When should monetary unions have a fiscal capacity?

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Motivation behind the paper

- Debate on fiscal capacity to provide European public goods
  - Long-term challenges require large investments (climate, geopolitical fragmentation, digitalization)
  - These challenges are global in nature and call for supranational public investments
  - Some of these challenges contribute to an increasing likelihood of supply shocks

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- Various proposals for a central fiscal capacity to provide European public goods
  - Public goods tend to be underprovisioned, and supranational ones even more so
  - To help dampen economic shocks in a monetary union

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  - To help dampen economic shocks in a monetary union
- What are the macro effects of a fiscal capacity that provides public goods in a monetary union?
  - What are the transmission channels?
  - Which factors are key in driving these effects?

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- Distinguish between two types of fiscal capacity investments that...
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  - ...evolve **exogenously** over time (*capacity to provide non-economic public good, e.g. defense, climate*)

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- Focus on macro properties of fiscal capacity through public investment and public capital

What we find

- Endogenous fiscal capacity investments:
  - Reduce output variability, yet raises inflation variability
  - Lead to more synchronized business cycles across the monetary union
  - Stronger counter-cyclical investments raise union-wide welfare
  - Welfare gains greater (smaller) when investments are more productive (monetary union faces only demand shocks)

- Exogenous fiscal capacity investments:
  - Reduce inflation variability, yet raises output variability
  - Crowd-in private investments and consumption, if sufficiently productive
  - Welfare gains also depend on whether investments are country-specific or common across countries

Related literature

- Public goods (Samuelson, 1954; Buchholz and Sandler, 2021)
- European public goods (Fuest and Pisani-Ferry, 2019; Wyplosz, 2024)
- Policy proposals (Draghi, 2024; Arnold et al., 2025)
- Fiscal capacity in structural model of monetary union (Bonam et al., 2022; Bianchi et al., 2023; Schang and Vinci, 2024)

Model

Overview of the model

- Monetary union with two member states: Home and Foreign
- Households:
  - Consume Home and Foreign goods
  - Hold domestic government bonds and bonds issued by the fiscal capacity
  - Consumption habits, investment adjustment costs, sticky wages, several (distortionary) taxes
- Firms:
  - Public capital enters production function
  - Sticky prices
- National fiscal policy and supranational monetary policy
- Fiscal capacity:
  - Invests in country-specific or common public capital
  - Issues bonds and levies (lump-sum and consumption) taxes on households

The fiscal capacity: common and country-specific public capital

Home production function: $y_{H,t} = z_{A,t} n_t^{\alpha} k_{t-1}^{1-\alpha} \mathcal{K}_{mu,t-1}^{\upsilon \alpha_{mu}} k_{mu,t-1}^{(1-\upsilon)\alpha_{mu}}$

Foreign production function: $y_{F,t}^{*} = z_{A,t}^{*} n_t^{*\alpha} k_{t-1}^{*1-\alpha} \mathcal{K}_{mu,t-1}^{\upsilon \alpha_{mu}} k_{mu,t-1}^{*(1-\upsilon)\alpha_{mu}}$

- Fiscal capacity investments can be used to build up:
  - common capital, $\mathcal{K}_{mu,t}$, or
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- Common capital accumulates through 'common investments', $i_{mu,t}$, which is itself are a composite of Home investment goods, $i_{f,t}$, and Foreign investments goods, $i_{f,t}^{*}$
- Country-specific capital accumulates through 'additional investments', $\mathcal{A}_t$ and $\mathcal{A}_t^{*}$

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- Four different types of **exogenous fiscal capacity investments**: shock to...
  - $i_{mu,t}$ (common investment to build common capital)
  - $i_{f,t}$ or $i_{f,t}^{*}$ (country-specific investment to build common capital)
  - $\mathcal{A}_t = \mathcal{A}_t^{*}$ (common investment to build country-specific capital)
  - $\mathcal{A}_t \neq \mathcal{A}_t^{*}$ (country-specific investment to build country-specific capital)

The fiscal capacity: common and country-specific public capital (cont.)

