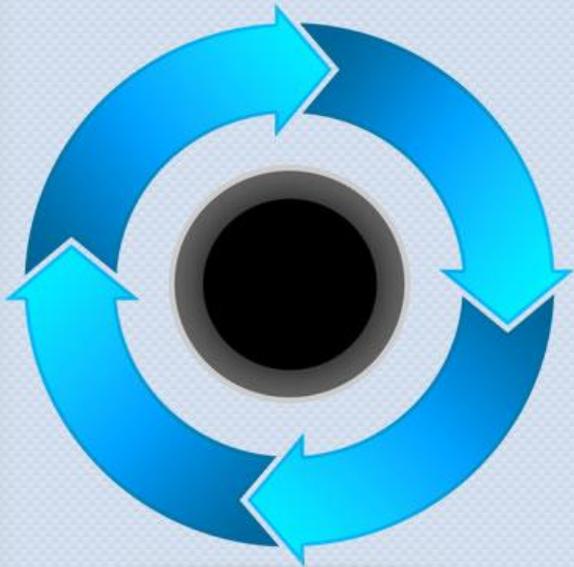


DO SPILLOVER EFFECTS CONSTITUTE A PRACTICAL LIMITATION TO EUROPEAN FISCAL AUSTERITY POLICY?

A REVIEW AND MAPPING OF CRISIS TRANSMISSION MECHANISMS IN EUROPE



Max Berre

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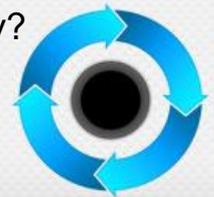


Introduction

- The purpose of this paper is a mapping of the academic literature and empirical findings concerning transmission within the EU and the EMU, taking place within the context of fiscal policy tightening.
- If monetary policy is constrained, as is the case within the Eurozone, likelihood of transmission of cyclic downturn is expressed via the Trade Channel, as well as via the Capital Markets Channel.
- The Trade Channel concerns, transmission via knock-on effects of fiscal tightening on trade, output and growth on neighboring markets. Generally, fiscal consolidation can lead to reduction of consumption, and imports, which can have its effects on overseas markets.
- The Capital Markets Channel meanwhile, concerns secondary effects brought on by changes in borrowing and financing costs (for both public sector and private sector borrowing and lending) linked to changes in sovereign default risks, which empirically speaking, are demonstrably linked among Eurozone member nations.

Do Spillover Effects Constitute a Practical Limitation to European Fiscal Austerity Policy?

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Introduction

- Spending cuts and tax increases accumulated to about 4% of annual Eurozone GDP between 2011 and 2013 (according to Rannenberg et al. (2015))
- What does the academic literature say about the likely (Europe-wide) effects of this fiscal consolidation?

Do Spillover Effects Constitute a Practical Limitation to European Fiscal Austerity Policy?

- Via the Trade Channel, fiscal consolidation has its effects on output and growth in trading partners. Multiple EU markets in consolidation may magnify contractionary effects, while canceling out any gains that might have been had.
- Capital Markets Channel can have a detrimental effect on borrowing costs of neighboring countries, affecting ratings, output, financial fragility, and banking sector fundamentals (ROA, ROE, Z-scores).

YES

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Literature Review

BGK and G&B:

- BGK: Beetsma et al. (2005) : Dutch Central Bank empirical working paper, which uses a Panel-VAR model to evaluate the relationship between fiscal policy output and trade
- G & B: Giuliadori and Beetsma (2004) is an ECB working paper which uses a VAR model towards this same end.
- “Partial” approach: focus in detail specifically about cross-border spillovers of fiscal policy via trade (term comes from 2005 paper)
- BGK (2005) find that an increase in fiscal spending leads to a statistically significant export gain as well as positive output shocks among Eurozone trading partners
- G & B (2004): fiscal expansions in Germany, France and Italy lead to significant increases in imports from a number of European countries.



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Literature Review

Pritchett (1987):

- Focuses on developing countries and emerging markets.
- Regression model uses very rudimentary income and price elasticities of import demand
- $$\eta_i = \alpha + \beta_1(1980 \text{ Per-capita Income}) + \beta_2(1980 \text{ Per-capita Income})^2 + \beta_3(1980 \text{ Population}) + \beta_4\left(\frac{\text{Imports} + \text{Exports}}{\text{GNP}}\right) + \varepsilon_i$$
- Finds that per-capita income, and share of trade in total output are important determinants of import elasticities. Income elasticity of import demand more influenced by per-capita income than by any other factor.
- Finds diminishing marginal effect of per-capita income on import demand elasticity
- Doesn't take cyclical factors, gravity factors, regulatory factors into account.



