

Financial Cycles and Fiscal Cycles

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Introduction

- ▶ Fiscal variables and GDP cycle
- ▶ Two-way interactions between financial crises and fiscal crises
 - ▶ Financial crises → Fiscal Weakness
 - ▶ Weak Sovereign → Financial Instability
- ▶ Also, financial cyclicalities and fiscal cyclicalities in “normal” times

Financial Cycles and Fiscal Cycles

- ▶ Financial shocks induce fiscal volatility
- ▶ Optimal fiscal management
 - ▶ Measures of “structural” fiscal positions
- ▶ Risk of fiscal procyclicality
 - ▶ Revenue windfalls prompt spending booms or tax cuts

Mechanisms

- ▶ Consider two types of financial shocks
 - ▶ net capital flows (current account)
 - ▶ domestic credit growth
- ▶ Mechanical effects of financial shocks on tax base
 - ▶ Asset Prices: CGT, transactions taxes, wealth effects
 - ▶ Sectoral composition of activity
 - ▶ Inflation, real exchange rate: non-indexed tax systems
- ▶ Discretionary fiscal responses (political economy factors)
 - ▶ Expenditure increases; tax cuts

Related Work

- ▶ Asset prices and fiscal cycle (Eschenbach and Schuknecht 2004, Girouard and Price 2004)
- ▶ Current account and fiscal cycle (Dobrescu and Salman 2011, Lendvai et al 2011)
 - ▶ main focus on improving cyclical-adjustment technique (to capture mechanical impact of current account on indirect tax revenues)
- ▶ Here, look jointly at current account and domestic credit growth
- ▶ Bénétrix and Lane (2010)
 - ▶ Pre-crisis credit growth and current account balance significant in explaining cross-country variation in fiscal performance in 2008-2009

What We Do

- ▶ Panel of 52 countries, 1980-2007
- ▶ Investigate co-movement between financial cycle and fiscal cycle
- ▶ Fixed-effects estimation
- ▶ OLS, IV

Basic Specification

$$FISCAL_{it} = \alpha_i + \beta CYCLE_{it} + \gamma Z_{it} + \lambda DEBT_{it-1} + \rho FISCAL_{it-1} + \varepsilon_{it}.$$

- ▶ *FISCAL* - typically, fiscal balance as a ratio to GDP
- ▶ *CYCLE* - GDP cycle (deviation from trend)
- ▶ *Z* - financial factors (current account, domestic credit growth)
- ▶ *DEBT* - lagged debt ratio
- ▶ *FISCAL*_{*t*-1} - lagged dependent variable

Fiscal Variables

- ▶ BAL/GDP - allow both mechanical and discretionary effects
- ▶ Real indices for BAL , REV , EXP
- ▶ Cyclically-adjusted balance
 - ▶ Ex-post measure
 - ▶ Cycle measures quite uncertain
 - ▶ (Real time measures)

IV Estimation

- ▶ Endogeneity of output cycle
 - ▶ Instrument: trade-weighted average of ROW output cycle
 - ▶ [Standard in fiscal cycle literature]
- ▶ Endogeneity of current account
 - ▶ Oil price shocks (oil trade balance)
- ▶ Table A1: diagnostic statistics on validity/quality/strength of instruments

General government balance. Full sample.

BAL(t)	OLS				IV			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
GDP(t)	0.10*** (0.03)	0.06** (0.03)	0.09*** (0.03)		0.18*** (0.05)	0.10** (0.04)	0.17*** (0.05)	
ABS(t)				0.03 (0.03)				0.09** (0.03)
CA(t)	0.09* (0.05)		0.09** (0.04)		0.26*** (0.05)		0.24*** (0.05)	
DCRE(t,t-1)		0.02 (0.02)	0.03* (0.02)	0.02 (0.02)		0.02* (0.01)	0.04*** (0.01)	0.02 (0.01)
DEBT(t-1)	0.02** (0.01)	0.02*** (0.01)	0.02*** (0.01)	0.02*** (0.01)	0.01*** (0.00)	0.02*** (0.00)	0.02*** (0.00)	0.03*** (0.00)
BAL(t-1)	0.71*** (0.06)	0.77*** (0.04)	0.74*** (0.03)	0.78*** (0.04)	0.67*** (0.03)	0.76*** (0.02)	0.70*** (0.03)	0.76*** (0.02)
CONS.	-1.32*** (0.37)	-1.58*** (0.35)	-1.52*** (0.35)	-1.54*** (0.34)	-1.17*** (0.26)	-1.67*** (0.24)	-1.43*** (0.25)	-1.73*** (0.25)
R^2	0.60	0.63	0.64	0.63			0.000	
Sig. CA&DCRE			0.024					
Obs.	968	952	952	952	950	952	934	952
Countries	52	51	51	51	52	51	51	51

General government balance. Advanced countries.

