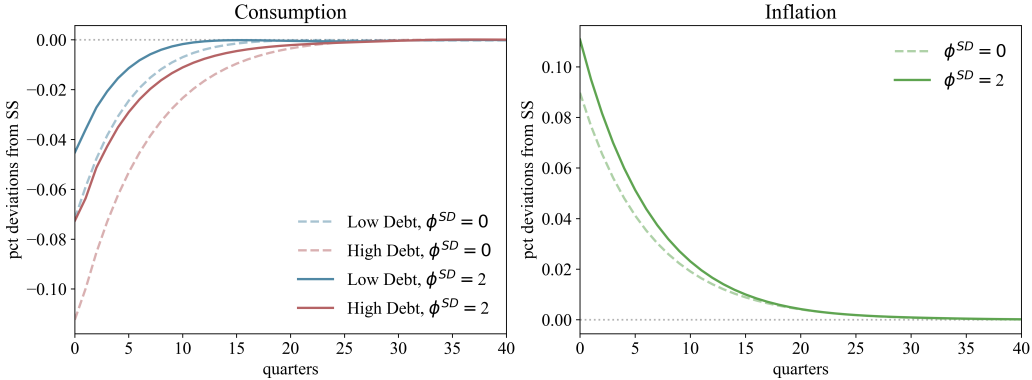
Political Union

- Political union: cross-country transfers under balanced budget
  - Effective at improving synchronization
  - Countries' net contributions zero on average



Augmented Taylor Rule

$$i_t = \phi \pi_t - \phi^{SD} \sqrt{\mathbb{V}ar_j \hat{c}_{jt}} + \varepsilon_t^i$$



CONCLUSION

- Heterogeneity in fiscal space across members of a monetary union:

I Leads to unequal transmission of monetary policy

II Gives rise to a trade-off between stabilization and synchronization for MP

III Deficit caps & fiscal union cannot address the trade-off; political union could

Appendix

CALIBRATION

BACK

Parameter	Description	Value	Comment
β	Discount factor	0.98	Standard
σ	Inverse IES	1	Standard
φ	Frisch Elasticity	1	Chetty et al. (2011)
ω	Preference for non-trad. consumption	0.66	Hazell et al. (2022)
α	Preference for non-trad. labor supply	0.66	Hazell et al. (2022)
ν	Cons. elasticity of subs. btw sectors	1.5	Hazell et al. (2022)
ψ	Elasticity of subs. btw tradables	1.5	Equal to ν for exposition
η	Labor elasticity of subs. btw sectors	0.45	Berger et al. (2022)
ρ_e	Pers. of log-productivity process	0.92	Auclert et al. (2021)
σ_e	Std. of log-productivity process	0.6	Auclert et al. (2021)
$\underline{b}$	Borrowing limit	0	Standard
μ	Union market power	21	Schmitt-Grohé and Uribe (2005)
θ	Wage rigidity	210	Target 0.1 slope of wage NKPC
τ	Income tax rate	30%	Eurozone average
$\bar{B}_1/\bar{Y}_1$	Debt to GDP in country 1	134%	Italy, 2019 (source: AMECO)
$\bar{B}_2/\bar{Y}_2$	Debt to GDP in country 2	60%	Germany, 2019 (source: AMECO)
γ^L	Response of deficits to L	1	Galí and Perotti (2003)
γ^B	Response of deficits to debt	0.07	Galí and Perotti (2003)

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