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Literature Review

Senhadji (1998),

- IMF empirical study.
- Outlines a difference between long-run and short-run income elasticities of import demand.
- Finds that long-run income elasticities are considerably larger than short-run income elasticities.

Blanchard and Leigh (2013)

- IMF empirical study.
- Fiscal multipliers are cyclical-dependent. Multipliers are larger during recessions.
- Empirical results find that in advanced economies, fiscal consolidation has been associated with lower growth than projected.



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Literature Review

Weyerstrass et al. (2006) and

- Weyerstrass et al. (2006) is a European Commission empirical study which enumerates and analyses economic spillovers in the Eurozone.
- Outlines taxonomy of the various types of spillover, as well as their potential sources and effects.
- Most Eurozone markets see significant output and interest rate spillover effects,
- Inflation spillover effects are typically quite small, and found to be significant primarily in the largest Eurozone markets (France, Germany, Italy).
- Uses ECB and OECD figures from 1980 to 2004. Part of dataset predates implementation of the Maastricht Treaty and the Single European Act.



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Literature Review

Schenderling (2012)

- Schenderling (2012) is an Erasmus School of Economics empirical study which explores the same taxonomy, while employing a dataset from 1979 to 2011 (thus, subject to same limitations).
- Finds that while fiscal expansion has a positive spillover effect on growth in the short and medium run, the causal link between fiscal expenditure and prices is not statistically significant in most of the EU markets.
- In comparing European markets, Schenderling (2012) finds that the spillover effects of fiscal policy are less robust in the core-Eurozone than on the European periphery, which Schenderling (2012) attributes to differences in monetary policy stance in the chronologically early part of Schenderling (2012)'s sample.
- Monetary stance affects the magnitude of fiscal policy spillovers.



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Literature Review

Hale et al. (2014)

- Hale et al. (2014), is a 2014 joint Fannie Mae and San Francisco Fed study, which goes into detail about the effect on banks of exposure to borrowers in crisis countries.
- Exposure to borrowers in crisis countries primarily affect ROA, ROE, and z-score of banks.

Corsetti et al. (2012)

- Empirical IMF working paper which examines relationship between sovereign debt levels, sovereign risk premiums, private-sector lending rates, and output.
- Changes in sovereign risk premiums play a direct role on determination of private-sector borrowing costs. Intuitively, findings in line with CAPM.

Sovereign risk mechanism is a mitigating factor for output contraction, because fiscal contraction can serve to reduce sovereign indebtedness levels, and hence also borrowing costs.

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Literature Review

Guajardo et al. (2011)

- Empirical IMF study, which investigates the short-term effects of fiscal consolidation on economic activity in OECD economies.
- Takes opposing view from Corsetti et al. (2012). Guajardo et al. (2011) find that fiscal consolidation has contractionary effects on private domestic demand and GDP.
- Claims that previous studies might be biased toward overstating expansionary effects of fiscal contraction. Overstating due to the way in which fiscal consolidations originally identified.
- Finds that fiscal contraction (or news thereof) in a member-nation is associated with an increase the risk-spread for sovereign borrowing in other Eurozone member-nations.



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Which Channels are Most Significant Empirically?

Overall, not all of the spillover effects enumerated are similar in magnitude or consistency

- Empirically, some of the spillover channels outlined by Weyerstrass et al. (2006) and by Schenderling (2012) on both individual countries and on the European level are noticeably more pronounced in their effect than others.
- Weyerstrass et al. (2006), outline that while spillovers affect not only output and prices via the trade channel, but also short and long-term interest rates via capital markets, and foreign exchange rates via both channels. Findings conclude that Eurozone output gaps, fiscal balances, and current accounts are relatively sensitive to changes in changes in fiscal stance of Eurozone trading partners, while inflation rates and short-term interest rates are relatively less-sensitive.
- Schenderling (2012) finds that at the national level, effects of fiscal expansion on price levels are significant on the German market, but not in France, Austria, Italy, or the UK.
- Both Weyerstrass et al. (2006) and by Schenderling (2012) use datasets which partially pre-date both the Single European Act and the Maastricht Treaty

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Which Channels are Most Significant Empirically?