BAL(t)	OLS				IV			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
GDP(t)	0.14** (0.06)	0.11** (0.04)	0.14** (0.05)		0.14* (0.08)	0.05 (0.07)	0.12 (0.08)	
ABS(t)				0.04 (0.03)				0.03 (0.06)
CA(t)	0.08 (0.07)		0.10 (0.06)		0.23*** (0.06)		0.24*** (0.06)	
DCRE(t,t-1)		0.01 (0.02)	0.03 (0.02)	0.02 (0.02)		0.02 (0.01)	0.04*** (0.01)	0.02 (0.01)
DEBT(t-1)	0.02** (0.01)	0.03*** (0.01)	0.02** (0.01)	0.03*** (0.01)	0.02*** (0.01)	0.03*** (0.00)	0.02*** (0.00)	0.03*** (0.00)
BAL(t-1)	0.83*** (0.03)	0.84*** (0.03)	0.80*** (0.03)	0.85*** (0.03)	0.80*** (0.04)	0.85*** (0.03)	0.78*** (0.04)	0.85*** (0.03)
CONS.	-1.61*** (0.52)	-1.86*** (0.49)	-1.77*** (0.49)	-1.79*** (0.47)	-1.26*** (0.31)	-1.80*** (0.29)	-1.52*** (0.30)	-1.78*** (0.29)
R^2	0.73	0.73	0.74	0.72			0.000	
Sig. CA&DCRE			0.070					
Obs.	574	573	573	573	556	573	555	573
Countries	22	22	22	22	22	22	22	22

General government balance. Emerging markets.

BAL(t)	OLS				IV			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
GDP(t)	0.08*** (0.02)	0.05 (0.03)	0.07*** (0.02)		0.22*** (0.06)	0.13** (0.05)	0.20*** (0.06)	
ABS(t)				0.02 (0.04)				0.13*** (0.04)
CA(t)	0.08 (0.07)		0.06 (0.06)		0.31*** (0.08)		0.26*** (0.08)	
DCRE(t,t-1)		0.02 (0.04)	0.04 (0.04)	0.03 (0.04)		0.00 (0.03)	0.06* (0.03)	0.00 (0.03)
DEBT(t-1)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.02** (0.01)	0.02** (0.01)	0.03*** (0.01)
BAL(t-1)	0.50*** (0.11)	0.60*** (0.08)	0.59*** (0.08)	0.61*** (0.08)	0.47*** (0.04)	0.57*** (0.05)	0.53*** (0.05)	0.58*** (0.05)
CONS.	-0.74 (0.54)	-1.03** (0.50)	-1.03* (0.51)	-1.00* (0.49)	-0.90** (0.44)	-1.31*** (0.41)	-1.29*** (0.43)	-1.62*** (0.47)
R^2	0.39	0.43	0.43	0.42			0.005	
Sig. CA&DCRE			0.541					
Obs.	394	379	379	379	394	379	379	379
Countries	30	29	29	29	30	29	29	29

Alternative fiscal measures. Advanced countries.

	BALANCE		REVENUES		EXPENDITURE	
	OLS	IV	OLS	IV	OLS	IV
	(1)	(2)	(3)	(4)	(5)	(6)
GDP(t)	0.15** (0.06)	0.16* (0.09)	0.53*** (0.10)	0.45*** (0.10)	0.06 (0.09)	-0.09 (0.11)
CA(t)	0.10 (0.08)	0.27*** (0.07)	-0.07* (0.04)	-0.00 (0.07)	-0.13*** (0.04)	-0.09 (0.08)
DCRE(t,t-1)	0.03 (0.02)	0.05*** (0.01)	0.01 (0.02)	0.02 (0.01)	-0.01 (0.01)	0.01 (0.02)
DEBT(t-1)	0.02* (0.01)	0.01 (0.01)	0.02*** (0.00)	0.02*** (0.01)	-0.02*** (0.01)	-0.02*** (0.01)
FISCAL(t-1)	0.78*** (0.03)	0.74*** (0.04)	0.52*** (0.05)	0.56*** (0.04)	0.61*** (0.04)	0.60*** (0.04)
CONS.	1.01*** (0.15)	1.21*** (0.20)	-0.01*** (0.00)	-0.01*** (0.00)	0.01*** (0.00)	0.02*** (0.00)
R^2	0.68		0.61		0.44	
Sig. CA&DCRE	0.087	0.000	0.151	0.344	0.001	0.381
Obs.	566	548	566	548	566	548
Countries	22	22	22	22	22	22

