The Political Economy of Fiscal Procyclicality

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The Rational Conduct of Fiscal Policy

- Is there any economic idea about which these two gentlemen would wholeheartedly agree?

The economic logic of countercyclicality

- Neoclassical theory predicts either countercyclical or (at least) acyclical fiscal policy
  - Shocks to the tax base should be offset by adjustments to fiscal balances, since constant expected tax rates enable intertemporal smoothing
  - Even without shocks, Ricardian equivalence suggests public expenditure would be offset by private demand
- Keynesian theory also implies countercyclical fiscal policy
  - Optimal fiscal policy entails return of post-shock economies to equilibrium via automatic stabilizers
  - Slow adjustment may be further facilitated by discretionary countercyclical expenditures

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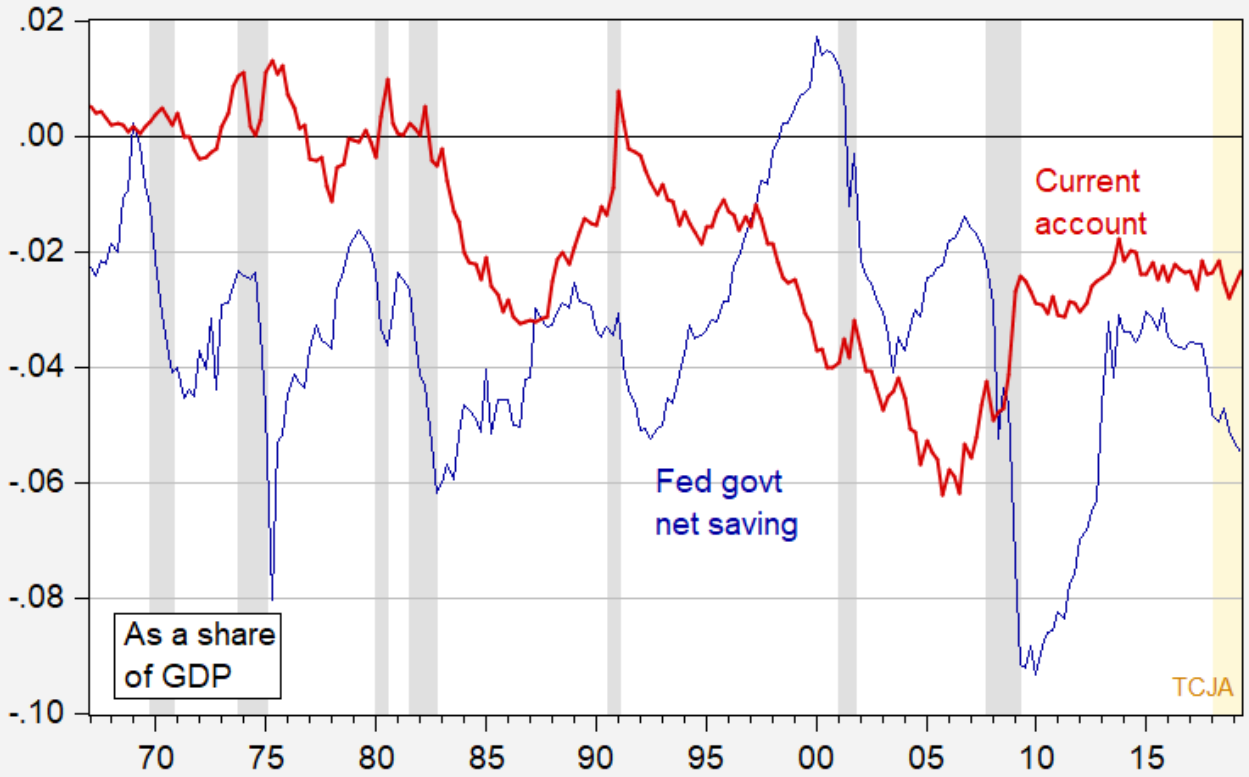
The empirical norm of procyclicality

- Yet we still routinely observe procyclical policy, *even in advanced economies*



Two schools of thought to explain procyclicality

- Constraints to financial access (e.g. Aizenman *et al.* 2000; Cuadra *et al.* 2010)
  - Credit frictions or incomplete markets mean inability to borrow during downturn to finance stimulus
  - During booms, governments exploit improved financial access leads to more borrowing than otherwise
- **BUT** why don't debtor government self-insure, or creditor government fund recession-busting policy that would ensure repayment?
- Political economy distortions (e.g. Ilzetski 2011; Alesina *et al.* 2008)
  - Sociopolitical polarization promotes expenditure excess to entice voters
  - Common-pool problem incites special interest rent-seeking of fiscal transfers

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Distinguishing between competing explanations

- Existing empirical approaches suffer from several shortcomings
  1. Discrete partitions of data to yield correlations over a given time period
     - Partitions are arbitrary and results are sensitive to sampling frame
  2. Static coefficient estimates obtained from regressions of policy on output gap
     - Endogeneity from reverse causality, unobserved heterogeneity, or measurement error
     - Imprecise *correlation* estimates since heteroskedasticity due to business-cycle volatility biases second moments
  3. Most papers do not *simultaneously* assess relative contributions of political economy and financial access to procyclicality

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Using dynamic conditional correlations to evaluate procyclicality

- Dynamic conditional correlations (DCC) offer several advances
  - Dynamic estimates allow evolution of cyclicality, rather than a static snapshot that may well have changed over time (Frankel *et al.* 2013)
  - Conditionality allows us to sidestep endogeneity question by asking whether correlations are significantly affected by politics or finance, rather than focus on whether these *cause* procyclicality

Does political economy or financial access better explain procyclicality?

