



STATISTICS

GFSAC-19/13

September 12-13, 2019

Meeting of the IMF Government Finance Statistics

Advisory Committee
Washington, D.C.

FISCAL SPACE

Prepared by Mark Zandi

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Fiscal Space

Mark Zandi, Chief Economist

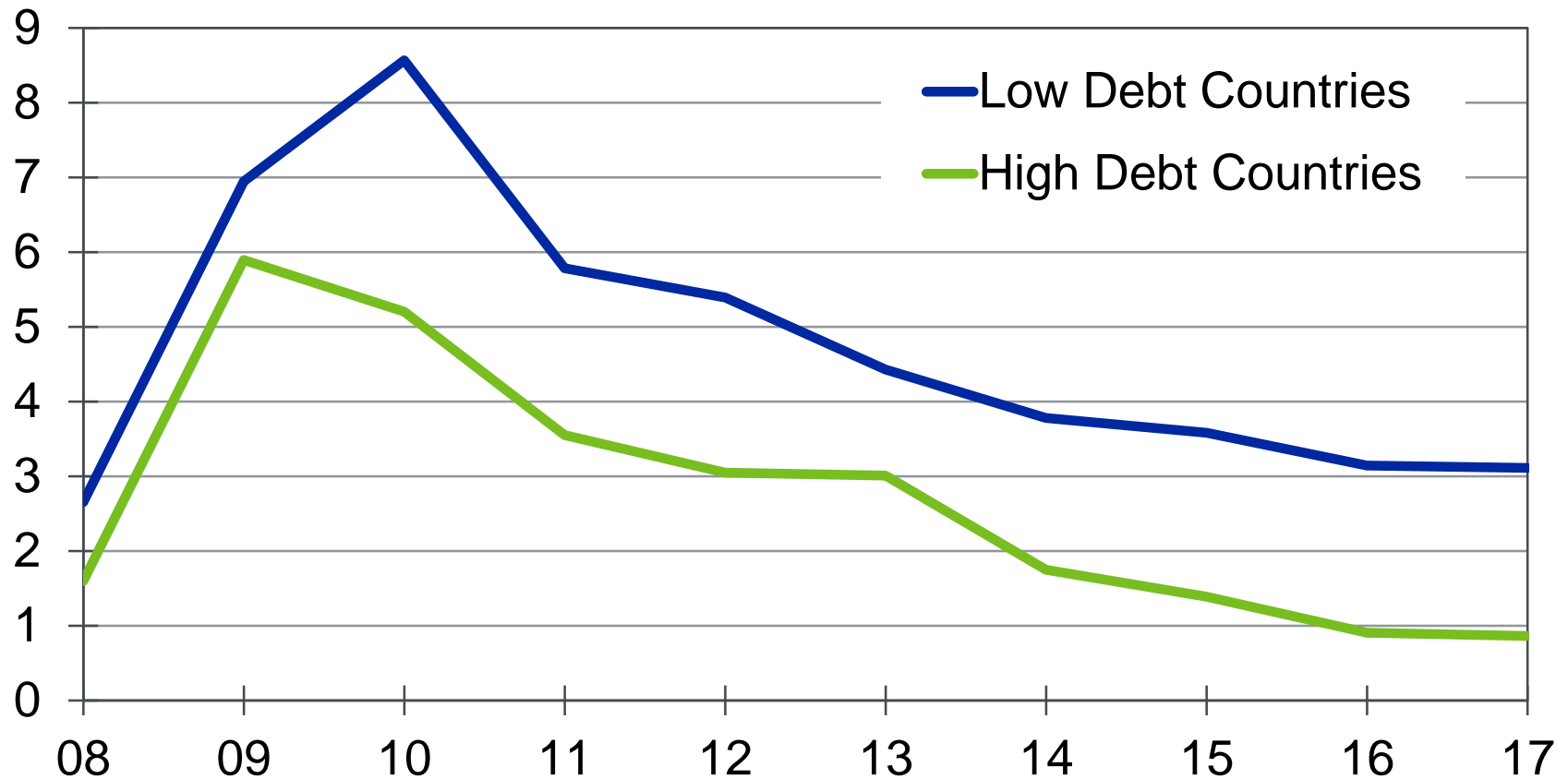
September 2019



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More Debt, Less Fiscal Space

Difference in government spending and revenues, % of GDP



Source: Moody's Analytics

Model Based Approaches

Sovereign debt ratio changes over time:

$$\Delta \left(\frac{Debt}{GDP} \right) = (r - g) \left(\frac{Debt}{GDP} \right) - \left(\frac{Primary\ balance}{GDP} \right)$$