		Fiscal capacity investment	
		Common	Country specific
Public capital accumulation	Common ($\mathcal{K}_{mu,t}$)	$i_{mu,t}$ *Union-wide EV charging network; union-wide transportation network*	$i_{f,t}$ or $i^*_{f,t}$ *Defense spending in one country; communication satelite launched and build in one country*
	Country specific ($k_{mu,t}, k^*_{mu,t}$)	$\mathcal{A}_t = \mathcal{A}^*_t$ *Energy network w/ one country benefiting most (NordLink)*	$\mathcal{A}_t \neq \mathcal{A}^*_t$ *National transportation network; Public investment in clean energy*

The fiscal capacity: endogenous fiscal capacity investment

- Fiscal capacity investments may also respond endogenously to macro imbalances within the union
- Let x_t denote the difference between the Foreign and Home output gap
- Further, let $\mathcal{I}_t = 1$ if $x_t > 0$ and $\mathcal{I}_t = 0$ otherwise
- Additional investments are then determined as follows:

$$\mathcal{A}_t = f_{mu,t}\mathcal{I}_t \qquad \mathcal{A}_t^* = f_{mu,t}\left(1 - \mathcal{I}_t\right) \tag{1}$$

where

$$f_{mu,t} = \phi\left[\mathcal{I}_t \cdot x_t + \left(1 - \mathcal{I}_t\right)\left(-x_t\right)\right] \tag{2}$$

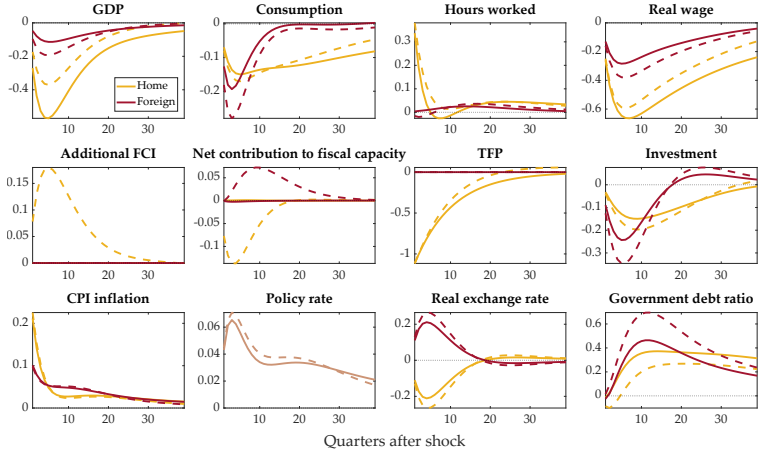
- In words:
  - If some shock causes the Foreign output gap to be greater than the Home output gap, fiscal capacity investment is set equal to a fraction (ϕ) of this gap and used to build up public capital in Home
  - Fiscal capacity investments thus act as a macroeconomic stabilization tool
  - The counter-cyclicality of this tool is governed by $\phi \geq 0$

Results:

Endogenous fiscal capacity investments

Fiscal capacity reduces macro imbalances following country-specific shock

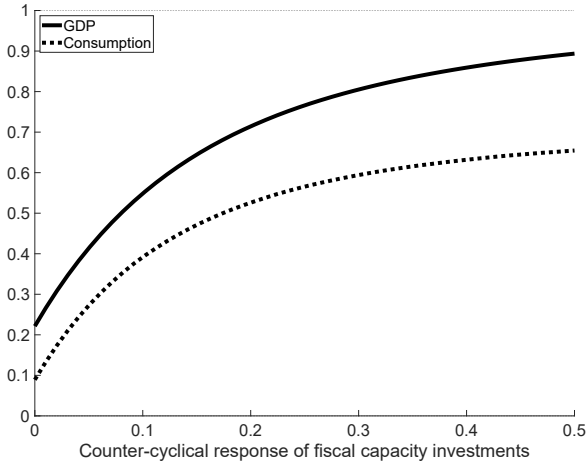
Figure 1: Responses to an adverse Home productivity shock, w/ and w/o endogenous fiscal capacity investments



Notes: Solid (dashed) lines refer to the case without fiscal capacity investments and $\phi = 0$ (counter-cyclical fiscal capacity investments and $\phi = 0.5$). FCI = fiscal capacity investments; FC = fiscal capacity. Units are expressed in percentage deviation from steady state.