- Apply two-step approach to evaluate contributors to procyclicality
  1. Extract dynamic conditional correlations using a DCC-GARCH model
  2. Analyze contribution of polity and debt in a panel with two-dimensional FEs and multiway clustering

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Procyclicality shows up routinely in the data

- Old political business cycles literature suggests these exist (Andrikopoulos *et al.* 2004; Castro & Martins 2018; Drazen 2000)
  - BUT incomplete: business cycles usually less (more) frequent than elections in advanced (developing) economies
- Empirical work that assesses procyclicality directly verify its prevalence
  - Pervasive in developing economies (Alesina *et al.* 2008; Frankel *et al.* 2013)...
  - ...though not uncommon in advanced economies either (Gali *et al.* 2003; Lane 2003)
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Procyclicality appears to be driven by *both* finance and politics

- Financial access is often an important channel...
  - Procyclicality of *both* fiscal policy and capital inflows (Kaminsky *et al.* 2005)
  - More indebted countries spend more in good times and *vice versa* (Aizenman *et al.* 2019)
- ...but so is political economy
  - Political competition is associated with procyclicality (Lane 2003)
  - Procyclicality is exacerbated by corruption (Alesina *et al.* 2008)
  - Generally, institutional quality is important (Calderon *et al.* 2016)
- **BUT** which is more relevant?

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Unconditional measures of procyclicality

- Unconditional correlation coefficient

$$\rho^{u}_{i,t,t+n} = \frac{\text{cov}\left(G_i, Y_i\right)}{\sqrt{\sigma^2_{G_i}\sigma^2_{Y_i}}}$$

  - Biased with heteroskedasticity (Boyer *et al.* 1997)
- Rolling (regression) correlation coefficient

$$G_{i,t} = \alpha_i + \rho^{r}_{i,t,t+n} Y_{i,t} + \mathbf{X}'_{i,t}\boldsymbol{\beta}_i + \epsilon_{i,t}$$

  - Obtained from regression using overlapping subsamples...
  - ...or applying moving windows to the static correlation
  - Biased due to heteroskedasticity and serial correlation (sans adjustment)

Conditional measures of procyclicality

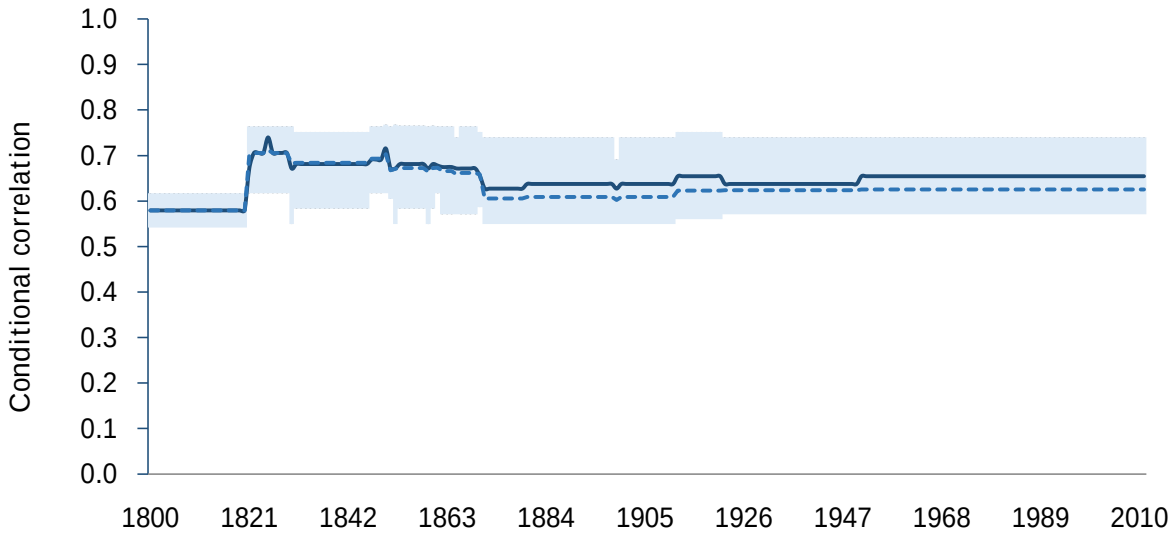
- DCC-GARCH model

$$\mathbf{Z}_{i,t} = \mathbf{X}'_{i,t}\boldsymbol{\Gamma} + \boldsymbol{\epsilon}_{i,t},$$
$$\boldsymbol{\epsilon}_{i,t} = \boldsymbol{\eta}_{i,t}^{1/2}\boldsymbol{\nu}_{i,t},$$
$$\boldsymbol{\eta}_{i,t} = \boldsymbol{\delta}_{i,t}^{1/2}\boldsymbol{\rho}_{i,t}^{c}\boldsymbol{\delta}_{i,t}^{1/2},$$
$$\boldsymbol{\rho}_{i,t}^{c} = \text{diag}\left(\boldsymbol{\theta}_{i,t}\right)^{-1/2}\boldsymbol{\theta}_{i,t}\,\text{diag}\left(\boldsymbol{\theta}_{i,t}\right)^{-1/2},$$
$$\boldsymbol{\theta}_{i,t} = \left(1-\lambda_1-\lambda_2\right)\boldsymbol{\rho}^{c} + \lambda_1\tilde{\boldsymbol{\epsilon}}_{i,t-1}\tilde{\boldsymbol{\epsilon}}'_{i,t-1} + \lambda_2\boldsymbol{\theta}_{i,t-1},$$