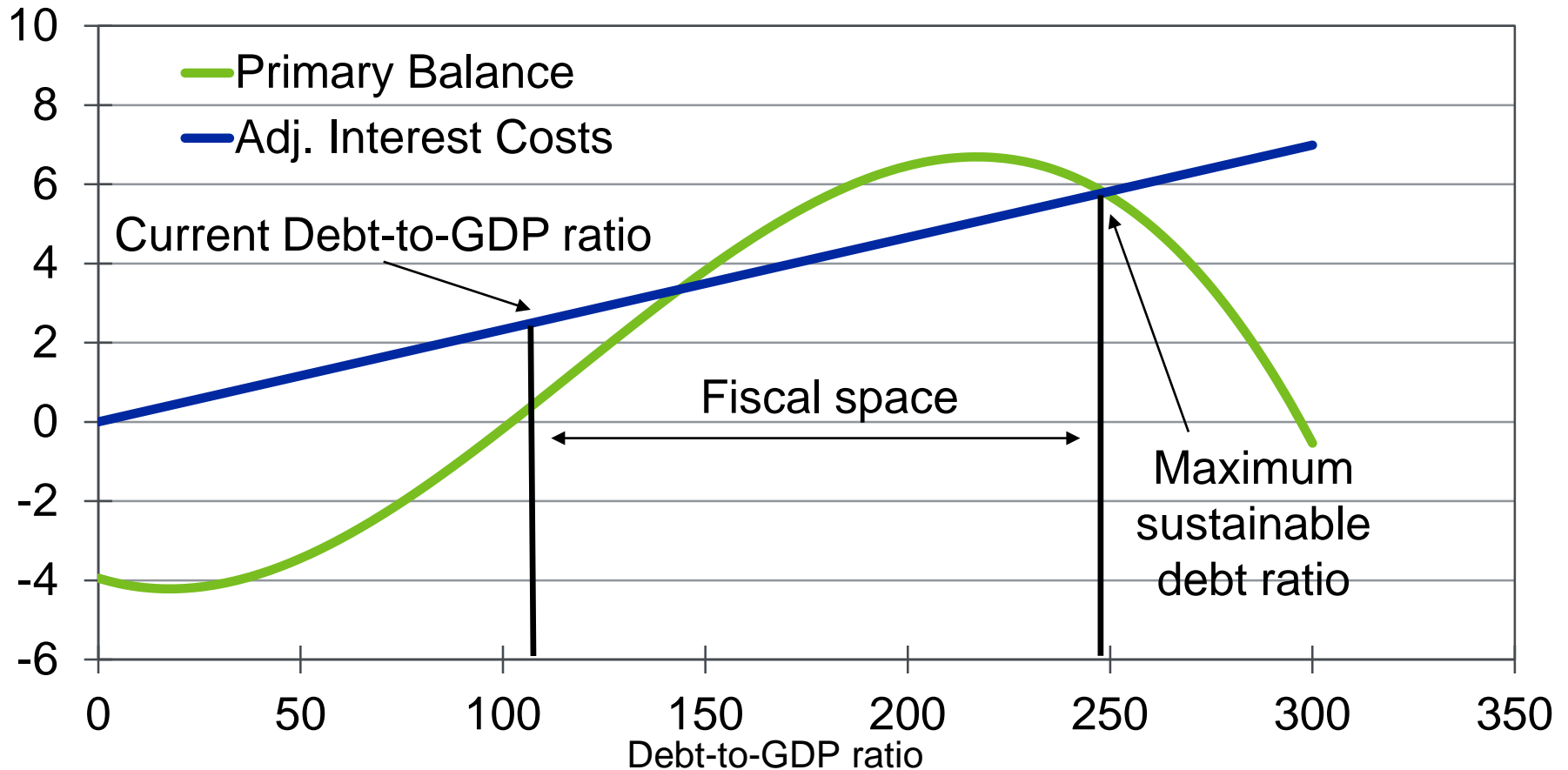
Primary balance = total government revenue less non-interest expenditure (need to estimate, reacts to debt level?)

r = rate on government borrowing (we proxy with current 10-year rate, reacts to debt level?)

g = GDP growth rate (we proxy with our projection of 10-year ahead nominal potential GDP)