...and leads to more synchronized business cycles across member states

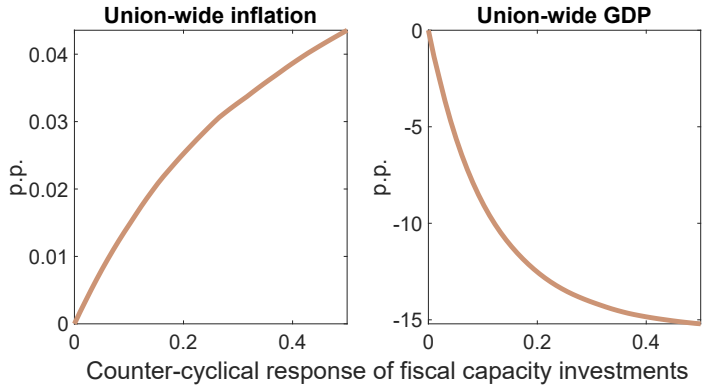
Figure 2: Correlation between Home and Foreign variables



Notes: Simulation assumes that both Home and Foreign are hit by random productivity shocks over 1,000 periods.

Counter-cyclical fiscal capacity investments lower output variability at the cost of some higher inflation variability

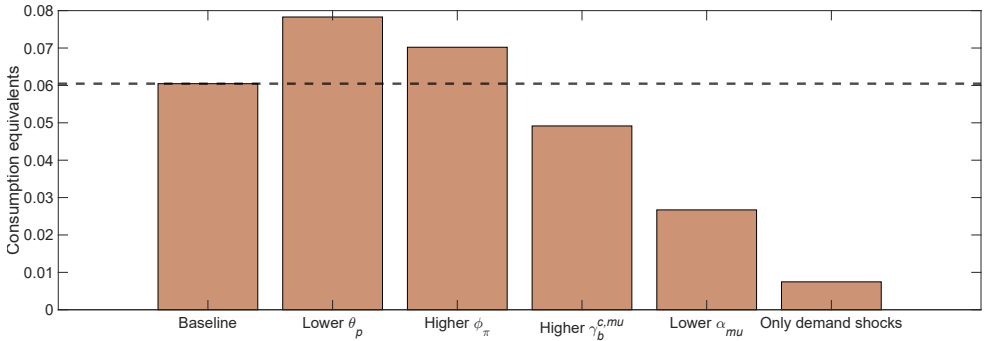
Figure 3: Standard deviation in p.p. deviation from baseline w/o endogenous fiscal capacity investments



Notes: Simulation assumes that both Home and Foreign are hit by random productivity shocks over 1,000 periods.

Greater (smaller) welfare gain when public capital is more productive (monetary union faces only demand shocks)

Figure 4: Union-wide welfare gain compared to baseline without endogenous fiscal capacity investments



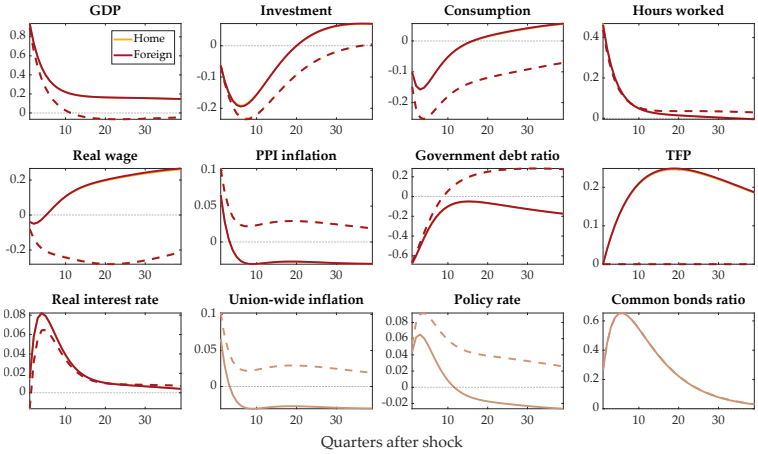
Notes: Simulation assumes that both Home and Foreign are hit by random productivity shocks over 1,000 periods (except in simulation labeled 'Only demand shocks'). θ_p governs the degree of price stickiness. ϕ_π measures the monetary policy response to inflation. $\gamma_b^{c,mu}$ measures the common VAT response to common outstanding debt. α_{mu} governs the productivity-enhancing effect of fiscal capacity investments. Units are measured in consumption equivalents.

