Financial Constraints, Cyclical Macroeconomic Policy and Growth

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Monetary Policy under Resource Mobility
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Motivation

- Three important stylized facts on growth:

  - Financial development is positively associated to growth (King and Levine (1993), Rajan and Zingales (1998), etc)

  - Volatility correlates negatively with long run growth (Ramey and Ramey (1995))

  - Financial development dampens the negative correlation between volatility and growth (Aghion et al. (2010))

$\rightarrow$ Question: How can we reduce macroeconomic volatility to foster growth in credit constrained environments?

Our view

- $\rightarrow$ Countercyclical fiscal and monetary policy to circumvent credit market imperfections and thereby help firms maintain their growth-enhancing investments over the cycle.

- $\rightarrow$ While this provides some justification for stimulus packages during recessions, this justification is quite distinct from the argument based on the Keynesian multiplier

- $\rightarrow$ We emphasize long-run growth effects working primarily through the supply side of the economy whereas the adepts of the multiplier emphasize short-run demand effects.

- $\rightarrow$ Unlike the conservatives, we do not advocate tax cuts in recessions but insist that tax revenues should target growth enhancing investments.

Part I: Fiscal Policy

The empirical investigation

- We run the following estimation

  $$Growth = F\left(fiscal\ countercyclicality \times credit\ constraints\right)$$

- We measure growth at the industry level over 1980-2005.

- Fiscal countercyclicality is the extent to which the government has run surpluses in good times and deficits in bad times

- Credit constraints are measured with external financial dependence or asset tangibility for the equivalent sector in the US.

Data

- Industry level data from EU KLEMS, 16 OECD countries plus the US, 45 manufacturing industries. Time span: 1980-2005.

- Financial dependence data from Raddatz (2006) and Rajan and Zingales (1998). Asset tangibility from Braun and Larrain (2005). All are based on Compustat. Data for 1980-1989

- Macro variables from OECD economic outlook. Time span is identical to that of industry level data.

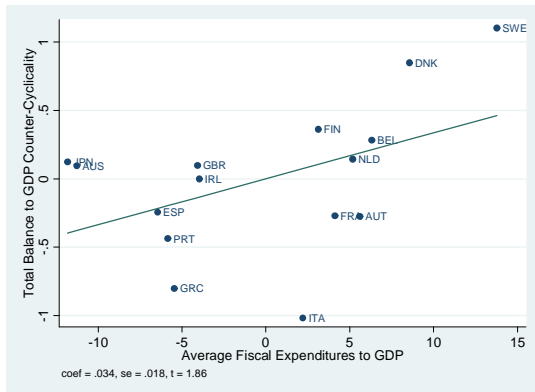# Fiscal balance cyclicality: a snapshot

Primary fiscal balance

Fiscal Policy Counter-Cyclicality Estimates
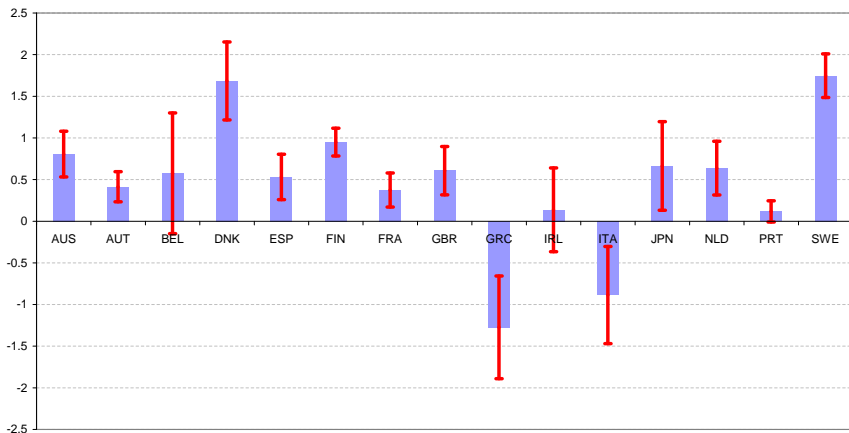
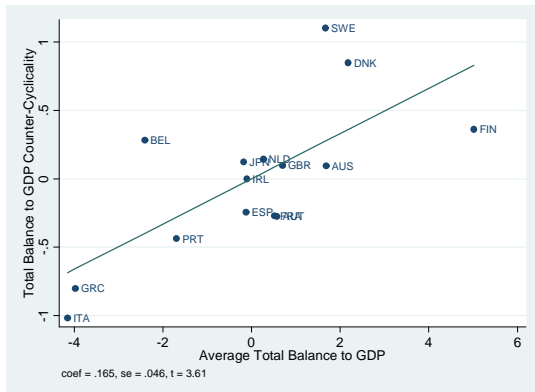Primary Fiscal Balance to GDP sensitivity to output gap