IMF (Ostry) Approach to Fiscal Space

% of GDP

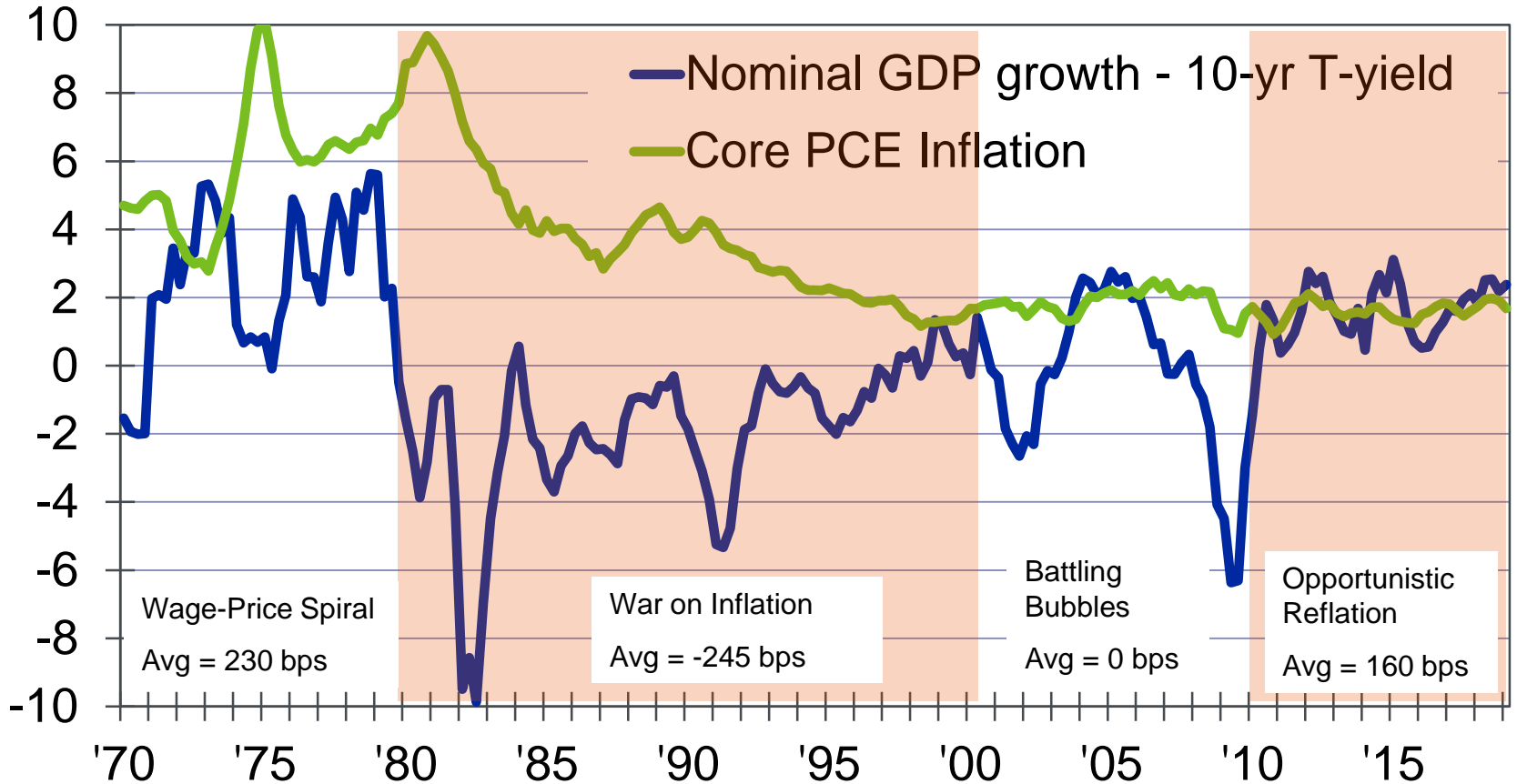


Source: Moody's Analytics



R Less G in Different U.S. Monetary Regimes

%



Sources: Treasury, BEA, Moody's Analytics

Estimating Ostry Primary Balance Curve

In our earlier work with a pre-crisis sample of OECD countries, the PB function was steep, constraining sustainable debt.