  - Static conditional (quasi)correlations recoverable from model
  - Dynamic conditional correlations can also be obtained from fitted model

On average, advanced and emerging economies tend to be procyclical

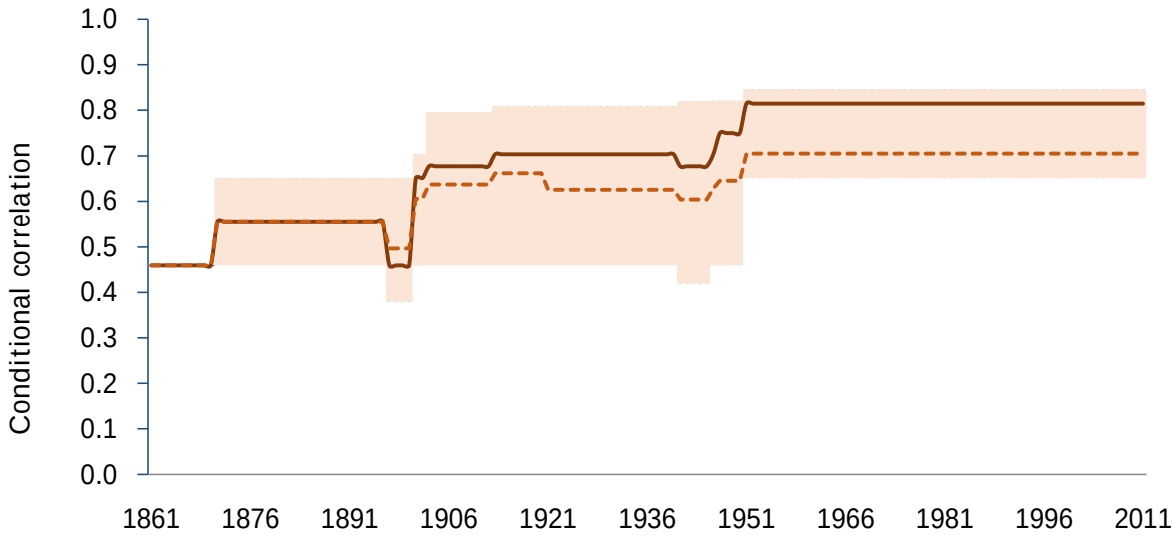
- Advanced economies exhibit more stability but are nevertheless procyclical



Source: Author's calculations.
Notes: Shaded area represents the upper (75th) and lower (25th) percentile, and solid (dashed) line represents the median (mean), in the distribution of the conditional correlations between primary expenditure and GDP growth, for any given year.

On average, advanced and emerging economies tend to be procyclical

- Developing economies are *even* more procyclical and have become more so over time



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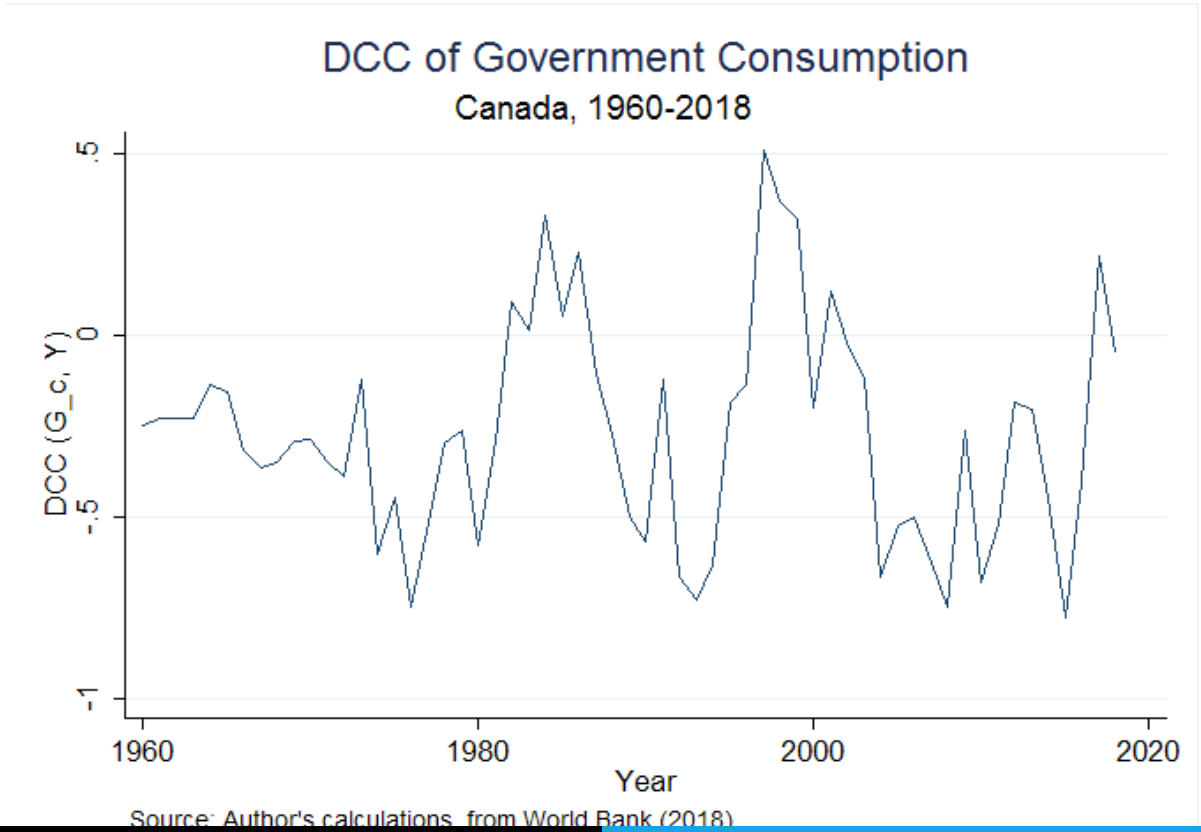
But distinct patterns are difficult to pin down at the country level