Results:

Exogenous fiscal capacity investments

Common fiscal capacity investments can crowd in private investments

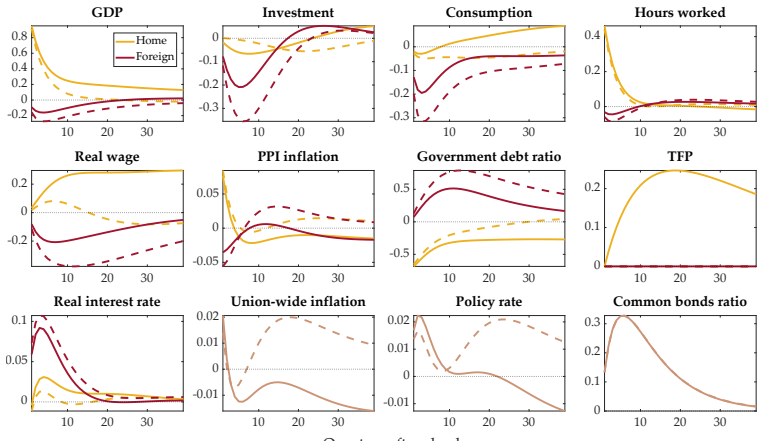
Figure 5: Responses to a common fiscal capacity investment shock



Notes: Solid (dashed) lines refer to the case where fiscal capacity investments are productive (unproductive) and their output elasticity is set to $\alpha_{mu} = 0.05$ ($\alpha_{mu} = 0$). Fiscal capacity investments are used to build up country-specific capital. Units are expressed in percentage deviation from steady state.

...while country-specific investments are contractionary in partner state

Figure 6: Responses to a country-specific fiscal capacity investment shock in Home



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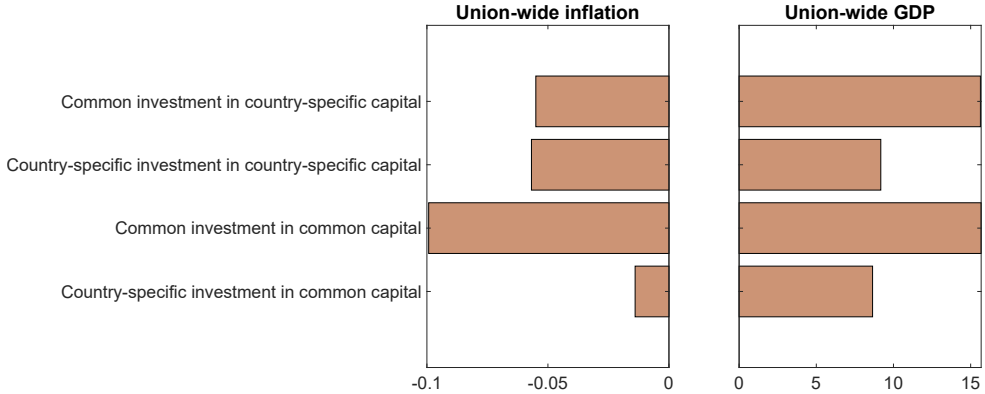
Investment shocks raise (lower) output (inflation) variability

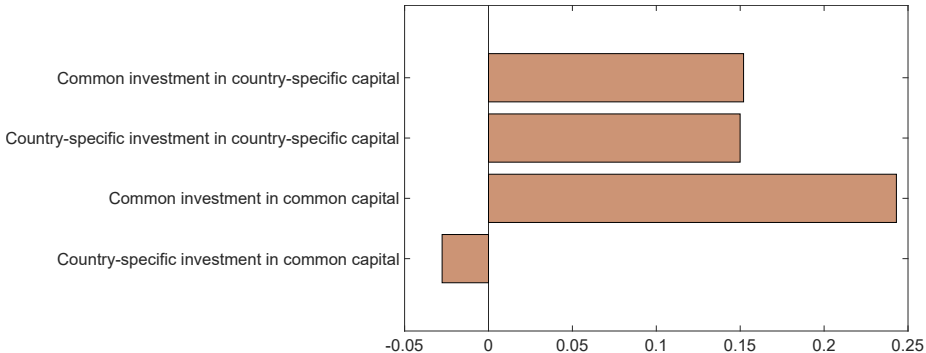
Figure 7: Standard deviation in p.p. deviation from baseline w/o exogenous fiscal capacity investments



Notes: In the baseline and alternative scenarios, both Home and Foreign are hit by random productivity shocks over 1,000 periods. In each of the four the alternative scenarios, fiscal capacity investment shocks are added to the simulation. These investment shocks occur randomly over time, are restricted to always be positive and are calibrated to generate an increase in fiscal capacity investment on impact of 1% of either union-wide output or national output, depending on whether the investment is common or country specific.

...while welfare gain can be positive, especially when investment is uniform across countries and raises common capital

Figure 8: Union-wide welfare gain compared to baseline w/o exogenous fiscal capacity investments



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Conclusion

Summary of results

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