Fiscal Cycle and Institutional Change

- ▶ Fiscal reforms after Maastricht Treaty; impact of EMU
- ▶ Galí and Perotti (2003), Fatás and Mihov (2010), Bénétrix and Lane (2010)

$$FISCAL_{it} = \alpha_i + \alpha_2 MT_{it} + \alpha_3 * EMU_{it} + \beta_1 X_{it} + \beta_2 (MT_{it} * X_{it}) + \beta_3 (EMU_{it} * X_{it}) + \varepsilon_{it}.$$

- ▶ MT_{it} : 1 for EU members 1992-2007
- ▶ EMU_{it} : 1 for EMU members 1999-2007

Maastricht Treaty and EMU effects. General government balance.

	GGBAL/GDP (OLS)				GGBAL/GDP (IV)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
GDP(t)	0.14** (0.06)	0.14** (0.06)	0.14** (0.06)	0.14** (0.07)	0.02 (0.11)	0.05 (0.11)	0.04 (0.11)	0.06 (0.11)
CA(t)	0.11 (0.07)	0.11 (0.08)	0.12 (0.07)	0.11 (0.08)	0.27*** (0.07)	0.30*** (0.07)	0.27*** (0.07)	0.30*** (0.07)
DCRE(t,t-1)	0.02 (0.02)	0.02 (0.02)	0.02 (0.02)	0.02 (0.02)	0.04*** (0.01)	0.03** (0.01)	0.02* (0.01)	0.02* (0.01)
DEBT(t-1)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.02 (0.01)	0.01 (0.01)	0.00 (0.01)	0.01 (0.01)	0.01 (0.01)
BAL(t-1)	0.78*** (0.04)	0.78*** (0.04)	0.77*** (0.04)	0.78*** (0.04)	0.76*** (0.05)	0.73*** (0.05)	0.75*** (0.05)	0.73*** (0.05)
MT	-1.08* (0.54)	-1.08* (0.53)	-1.32** (0.56)	-1.34** (0.55)	-1.41** (0.59)	-1.38** (0.59)	-1.78*** (0.60)	-1.60*** (0.60)
MTxGDP(t)	0.17* (0.09)	0.17* (0.09)	0.17* (0.09)	0.18* (0.09)	0.62*** (0.20)	0.58*** (0.20)	0.63*** (0.19)	0.59*** (0.19)
MTxDEBT(t-1)	0.01* (0.01)	0.01* (0.01)	0.02** (0.01)	0.02** (0.01)	0.01 (0.01)	0.01 (0.01)	0.02** (0.01)	0.02** (0.01)
MTxrBAL(t-1)	-0.10 (0.07)	-0.10 (0.07)	-0.10 (0.08)	-0.10 (0.07)	-0.26*** (0.08)	-0.21*** (0.08)	-0.25*** (0.08)	-0.20*** (0.08)
EMU	0.71** (0.31)	0.70** (0.31)	0.38 (0.35)	0.36 (0.36)	0.88** (0.35)	0.77** (0.35)	0.39 (0.37)	0.51 (0.37)
EMUxGDP(t)	-0.25*** (0.09)	-0.25*** (0.09)	-0.23** (0.09)	-0.23** (0.09)	-0.23 (0.23)	-0.26 (0.23)	-0.34 (0.22)	-0.32 (0.23)
EMUxCA(t)		-0.02 (0.08)		0.03 (0.07)		-0.22** (0.10)		-0.19* (0.11)
EMUxDCRE(t,t-1)			0.08 (0.05)	0.08* (0.04)			0.12*** (0.04)	0.07 (0.04)
CONS.	-1.46*** (0.45)	-1.45*** (0.46)	-1.48*** (0.47)	-1.50*** (0.49)	-1.11*** (0.34)	-0.99*** (0.35)	-1.13*** (0.34)	-1.02*** (0.35)
<i>R</i> ²	0.74	0.75	0.75	0.75				
Sig. CA&DCRE	0.059	0.045	0.067	0.000	0.000	0.001	0.000	0.000
Obs.	573	573	573	573	555	555	555	555
Countries	22	22	22	22	22	22	22	22

Maastricht Treaty and EMU effects. CA general government balance.