- Advanced economies can occasionally be procyclical. . .



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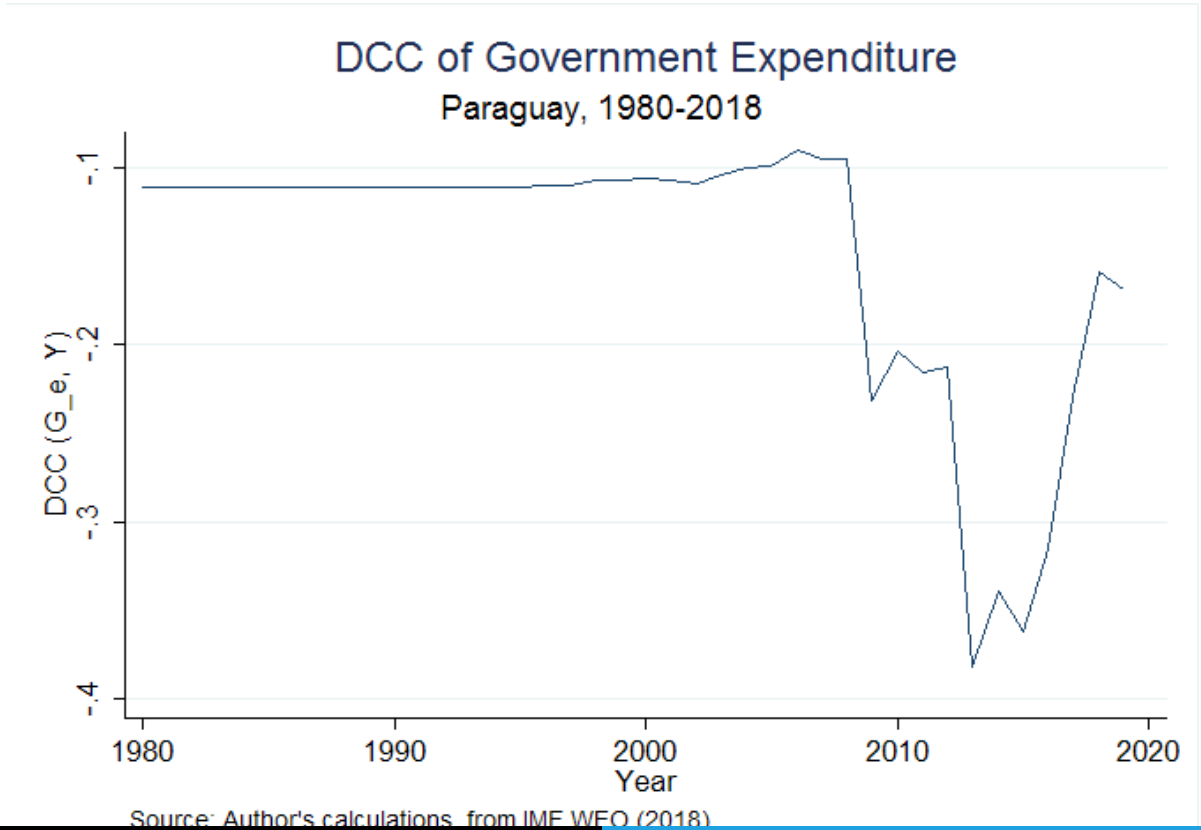
- . . . while developing economies can also be countercyclical