Dependent Variable: Primary balance-to-GDP				
Sample (adjusted): 1985-2007 (annual), 24 countries				
Total pool observations: 351				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	29.82	11.83	2.52	0.01
Debt-to-GDP ratio	0.09	0.07	1.27	0.21
(Debt-to-GDP-ratio)^2/100	0.04	0.00	0.44	0.66
(Debt-to-GDP-ratio)^3/10000	-0.02	0.00	-0.69	0.49
Real GDP/real potential GDP	0.49	0.05	10.14	0.00
Public expenditure gap (GDP share)	-0.30	0.03	-10.38	0.00
Working-Age pop. share	-0.53	0.21	-2.53	0.01
Trade openness (import share)	0.03	0.02	1.77	0.08
AR(1) error term	0.78	0.04	20.80	0.00

$$R^2 = 0.745$$

Fixed Effects	
Mean	-0.39
Standard deviation	4.28
Range	22.44

Primary Balance Curve, Full Sample

Using post crisis data, PB function has become very flat. Supports much higher debt ratios. Shape very sensitive to sample period.

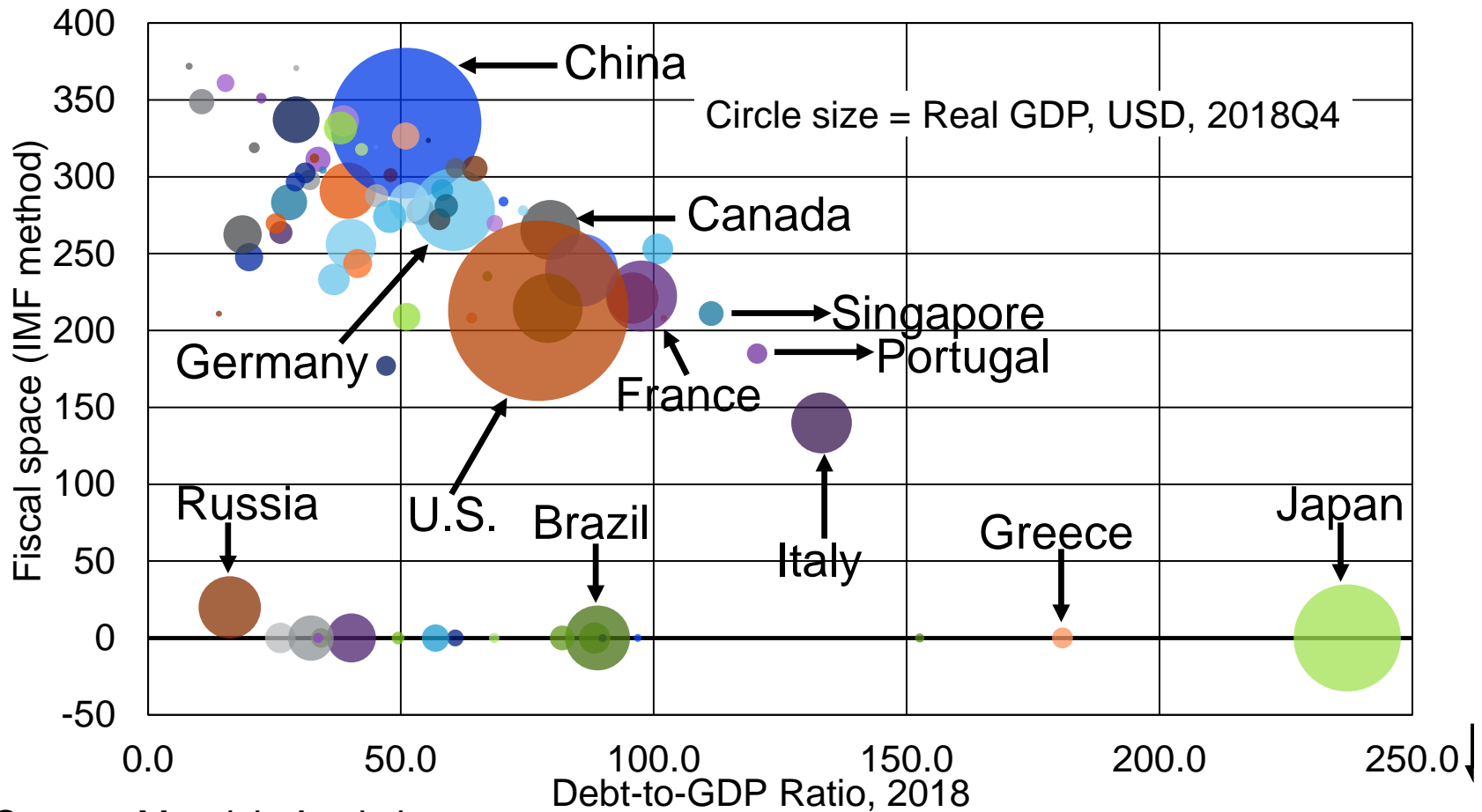
Dependent Variable: Primary balance-to-GDP				
Sample (adjusted): 1980-2007 2010-2018 (quarterly), 77 countries				
Total pool observations: 5062 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	32.12	8.32	3.86	0.00
Debt-to-GDP ratio	-0.11	0.03	-3.56	0.00
(Debt-to-GDP-ratio)^2/100	0.08	0.03	2.64	0.01
(Debt-to-GDP-ratio)^3/10000	-0.02	0.01	-2.09	0.04
Real GDP/real potential GDP	-4.21	4.05	-1.04	0.30
Public expenditure gap (GDP share)	-0.24	0.01	-18.55	0.00
Working-Age pop. share	-37.11	7.57	-4.90	0.00
Trade openness (import share)	-2.96	1.54	-1.93	0.05
AR(1) error term	0.62	0.01	56.70	0.00