More Sensitive

- Output gap,
- Fiscal balance,
- Current accounts balance

Less Sensitive

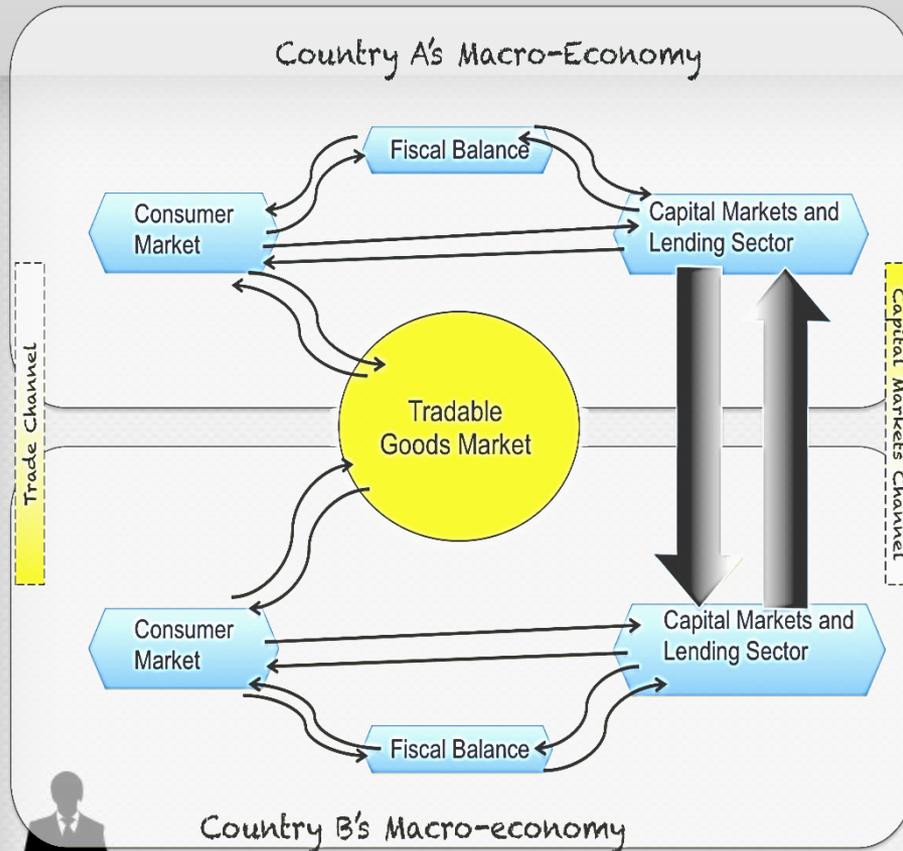
- Inflation rates
- Price Levels
- Short-term interest rates



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Which Channels are Most Significant Empirically?



For the purposes of this paper

- Narrower set of cross-border spillovers focused on, due to:
- Trends in the more recent published literature,
- Contextual realities of the European Single Market and the European Monetary Union.
- This map is simplified to omit the role of the ECB, as well as the role of inflation, interest rates, and monetary policy.
- Consistent with BGK and G&B

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The Trade Channel

*Export gains and positive
output shocks among
trading partners*



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The Fiscal Multiplier

Schenderling's EU Fiscal Multipliers

	Immediate Fiscal Multiplier	After Four Quarters	After Twelve Quarters
Denmark	2,202	2,291	1,549
Ireland	1,925	0,619	-1,233
Portugal	1,777	4,250	4,955
Spain	1,449	2,150	0,360
France	1,297	1,719	1,326
Sweden	1,177	0,440	-1,421
Austria	1,118	1,805	0,657
Finland	0,831	0,733	-0,989
Germany	0,818	0,120	-0,924
Netherlands	0,645	0,663	0,631
Belgium	0,631	0,679	0,265
Italy	0,554	1,349	3,452
United Kingdom	0,323	0,702	1,046
Greece	0,118	0,439	-0,246

- Source: Schenderling (2012). Data from 1979 to 2011.
- Fiscal multipliers play a deterministic role in outlining the magnitude of the economic effect.