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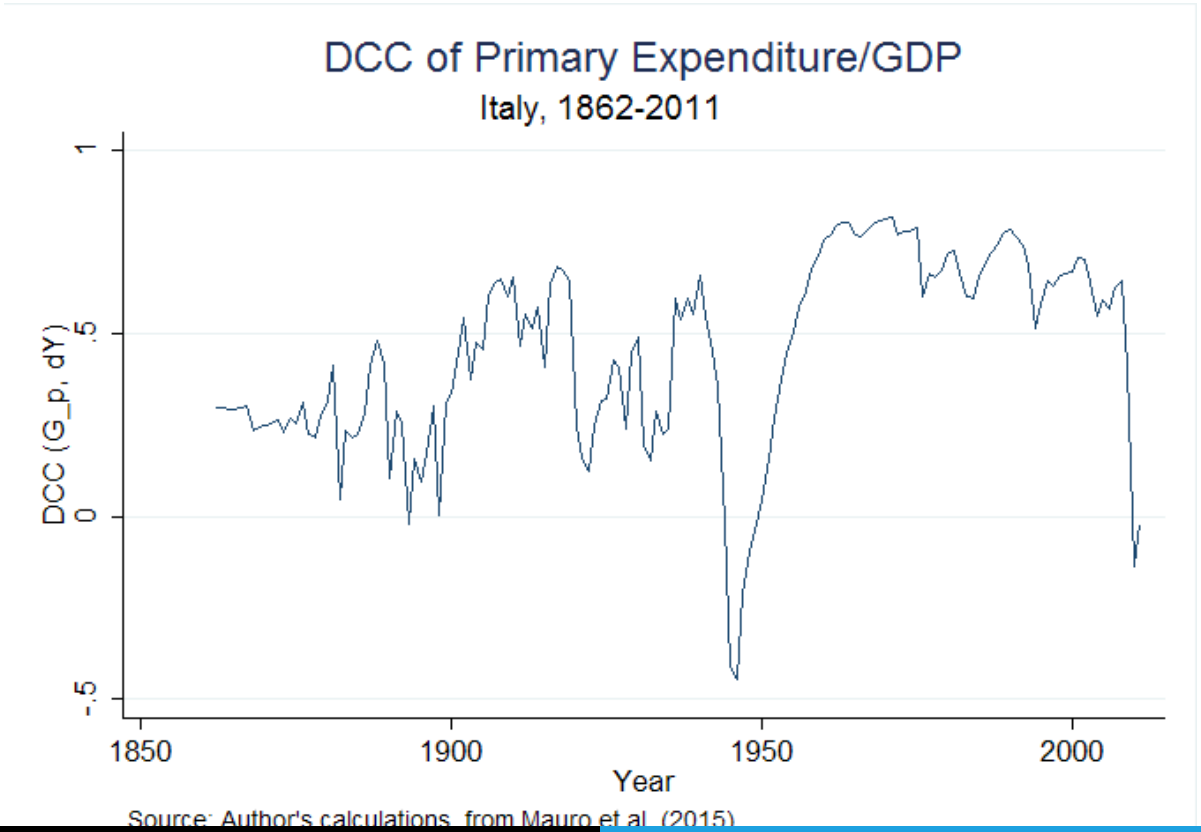
- Over long periods, countries can exhibit phases. . .



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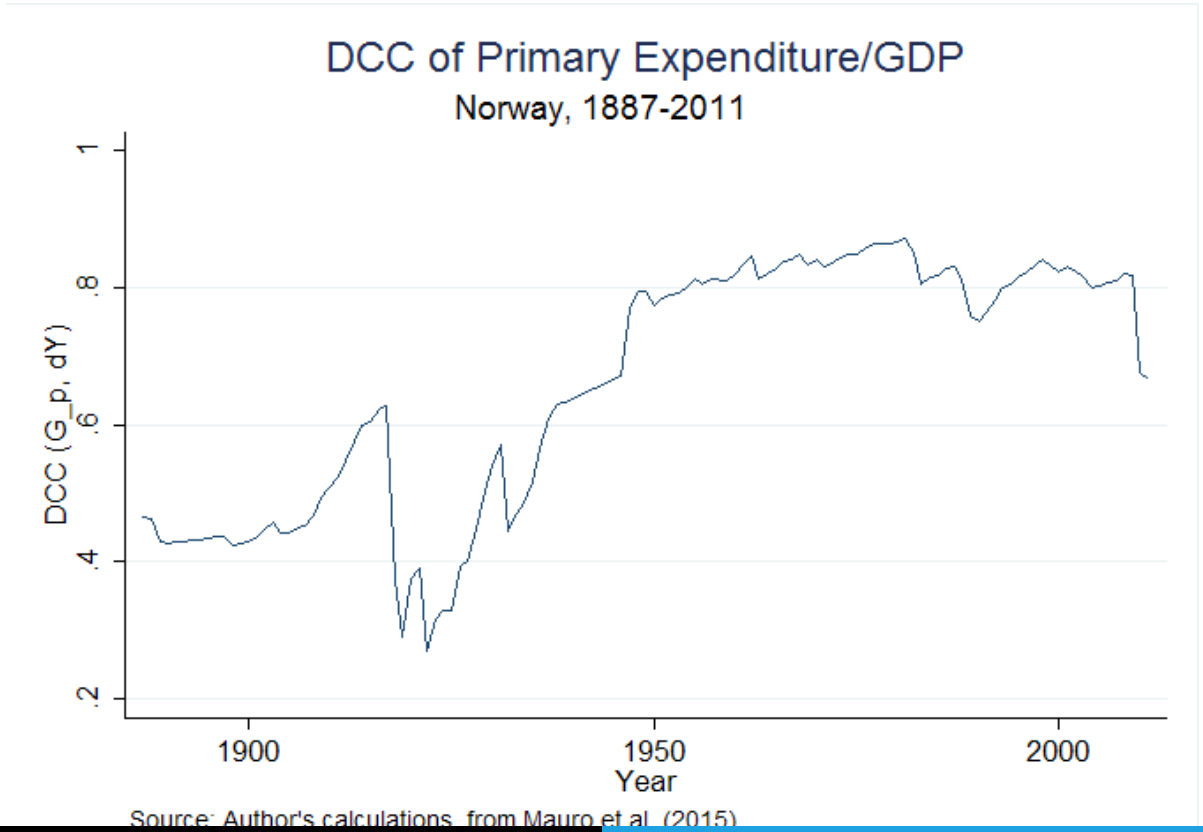
- . . . as well as trends