Determinants of fiscal balance cyclicality
Does government size matter?

coef = .034, se = .018, t = 1.86

Determinants of fiscal balance cyclicality

Does fiscal discipline matter?

Fiscal balance cyclicality and labor productivity growth

Dependent variable: Labor Productivity per worker Growth		
	(i)	(ii)
Log of Initial Relative Labor Productivity	**-2.549***	**-2.512***
	(0.512)	*(0.503)*
Interaction (Financial Dependence and Total Fiscal Balance to GDP Counter-Cyclicality)	**5.005***	
	(0.773)	
Interaction (Asset Tangibility and Total Fiscal Balance to GDP Counter-Cyclicality)		**-13.03***
		(4.011)
Observations	523	523
R-squared	0.548	0.538

Economic magnitude
How large is the effect of stabilizing fiscal policy?

- The exercise consists in computing the growth gain/loss stemming from a double change from the first to the third quartile in fiscal policy cyclicality *and* industry characteristic.

Growth gain (in %) from a change in fiscal policy counter-cyclicality and industry characteristics

	Real Value Added Growth		Labour Productivity Growth	
	Financial Dependence	Asset Tangibility	Financial Dependence	Asset Tangibility
Total Fiscal Balance to potential GDP	1.92	2.20	1.45	2.14
Primary Fiscal Balance to potential GDP	1.57	1.93	1.15	1.77

- A similar exercise investigating the effect financial development finds a 1pp growth gain in industry real value added (Rajan and Zingales 1998).

Part II: Monetary Policy

The empirical investigation

- We run the following estimation

  Growth $= F$ (*monetary countercyclicality* $\times$ *financial constraints*)

- We measure growth at the industry level over 1995-2005.

- Monetary policy countercyclicality is the extent to which the real short term interest rate is high in good times and low in bad times.

- Financial constraints are measured either with credit constraints (external financial dependence and asset tangibility) or with liquidity dependence (inventories to sales or labor costs to sales) for the equivalent sector in the US.

Data

- Industry level data from EU KLEMS, 17 OECD countries plus the US, 45 manufacturing industries. Time span: 1995-2005.

- Industry specific characteristics from Raddatz (2006), Rajan and Zingales (1998) and Braun and Larrain (2005). All are based on Compustat. Data for 1980-1989

- Macro variables from OECD economic outlook.

Monetary Policy cyclicality: a snapshot
Real short term interest rate

Monetary Policy Counter-Cyclicality Estimates
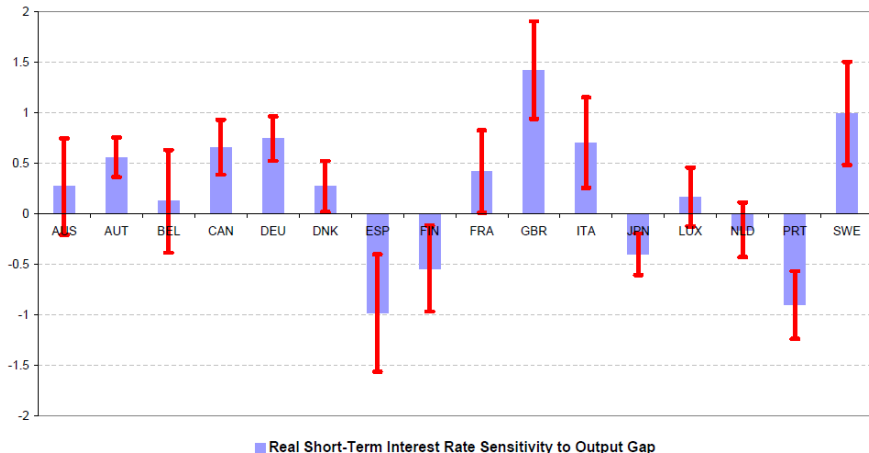
Real Short-Term Interest Rate Sensitivity to Output Gap