- BUT...Blanchard and Leigh (2013): cyclically-dependent nature of fiscal multipliers.
- Multipliers are larger during recessions.
- For every additional percent (of GDP) of fiscal consolidation, output was around one percent lower than projected.

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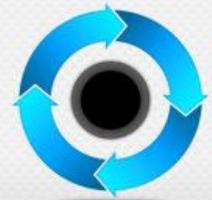
The Fiscal Multiplier

Cyclically dependent multiplier

- Blanchard and Leigh (2013): Decline in multipliers relative to 2009-2010 may be due to changes in private sector credit conditions and a reduction in slack in the economies in the dataset.
- Empirically, cyclical factors, such as the presence of the banking crisis, magnitudes of pre-crisis household debt, trading partner fiscal consolidation found to be statically significant for affecting multiplier size.
- Rannenberg et al. (2015): Crisis-related increase in fiscal multiplier due to changes the share of liquidity constrained households.
- Schenderling (2012): Fiscal multipliers likely to be larger during crisis because risk of crowding-out private investment is small during recessions.

THIS WILL AFFECT IMPORT DEMAND

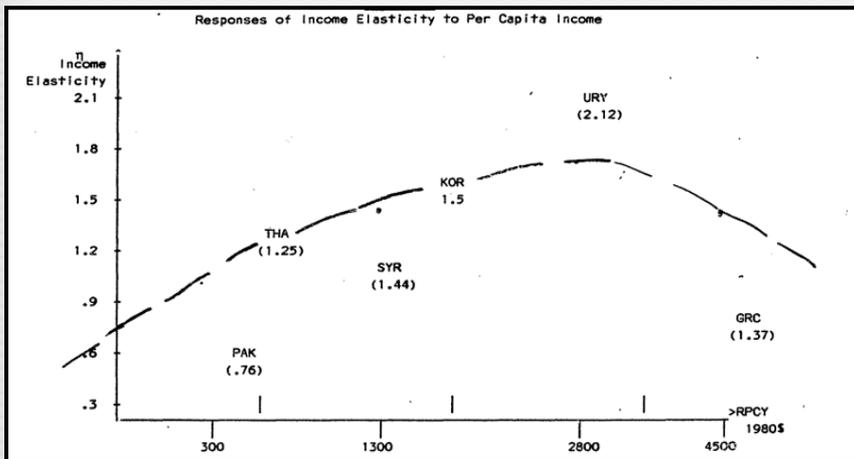
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Import Demand

Pritchett (1987):

- Income elasticities of import demand are more heavily influenced by per-capita income than by any other factor.
- Diminishing marginal effect: Elasticities peak at per-capita incomes on par with the lower end of OECD markets, diminish thereafter.
- Specifically, Korea: income elasticity of 1.5, Israel: income elasticity of 1.44, and Greece: income elasticity of 1.37
- All of these are “Relatively Elastic” income elasticities of import demand.



Pritchett (1987)'s

Import Elasticity of Demand Function

$$\eta_i = \alpha + \beta_1(1980 \text{ Per-capita Income}) + \beta_2(1980 \text{ Per-capita Income})^2 + \beta_3(1980 \text{ Population}) + \beta_4\left(\frac{\text{Imports} + \text{Exports}}{\text{GNP}}\right) + \varepsilon_i$$



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The Long Run vs. the Short Run

- Senhadji (1998): Short-run income elasticities of import demand are considerably smaller than those established within the long-run trade relationship.
- Ultimately, this might mean that trade contractions resulting from cyclical output contractions might be smaller than some of the other studies examined here suggest.
- Senhadji (1998) is reinforced by
 - Findings of Beetsma et al. (2005) trade channel spillover findings and
 - Schenderling (2012)'s fiscal multiplier calculations.
 - Dany et al. (2015): Longevity of fiscal effects of flight to quality.