Estimation and methodology

- Two-dimensional FE with multiway clustering

$$\rho_{i,t}^{m} = \chi_0 + \chi_t + \chi_i + \mathbf{W}'\boldsymbol{\chi} + \chi_P PolEc_{i,t-1} + \chi_F FinAcc_{i,t-1} + \varepsilon_{i,t}, \qquad m \in \{u, r, c, d\}$$

  - Estimates from cross-section (ρ^u, ρ^c) or panel (ρ^d)
  - Consider three alternative government spending measures
    - Government consumption (G_c)
    - Government expenditure (G_e)
    - Primary expenditure share of GDP (G_p)

Data and sources

- Fiscal and macro data from three main sources
  - World Development Indicators
  - World Economic Outlook
  - Mauro *et al.* fiscal prudence (2015) dataset
- Political Economy: Polity2 (Marshall *et al.* 2002), Democracy, Corruption
- Financial Access: Public debt/GDP (Abbas *et al.* 2011), Debt/Revenue, Private Credit

A cross-sectional benchmark

	Unconditional					
	G_c		G_e		G_p	
	(C1)	**(C2)**	**(C3)**	**(C4)**	**(C5)**	**(C6)**
Polity	-0.041	-0.005	-0.043	-0.031	-0.012	0.003
	(0.013)***	(0.012)	(0.025)*	(0.013)**	(0.012)	(0.020)
Debt	-0.143	-0.028	0.035	0.013	-0.049	-0.093
	(0.046)***	(0.028)	(0.066)	(0.029)	(0.029)*	(0.046)**
	Conditional					
	G_c		G_e		G_p	
	(C7)	**(C8)**	**(C9)**	**(C10)**	**(C11)**	**(C12)**
Polity	-0.045	-0.041	-0.008	-0.039	-0.013	-0.024
	(0.022)**	(0.034)	(0.028)	(0.041)	(0.010)	(0.016)
Debt	-0.075	-0.010	0.066	0.061	0.023	0.031
	(0.068)	(0.054)	(0.077)	(0.065)	(0.028)	(0.039)

- Neither political economy nor financial access appear to be important
- When coefficients are significant, signs are inconsistent with theory and intuition

Panel regressions with dynamic correlations

	G_c			G_e			G_p		
	(P1)	(P2)	(P3)	(P4)	(P5)	(P6)	(P7)	(P8)	(P9)
Polity	0.011	-0.001	0.009	0.010	0.016	0.016	0.025	0.010	0.018
	(0.007)	(0.007)	(0.009)	(0.007)	(0.008)**	(0.009)*	(0.005)***	(0.005)*	(0.010)*
Debt	0.042	0.050	0.021	-0.008	-0.016	-0.029	-0.046	-0.034	-0.015
	(0.029)	(0.019)**	(0.040)	(0.024)	(0.028)	(0.031)	(0.018)**	(0.011)***	(0.037)
Trade			-0.013			-0.006			-0.016
balance			(0.009)			(0.013)			(0.011)
Δ money			0.022			-0.026			-0.010
supply			(0.060)			(0.096)			(0.065)
Δ exchange			0.000			0.028			-0.004
rate			(0.000)			(0.011)**			(0.002)**
Fixed effects:									
Time?	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Country?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

- Political economy now appears to matter relatively more than financial access
- Switch in signs for the debt constraint could imply countercyclical public investment
- Placing greater weight on time-series methods implies less diversified sample (29–44 Adv/Dev)

Endogeneity concerns

- DCC-GARCH and panel FEs account for measurement error and unobserved heterogeneity, not reverse causality
  - Lagged *PolEc* and *FinAcc* proxies should alleviate immediate concerns about simultaneity
  - Slow-evolving nature of both variables (stocks not flows) also limits reverse causality
- IV techniques are one potential strategy
  - Even if able to find instruments that satisfy exclusion restriction, these are generally not long-dated
- Sidestep problem by asking whether politics or finance affects the variance-covariance matrix of errors
  - Ask how correlations change after including our variables of interest directly into multivariate GARCH
  - Calculate ρ^d with and without polity/debt in specification