$$R^2 = 0.635$$

Fixed Effects	
Mean	-0.10
Standard deviation	4.33
Range	24.45

Fiscal Space (IMF) versus Debt/GDP

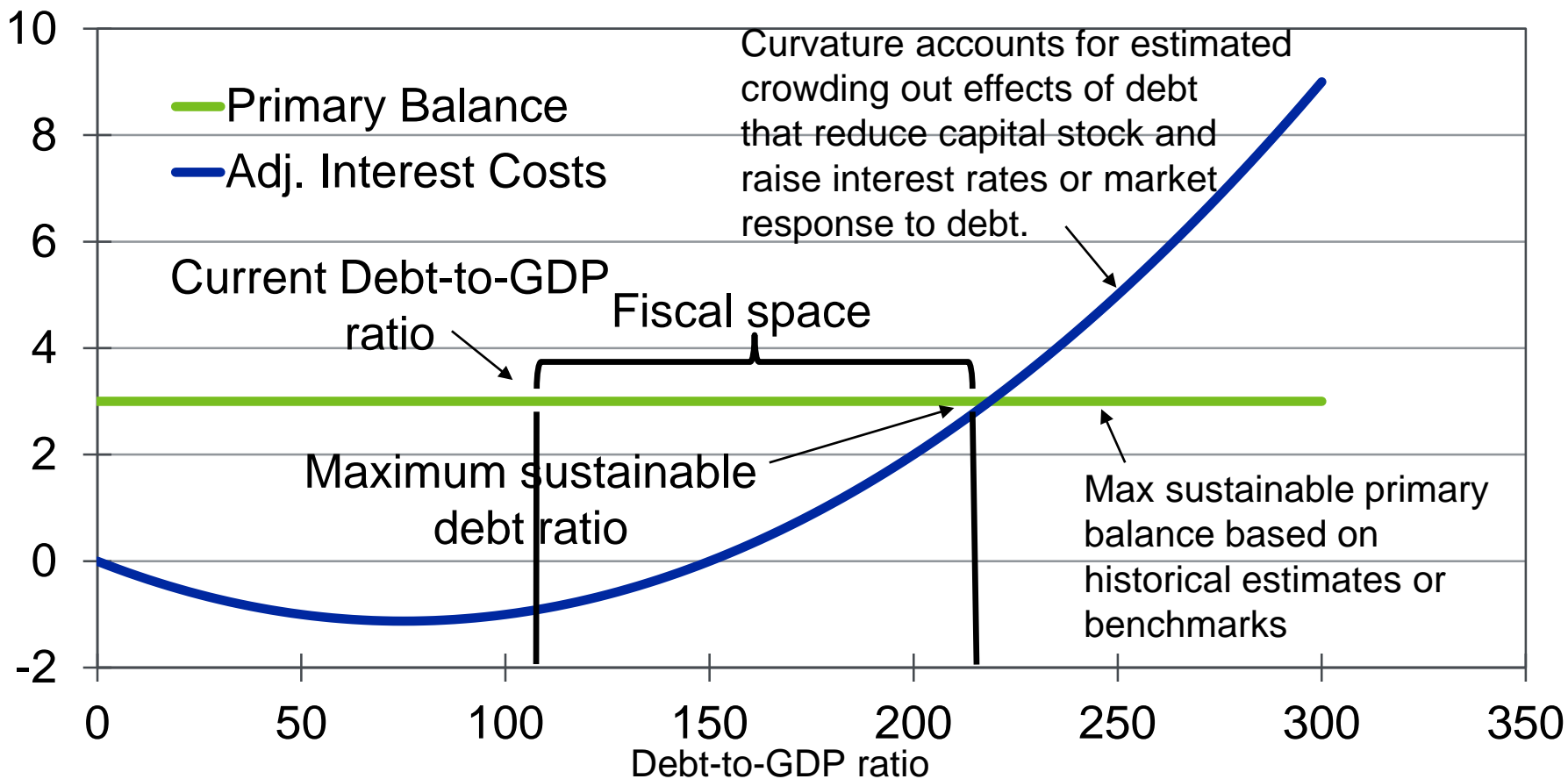
Full sample. Lots of space for most, a knife edge with no space for some.