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Magnitude of Trade Channel Fiscal Spillovers

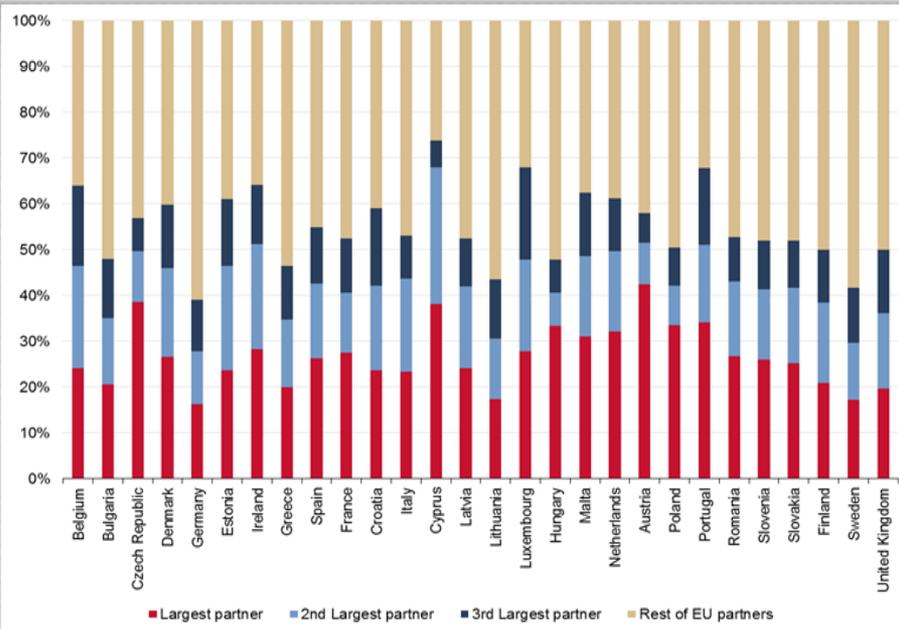
	Increase Spending by 1% of GDP						Cut Taxes by 1% of GDP						
	Germany			France			Germany			France			
	Immediate	2 years	5 years	Impact Effect	2 years	5 years	Immediate Effect	2 years	5 years	Impact Effect	2 years	5 years	
Austria	0,41	1,46	2,152	0,045	0,161	0,225	Austria	0,078	0,268	0,158	0,008	0,027	0,023
Belgium-Lux	0,42	1,494	2,201	0,291	1,037	1,446	Belgium-Lux	0,08	0,274	0,162	0,05	0,172	0,146
Finland	0,139	0,494	0,728	0,043	0,153	0,213	Finland	0,026	0,091	0,053	0,007	0,025	0,022
France	0,103	0,368	0,542	-	-	-	France	0,02	0,068	0,04	-	-	-
Germany	-	-	-	0,076	0,27	0,376	Germany	-	-	-	0,013	0,045	0,038
Ireland	0,197	0,701	1,033	0,109	0,387	0,539	Ireland	0,037	0,129	0,076	0,019	0,064	0,054
Italy	0,101	0,358	0,527	0,071	0,254	0,355	Italy	0,019	0,066	0,039	0,012	0,042	0,036
Netherlands	0,403	1,435	2,114	0,134	0,476	0,663	Netherlands	0,077	0,263	0,155	0,023	0,079	0,067
Portugal	0,161	0,574	0,845	0,084	0,301	0,419	Portugal	0,031	0,105	0,062	0,014	0,05	0,042
Sweden	0,127	0,451	0,664	0,051	0,183	0,254	Sweden	0,024	0,083	0,049	0,009	0,03	0,026
UK	0,095	0,338	0,498	0,065	0,23	0,321	UK	0,018	0,062	0,037	0,011	0,038	0,032
AVG	0,2156	0,7673	1,1304	0,0969	0,3452	0,4811	AVG	0,041	0,1409	0,0831	0,0166	0,0572	0,0486

- Source: Beetsma et al (2005)
- Findings corroborate story told by Pritchett (1987) about Import Demand

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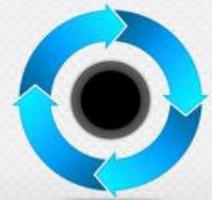
How Large is Intra-EU Trade?



- Source: Eurostat
- Most EU nations concentrate around 60% of intra-EU trade among their top-three trading partners.
- Slightly higher trade concentrations among smaller economies such as Cyprus and Portugal,
- Slightly more diversified trade concentrations among some of the larger economies, such as the UK, France and Germany.
- Indicative of the potential size of cross-border trade channel spillovers



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How Large is Intra-EU Trade?