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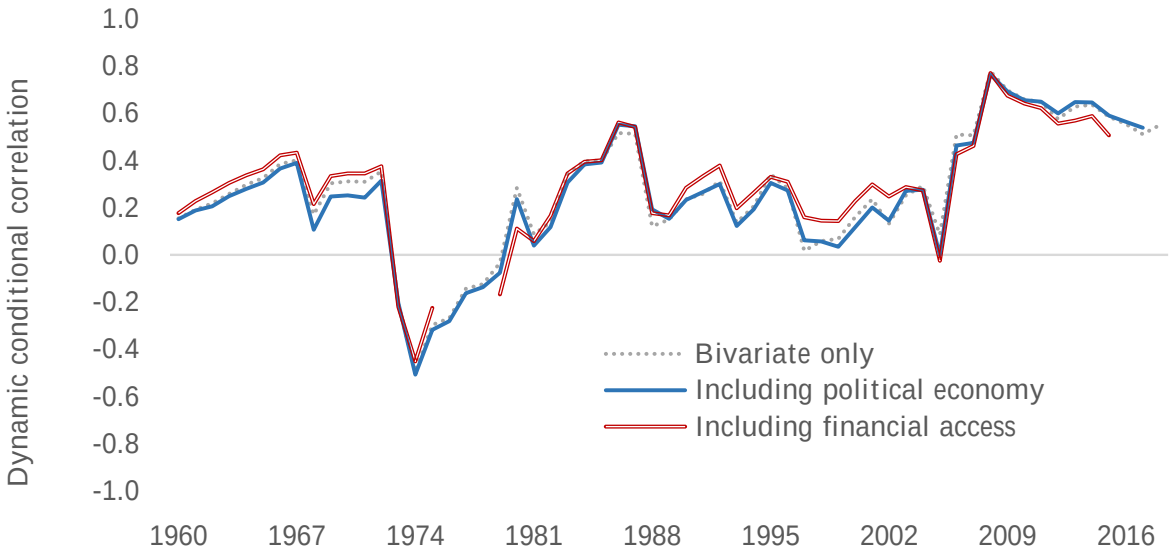
Comparing deviations in conditional correlations

	Political economy					
	G_c		G_e		G_p	
	Diff.	Sig. (%)	Diff.	Sig. (%)	Diff.	Sig. (%)
All	-0.008	59	-0.028	57	-0.380	90
Advanced	-0.013	60	-0.016	60	-0.467	88
Developing	-0.002	58	-0.039	50	-0.292	100
	Financial access					
	G_c		G_e		G_p	
	Diff.	Sig. (%)	Diff.	Sig. (%)	Diff.	Sig. (%)
All	-0.038	59	-0.057	29	-0.441	100
Advanced	-0.068	50	0.022	40	-0.352	100
Developing	-0.009	67	-0.136	0	-0.529	100

- Including polity/debt often results in significant changes in DCCs
- Overall, political economy appears to matter more than financial access
- Financial access drive government consumption procyclicality in developing countries, while political economy drives government expenditure procyclicality

A multivariate model with polity and debt can alter correlations!

- DCC for Greece with little separation after including polity/debt



Source: Author's calculations.
Notes: DCC computed from predicted in-sample conditional variance-covariance matrix for bivariate GARCH of cyclical components of real government consumption and GDP, or multivatiate GARCH further including either polity or debt.

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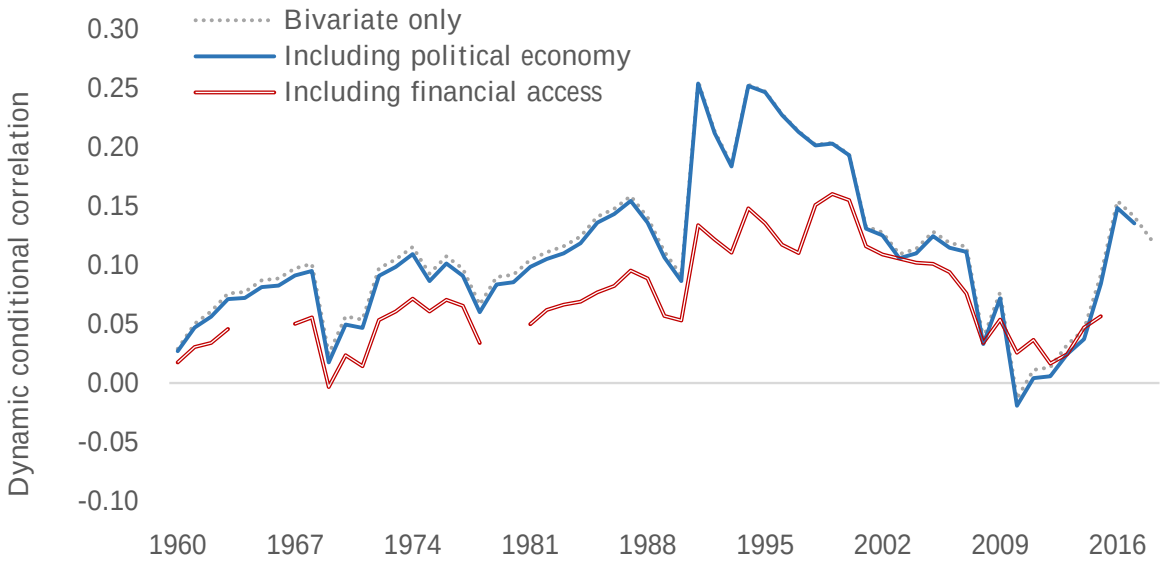
- Separation of DCC for Finland when financial access included