Source: Moody's Analytics

Dynamic Rate Approach to Fiscal Space

% of GDP



Source: Moody's Analytics

Estimating Dynamic Rate Response

Some empirical support for higher debt raising effective interest costs.

Alternative mechanism for bounding debt.

Lines up with CBO estimate of 2bps increase in interest costs per 1% increase Debt-to-GDP.

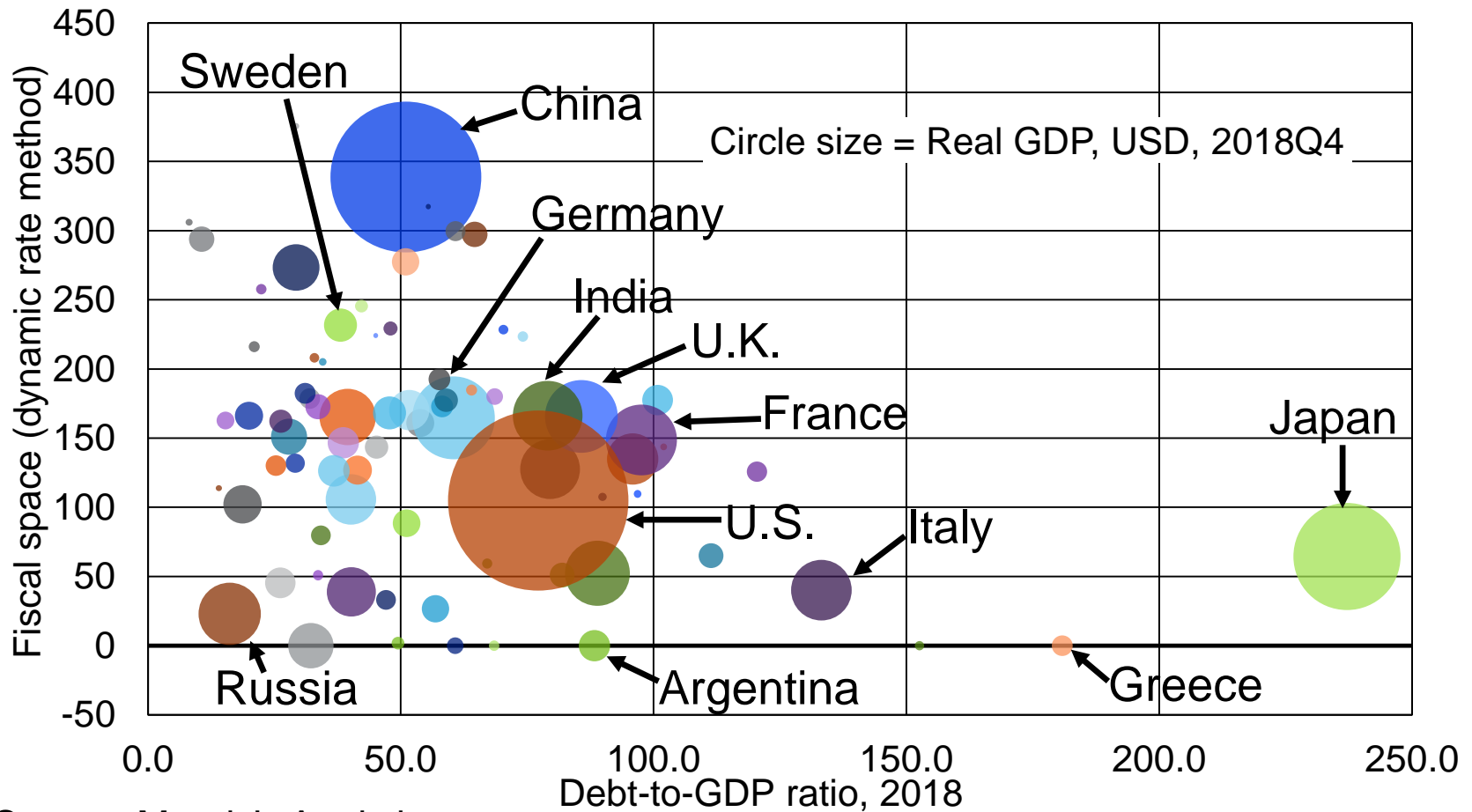
Dependent Variable: Nominal 10-year rate less Nominal GDP growth rate				
Sample: 7 5-year time periods, 50 countries				
Total pool observations: 138				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-92.59	13.82	-6.70	0.00
Real GDP/Real Potential GDP (20-quarter lag)	91.65	13.80	6.64	0.00
Debt-to-GDP ratio (20-quarter lag)	0.017	0.007	2.52	0.01
Net Exports-to-GDP	-12.86	2.96	4.35	0.00