	Exports		Imports		Trade balance	
	2013	2014	2013	2014	2013	2014
EU-28	2 842,4	2 935,1	2 771,7	2 850,5	70,6	84,6
Germany	623,7	657,3	578,8	600,0	44,9	57,3
France	259,8	264,2	347,7	348,4	-87,9	-84,1
United Kingdom	177,2	182,4	257,6	273,1	-80,4	-90,8
Belgium	247,6	250,9	225,9	223,3	21,7	27,6
Netherlands	382,6	383,8	205,6	203,4	176,9	180,4
Italy	209,8	217,7	200,2	202,9	9,7	14,8
Spain	150,5	155,9	141,7	154,0	8,8	1,8
Poland	115,8	125,7	107,8	114,3	7,9	11,4
Austria	92,4	93,6	105,7	105,1	-13,3	-11,5
Czech Republic	99,1	107,5	83,5	88,7	15,7	18,9
Sweden	72,8	72,3	83,3	84,1	-10,5	-11,8
Hungary	63,0	66,6	54,1	59,1	8,9	7,4
Denmark	52,6	53,0	50,9	51,7	1,6	1,3
Slovakia	53,6	55,0	45,7	47,0	7,8	8,0
Romania	34,5	37,3	41,9	44,1	-7,4	-6,8
Portugal	33,2	34,2	41,0	43,9	-7,7	-9,8
Finland	31,0	32,0	38,7	39,2	-7,7	-7,2
Ireland	49,0	48,4	35,0	36,6	14,0	11,8
Greece	12,8	13,0	22,1	23,2	-9,3	-10,2
Slovenia	19,2	20,5	17,6	17,8	1,6	2,7
Luxembourg	11,2	11,9	15,9	16,1	-4,6	-4,1
Lithuania	13,6	13,4	15,8	16,9	-2,2	-3,5
Bulgaria	13,4	13,8	15,4	16,1	-2,1	-2,3
Estonia	8,7	8,7	11,4	11,2	-2,7	-2,5
Croatia	5,9	6,5	11,1	12,8	-5,2	-6,3
Latvia	7,2	7,5	10,8	10,7	-3,5	-3,2
Cyprus	0,9	0,8	3,4	3,6	-2,5	-2,9
Malta	1,2	1,0	3,3	3,0	-2,1	-2,0

- Intra-European Balance of Trade Figures
- Source: Eurostat
- Largest importers are Germany, followed by France, the UK, Belgium, and the Netherlands.
- Indicative of the potential size of cross-border trade channel spillovers

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The Capital Markets Channel

Secondary effects brought on by changes in private sector borrowing and financing costs linked to changes in sovereign default risks



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The Capital Markets Channel

- Santis (2012): fiscal contraction (or news thereof) in a member-nation is found to increase the risk-spread for sovereign borrowing in other Eurozone member-nations.
- In the Eurozone, sovereign risk influenced by domestic macroeconomic factors, aggregate risk factors, as well as those of Greece and the PIIGS. Co-movement in excess of that of macroeconomic fundamentals.
- Divergence between evolution of sovereign indebtedness and sovereign borrowing costs. Germany benefiting from safe-haven status. This has influenced bond spreads of Austria, Finland, and the Netherlands.
- Hale et al. (2014) find that exposure to borrowers in crisis countries primarily affect ROA, ROE, and z-score of banks.
- Dany et al. (2015) outlines a flight to quality effect, impacting German state finances.
- Implications of Corsetti et al. (2012) are that this might have cyclical and output effects.

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The Capital Markets Channel

What is the evidence of these phenomena?