	CAGGBAL/GDP (OLS)				CAGGBAL/GDP (IV)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
GDP(t)	0.01 (0.04)	0.01 (0.04)	0.01 (0.04)	0.01 (0.04)	-0.13 (0.08)	-0.13* (0.08)	-0.12 (0.08)	-0.13 (0.08)
CA(t)	0.04 (0.03)	0.03 (0.04)	0.04 (0.04)	0.03 (0.04)	0.06 (0.05)	0.05 (0.06)	0.06 (0.05)	0.05 (0.06)
DCRE(t,t-1)	0.02 (0.01)	0.02* (0.01)	0.02 (0.01)	0.02 (0.01)	0.02** (0.01)	0.02** (0.01)	0.02* (0.01)	0.02* (0.01)
DEBT(t-1)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.00)	0.01 (0.01)	0.01 (0.00)	0.01 (0.01)
BAL(t-1)	0.79*** (0.04)	0.80*** (0.04)	0.79*** (0.04)	0.79*** (0.04)	0.80*** (0.04)	0.81*** (0.04)	0.80*** (0.04)	0.81*** (0.04)
MT	-1.05** (0.44)	-1.05** (0.46)	-1.15** (0.43)	-1.22** (0.45)	-1.16** (0.48)	-1.17** (0.48)	-1.24** (0.50)	-1.30*** (0.50)
MTxGDP(t)	0.13* (0.07)	0.14* (0.07)	0.13* (0.07)	0.14** (0.07)	0.37*** (0.14)	0.37*** (0.14)	0.37*** (0.14)	0.38*** (0.14)
MTxDEBT(t-1)	0.02** (0.01)	0.02** (0.01)	0.02** (0.01)	0.02** (0.01)	0.02** (0.01)	0.02** (0.01)	0.02** (0.01)	0.02** (0.01)
MTxrBAL(t-1)	-0.10 (0.07)	-0.11 (0.07)	-0.09 (0.07)	-0.11 (0.07)	-0.14** (0.06)	-0.15** (0.06)	-0.14** (0.06)	-0.15** (0.06)
EMU	0.41 (0.26)	0.43* (0.23)	0.28 (0.30)	0.22 (0.30)	0.42 (0.29)	0.44 (0.29)	0.32 (0.31)	0.29 (0.31)
EMUxGDP(t)	-0.14* (0.07)	-0.14* (0.07)	-0.13 (0.08)	-0.13 (0.08)	-0.26 (0.18)	-0.25 (0.18)	-0.29 (0.18)	-0.29 (0.18)
EMUxCA(t)		0.06 (0.05)		0.09** (0.04)		0.04 (0.08)		0.05 (0.09)
EMUxDCRE(t,t-1)			0.03 (0.03)	0.05 (0.03)			0.03 (0.03)	0.04 (0.04)
CONS.	-1.18*** (0.29)	-1.21*** (0.29)	-1.19*** (0.30)	-1.24*** (0.31)	-1.09*** (0.27)	-1.11*** (0.28)	-1.10*** (0.27)	-1.13*** (0.28)
<i>R</i> ²	0.73	0.73	0.73	0.73				
Sig. CA&DCRE	0.056	0.039	0.072	0.003	0.102	0.147	0.164	0.178
Obs.	565	565	565	565	547	547	547	547
Countries	22	22	22	22	22	22	22	22

Empirical Summary

- ▶ Current account deficits generate revenue windfalls but also induce greater public spending (voracity effect) - destabilising pattern
- ▶ Credit cycle affects conventionally-measured “structural” fiscal balances - budgetary management issues

Policy Issues

- ▶ Measurement of fiscal cycle: role of financial factors
- ▶ Design of fiscal rules
- ▶ Independent fiscal council?
- ▶ “Leaning against the wind” fiscal stance (current account; credit growth) - Summers (1988), Blanchard (2007)

Directions for Future Research

- ▶ Non-linearities: large financial boom-bust cycles
- ▶ Differences across institutional settings?
- ▶ Dynamic impact of financial shocks on fiscal behaviour (VAR model)
- ▶ Understanding the mechanisms
 - ▶ “Automatic” impact on tax revenues
 - ▶ Discretionary expenditure response
 - ▶ Discretionary tax response

Conclusions

- ▶ Evidence that financial cycle affects the fiscal cycle
 - ▶ Current account deficits fiscally destabilising
 - ▶ Credit booms temporarily improve fiscal balance
 - ▶ Discretionary responses important
- ▶ Policy Relevance
 - ▶ Fiscal management, fiscal surveillance
 - ▶ Design of fiscal rules
 - ▶ Scope of independent fiscal councils