$$R^2 = 0.37$$

Dependent and all regressors are calculated as 20-quarter averages and estimated on 20-quarter intervals.

Fiscal Space (Dynamic) versus Debt/GDP

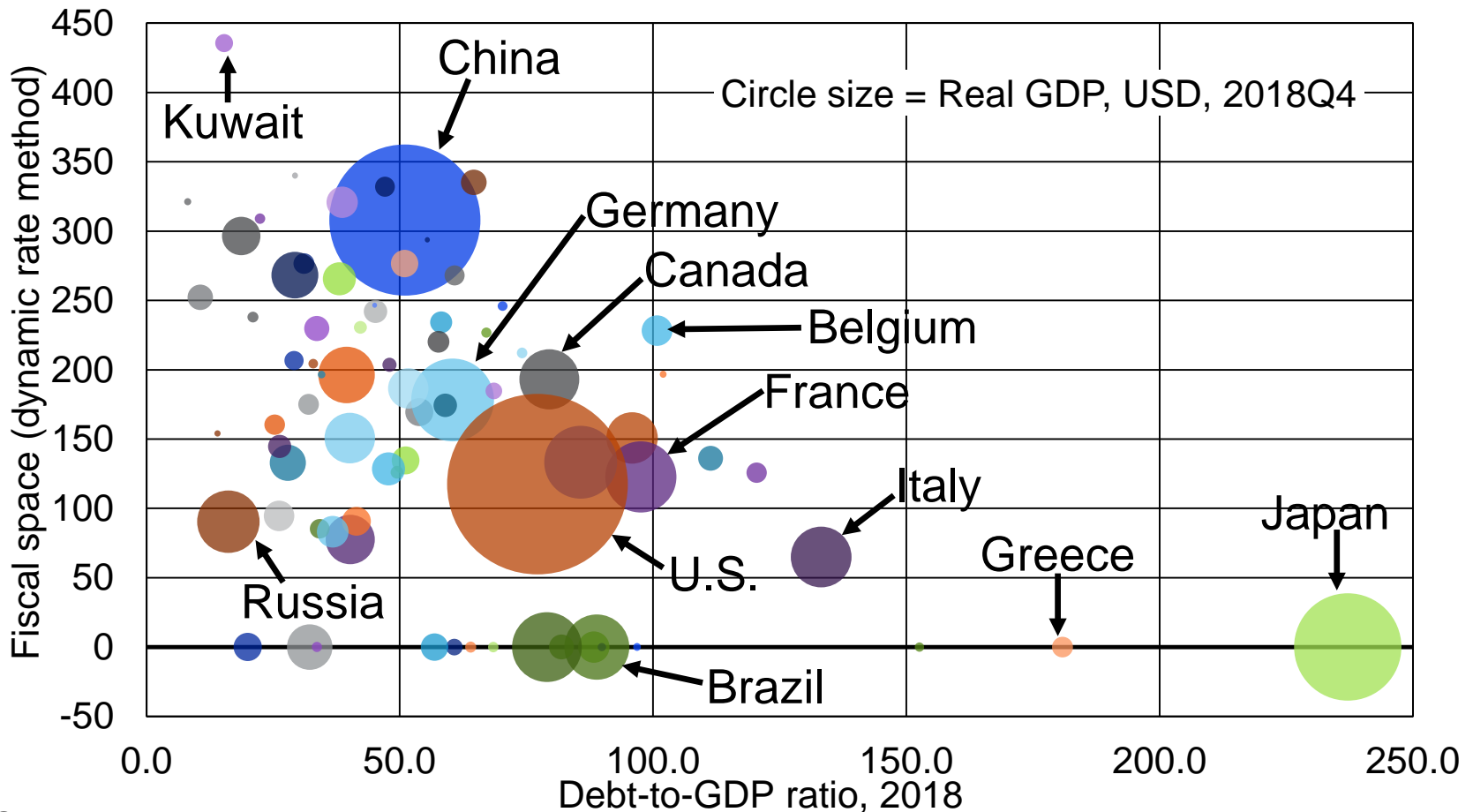
Assumes max. sustainable primary balance is a fixed 2% of GDP.