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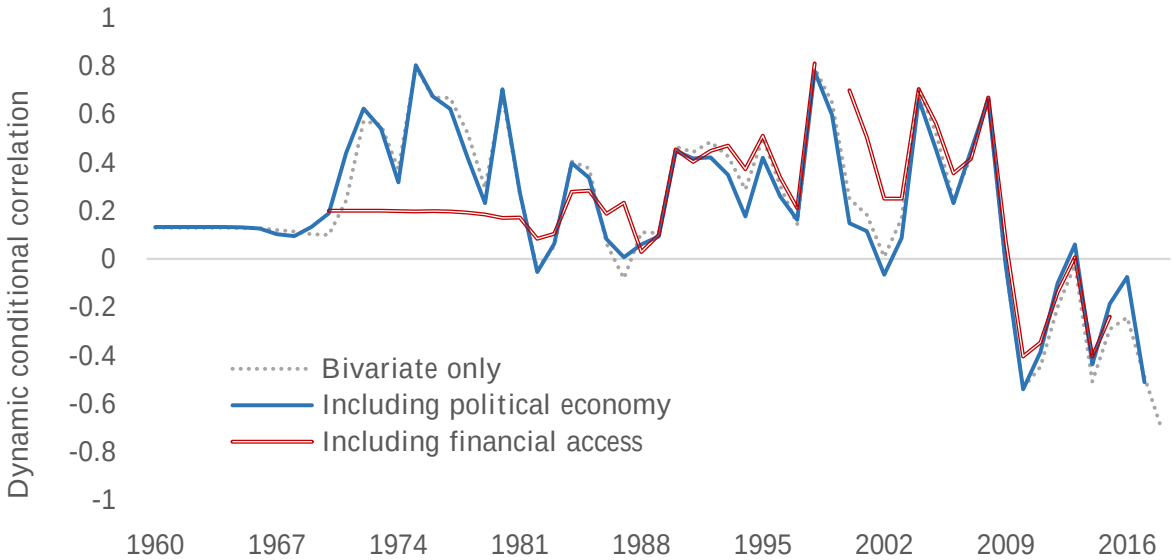
- DCCs can converge over time, as in Chile



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Contrasting procyclicality in advanced vs developing

	Advanced			Developing		
	G_c (S1)	G_e (S2)	G_p (S3)	G_c (S4)	G_e (S5)	G_p (S6)
Polity	0.019	0.033	0.005	0.003	0.022	0.011
	(0.007)**	(0.012)**	(0.004)	(0.013)	(0.009)**	(0.013)
Debt	0.050	-0.046	-0.037	0.018	-0.011	0.010
	(0.034)	(0.045)	(0.009)***	(0.041)	(0.035)	(0.045)
Fixed effects:						
Time?	Yes	Yes	Yes	Yes	Yes	Yes
Country?	Yes	Yes	Yes	Yes	Yes	Yes

- Political economy seems to matter more in advanced (and financial access mitigates procyclical expenditure in developing)
- Partial validation of political business cycle theories
- Some evidence of developing graduation (post 2000), but inconsistent and weak

Conditioning on corruption and private credit

	Political economy			Financial access		
	G_c (I1)	G_e (I2)	G_p (I3)	G_c (I4)	G_e (I5)	G_p (I6)
Polity	-0.035	0.064	0.085	0.019	-0.173	0.003
	(0.032)	(0.028)**	(0.046)*	(0.008)**	(0.924)	(0.006)
Corruption	-0.063	-0.051	0.212			
	(0.061)	(0.060)	(0.074)***			
Polity ×	0.020	-0.036	-0.044			
corruption	(0.020)	(0.016)**	(0.023)*			
Debt	0.016	-0.032	-0.076	0.471	-1.257	-0.047
	(0.043)	(0.027)	(0.035)**	(0.148)***	(0.986)	(0.067)
Pte credit				0.503	-1.119	-0.016
				(0.199)**	(0.959)	(0.075)
Debt ×				-0.093	0.232	0.002
pte credit				(0.036)**	(0.189)	(0.016)
Fixed effects:						
Time?	Yes	Yes	Yes	Yes	Yes	Yes
Country?	Yes	Yes	Yes	Yes	Yes	Yes

- **Corruption**: +ve level (corruption facilitates procyclicality), -ve interaction (less corruption mitigates procyclical tendency)
- **Private credit**: +ve level (financial development enables procyclicality), -ve interaction (overextended private sector induces restraint)

Are fiscal rules a panacea?

	Rules only			Conditioned on rules		
	G_c (F1)	G_e (F2)	G_p (F3)	G_c (F4)	G_e (F5)	G_p (F6)
Fiscal rules	0.031	0.046	0.020	-0.043	-0.136	-0.049
	(0.024)	(0.014)***	(0.014)	(0.155)	(0.091)	(0.155)
Polity	0.017	0.026	0.031	0.016	0.024	-0.002
	(0.017)	(0.010)**	(0.031)	(0.018)	(0.010)**	(0.017)
Debt	0.035	-0.027	-0.106	0.018	-0.084	-0.100
	(0.075)	(0.040)	(0.057)*	(0.069)	(0.043)*	(0.051)*
Rules × polity				-0.002	0.012	0.065
				(0.009)	(0.003)***	(0.034)*
Rules × debt				0.018	0.033	-0.027
				(0.033)	(0.019)*	(0.028)
Fixed effects:						
Time?	Yes	Yes	Yes	Yes	Yes	Yes
Country?	Yes	Yes	Yes	Yes	Yes	Yes

- Fiscal rules are *ipso facto* associated with *greater* procyclicality
- Conditioning polity and debt on rules *exacerbates* effects

Takeaways

- Apply time-series techniques to obtain dynamic conditional correlations to evaluate fiscal procyclicality and its drivers
- Political economy factors tend to be more relevant than financial access constraints
- Implication: The PBC is alive and well: to contain procyclicality, focus on mitigating electoral effects

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