Monetary policy cyclicality and labor productivity growth

Dependent variable: Labor Productivity per worker Growth

	(i)	(ii)	(iii)	(iv)
Log of Initial Relative Labor Productivity	**-2.549*****	**-2.512*****	**-3.827*****	**-3.740*****
	(0.512)	*(0.503)*	*(1.029)*	*(1.002)*
Interaction (Financial Dependence and Total Fiscal Balance to GDP Counter-Cyclicality)	**5.005*****			
	(0.773)			
Interaction (Asset Tangibility and Primary Fiscal Balance to GDP Counter-Cyclicality)		**-13.03*****		
		(4.011)		
Interaction (Inventories to Sales and Real Short term Interest Rate Counter-Cyclicality)			**27.45*****	
			(8.804)	
Interaction (Labor Costs to Sales and Real Short term Interest Rate Counter-Cyclicality)				**16.61*****
				(4.29)
Observations	523	523	624	624
R-squared	0.548	0.538	0.368	0.368

Economic magnitude
How large is the effect of stabilizing monetary policy?

- The exercise consists in computing the growth gain/loss stemming from a double change from the first to the third quartile in monetary policy cyclicality *and* industry characteristic.

Labour productivity growth gain (in %) from

a change in monetary policy counter-cyclicality and industry characteristics

Credit Constraints		Liquidity Constraints	
Financial Dependence	Asset Tangibility	Labor Costs to Sales	Inventories to Sales
0.75	**1.85**	**3.10**	**3.60**

- The growth effects of fiscal and monetary policy cyclicality through credit constraints is of comparable magnitude
- The growth effect of monetary policy cyclicality is much larger through liquidity constraints than credit constraints.

The cost of low interest rates in good times

Table 12

Dependent variable: Labor Productivity per hour Growth			(iii)	(iv)
Log of Initial Relative Labor Productivity			**-3.696***** (0.904)	**-3.686***** (0.903)
Interaction (Inventories to Sales and Real Short term Interest Rate Counter-Cyclicality)	Upturn	Low Tech	**4.29** (5.712)	
		High Tech	**11.27*** (6.594)	
	Downturn	Low Tech	**17.82**** (7.936)	
		High Tech	**15.99**** (6.891)	
Interaction (Labor Costs to Sales and Real Short term Interest Rate Counter-Cyclicality)	Upturn	Low Tech		**1.33** (2.465)
		High Tech		**7.827**** (3.824)
	Downturn	Low Tech		**11.16***** (2.806)
		High Tech		**9.558***** (2.711)
Observations			624	624
R-squared			0.367	0.369

Note: The dependent variable is the average annual growth rate in labor productivity per hour for the period 1995-2005 for each industry in each country. Initial Relative Labor Productivity is the ratio of industry labor productivity per hour to total manufacturing labor productivity per hour in 1995. Inventories to Sales is the median ratio of total inventories over annual sales for US firms in the same industry for the period 1980-1989. Labor Costs to Sales is the median ratio of labor costs to shipments for US firms in the same industry for the period 1980-1989. Real Short term Interest Rate Counter-Cyclicality upturn (resp. downturn) is the coefficient of the output gap when Real Short Term Interest Rate is regressed for each country on a constant and the output gap, the output gap being above (resp. below) median The interaction variable is the product of variables in parentheses. The coefficient for the interaction term is estimated separately for high tech and low tech industries. (cf. list of industries in each category in appendix). Standard errors -clustered at the industry level- are in parentheses. All estimations include country and industry dummies. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (resp. **; *).

Conclusion: The State as macroeconomic regulator

- Two dominant views of how to react to the business cycle:
  - Keynesian view (non-discriminatory increase in public spending)
  - Conservative view (tax and spending cuts)

- We propose a Schumpeterian view: countercyclical macroeconomic policies help financially constrained firms maintain growth enhancing investment over the business cycle

  - countercyclical fiscal support to innovative investments
  - countercyclical interest rate policy
  - countercyclical capital requirements?