Source: Moody's Analytics

Fiscal Space (Dynamic) vs Debt/GDP

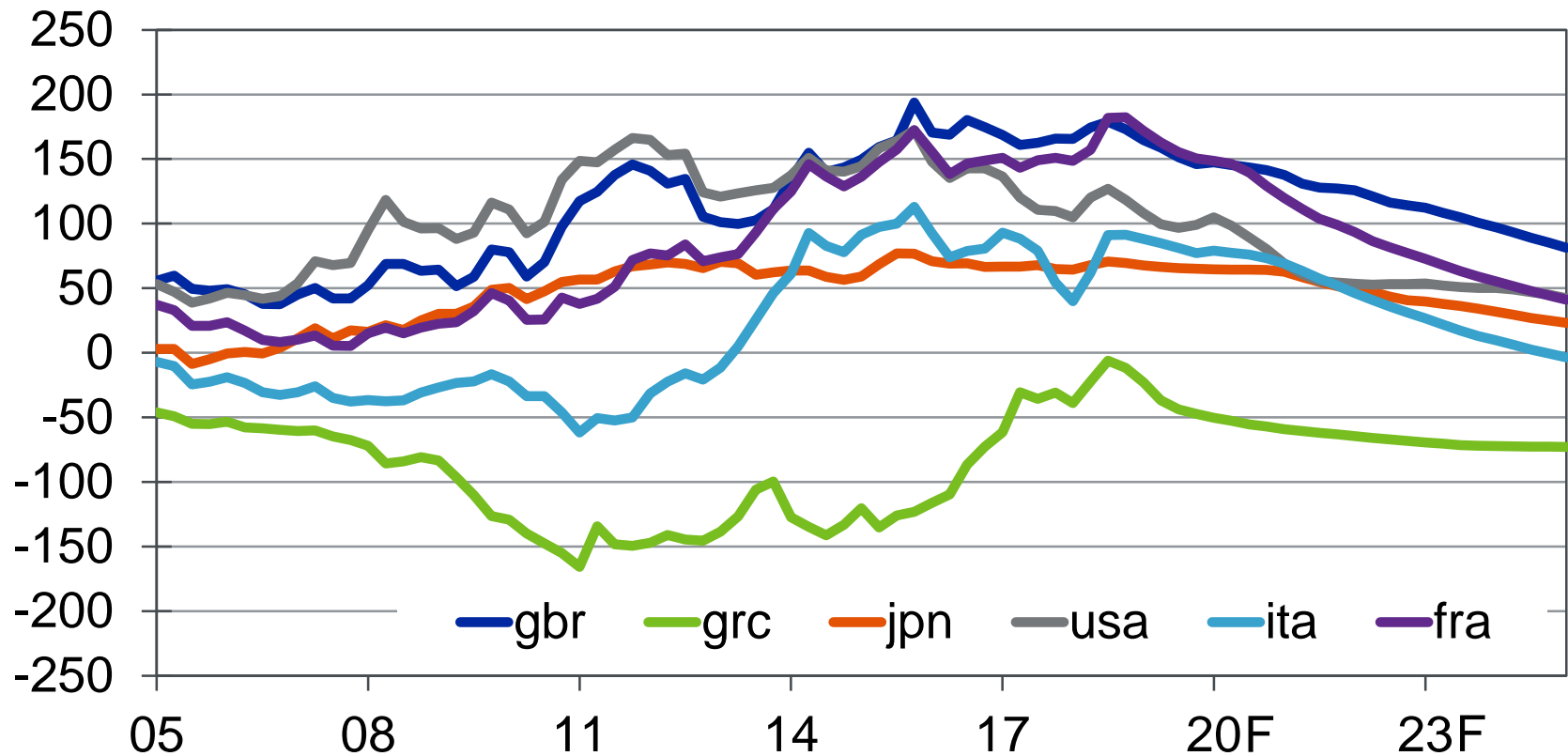
Sustainable primary balance equal to historical average plus 2 std. devs.



Source: Moody's Analytics

Space to Decline as Rates Normalize

Fiscal space (dynamic), % of GDP



Source: Moody's Analytics

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