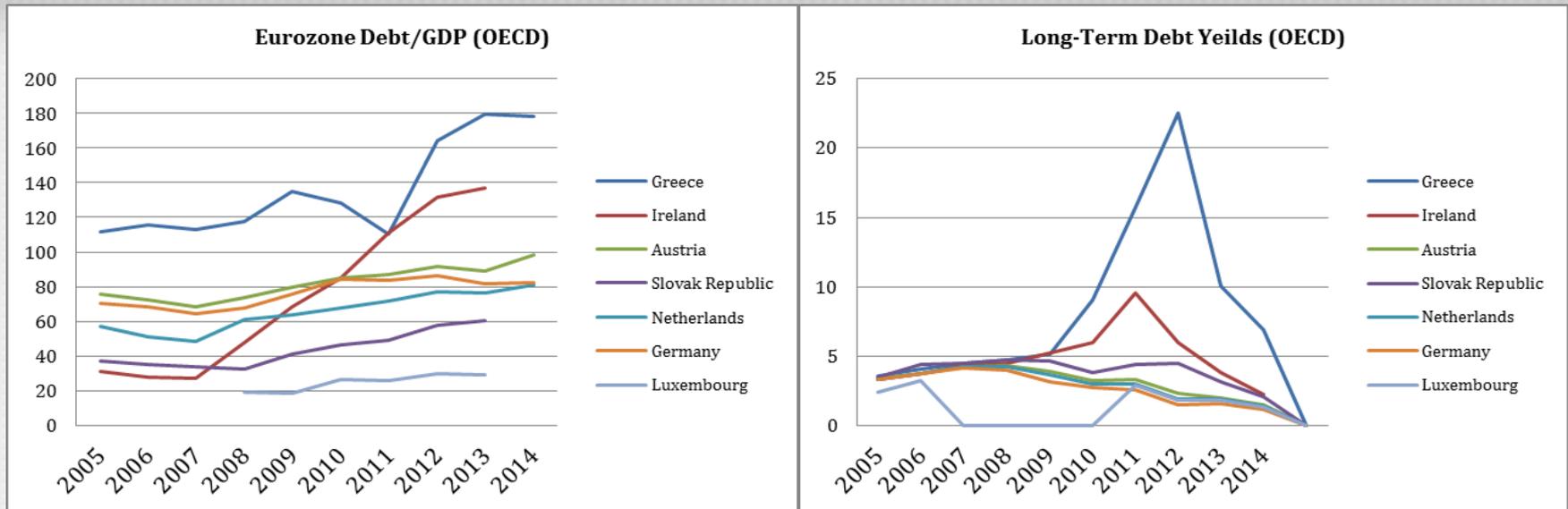
- We can compare evolution of Eurozone Debt-to-GDP ratios with sovereign borrowing costs.
- We can compare borrowing costs between countries
- Is there a divergence between their evolutions?
- Do domestic borrowing costs respond to domestic fundamentals or to foreign fundamentals?



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Eurozone Debt-to-GDP vs. Sovereign Borrowing Costs



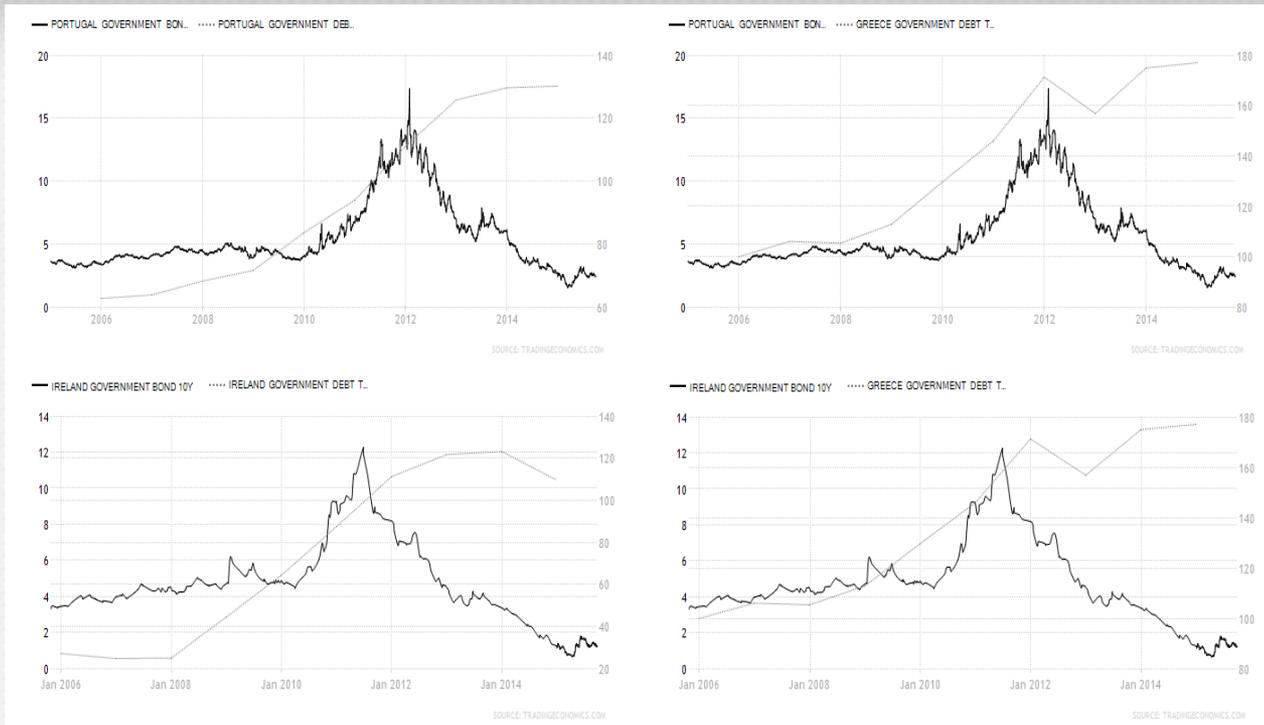
- Source: OECD Stats
- Several Eurozone countries have lower Debt to GDP ratios than Germany, but still face higher sovereign borrowing costs

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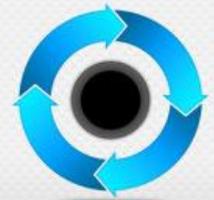


Ireland and Portugal:

Influence of Domestic Fundamentals vs. Greek Fundamentals on Sov. Borrowing Costs



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Sovereign Debt Risk & Private Borrowing Costs

- Corsetti et al. (2012): A pessimistic shift in expectations may serve to expand risk premia on public debt, which might lead to a contraction in output due to:
 - Larger fiscal deficits
 - Higher private-sector-borrowing costs
- Fundamentally, this is logically consistent with the Capital Asset Pricing Model (CAPM):

$$R_e = R_f + \beta(R_m - R_f)$$



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The Role of Interbank Exposure

- Bank exposure to both banks and borrowers in countries undergoing a contraction in GDP faced increased instability and reduced profitability.
- Hale et al. (2014): exposure to borrowers in crisis countries primarily affect ROA, ROE, and z-score of banks.
- The risk of transmission of GDP contraction via the interbank system is a present risk.
- This means that banks in neighboring countries can:
 - Become more fragile
 - Undergo a contraction in lending on exposed, domestic, and third country markets in order to manage their risk profile.



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Do Spillover Effects Constitute a Practical Limitation to Fiscal Austerity Policy?

- European austerity policy pursued mainly with the aim of ensuring the fiscal sustainability of individual member-nation economies
- Cyclical implications of the empirical literature are clear: the transmission channels synchronize and prolong the recessionary end of the business cycle among linked European markets.
- This would particularly be the case in the context of multiple European member nations implementing austerity simultaneously
- This constitutes a practical limit of feasibility fiscal austerity in Europe.



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Conclusion & Recommendations

Policy Implications

- As far as the European context is concerned, the main policy recommendation drawn from examination of spillover and transmission channels is that international effects should be taken into consideration for coordination and cyclical response policies.
- Overlooking the spillover channels can lead to either over-shooting, under-shooting, or mis-coordination of fiscal retrenchment policies. Transmission channels synchronize and prolong the recessionary end of the business cycle among linked European markets.
- Beetsma et al. (2005), find that pronounced spillovers imply a “leakiness” of fiscal policy, meaning that a portion of the overall effects of fiscal stimulus policy will also be felt in neighboring and associated markets. This issue can be addressed by multilateral coordination of fiscal stimulus, thereby mutually internalizing the associated positive externality.
- Weyerstrass et al. (2006) corroborate this, elaborating that policy coordination can serve to mitigate the negative consequences of spillover from both idiosyncratic and union-wide macroeconomic shocks with respects to both competitiveness and output changes.

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Conclusion & Recommendations

Research

TRADE CHANNEL

- Studies on import demand elasticities have been undertaken principally focusing on emerging markets and developing countries
- Emerging Markets: larger income elasticities of import demand (both SR and LR).

Recommendations

CAPITAL MARKET CHANNEL

- More research can be done on effect of capital market spillover on not just on output, but also on financial market volatility, financial fragility, and systemic risk indicators
- International Database on Financial Fragility constructed at the University of Leicester makes good example

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Questions?

