Spillover Effects of Germany's Final Demand on Southern Europe

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Vortrag WU Forschungsseminar
Payerbach, 12. Mai 2017

Outline

Two views on current account rebalancing in EMU

The "Bundesbank" view

- Germany can contribute very little to growth, employment and trade balances in Southern Europe
- Bilateral trade flows small
- Germany trades with large number of countries
- $\rightarrow$ A German expenditure boom diffuses

The "symmetric rebalancing" view

- CA surplus countries: Stimulate domestic expenditure and inflate wages and prices
- CA deficit countries: Moderate expenditure and deflate
- Internal devaluation in deficit countries without expansion in surplus countries $\rightarrow$ recession

Which view is accurate?

Previous work:

- EC (2012): multi-regional input-output model to **estimate** the **size of spillover effects**.
- Shock: 1% of final demand in Germany $\rightarrow$
  Results: improves trade balance of Spain, Italy and Portugal by about 0.02% (smaller for Greece).
- Problem 1: Computes only simple multipliers, multiplier typically < 1 because of limited domestic effect and imports
- Problem 2: Germany only, not a coordinated stimulus in surplus countries
- Problem 3: What about a coordinated stimulus in all EU countries?

Our contribution: Going beyond the Commission study

1. Close the model with respect to households:
   Allow for a Keynesian multiplier typically > 1 (a Keynesian consumption function)
   $\rightarrow$ compute total multipliers (including induced effects of higher wages on higher consumption)
2. Additionally, close the model with respect to firms: a simplistic Keynesian investment function
   $\rightarrow$ compute total multipliers (including induced effects of higher firm profits on more investment)
3. Estimate the effects of coordinated demand shocks in groups of countries, while the EC study focuses on Germany alone.

Our method, IO analysis, has a few advantages

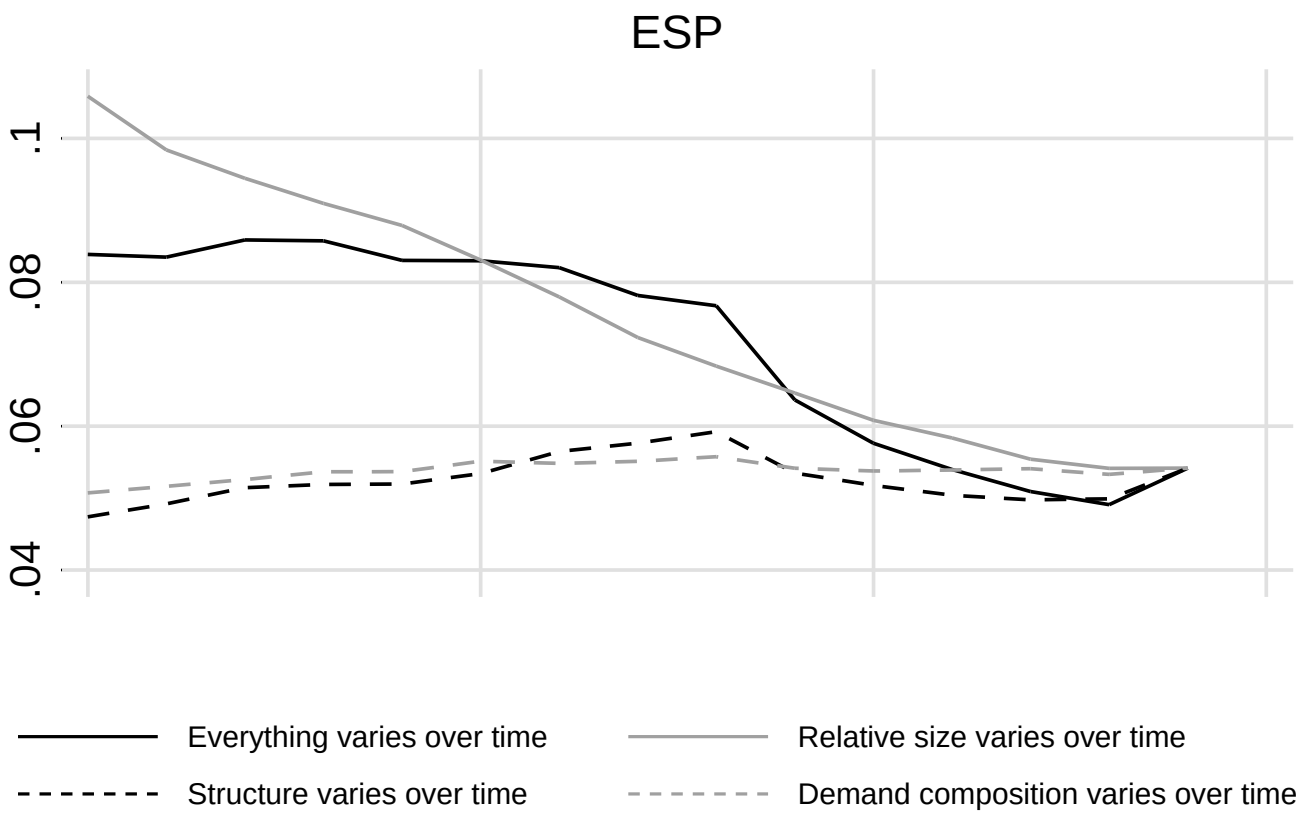
- A *multi-regional* input-output model takes into account interdependencies between industries in different regions (third-country multiplier effects and global value chains).
- *Impact analysis* allows estimation of the effect on output and employment of an exogenous shock to final demand
- **Impact analysis based on a multi-regional model yields estimates of** the **size of spillover effects**, i.e. the response of income and employment in one country triggered by a final demand shock in another country

Size of spillover effects depends on...

- Economic structure
  - Production structure: The sourcing pattern of producers: From which industries in which countries do producers buy their intermediate goods?
  - Consumption structure: The sourcing pattern of end-users: From which industries in which countries do end-users buy their consumption and investment goods?
- Relative size: Size of shocked economy (e.g. Germany) relative to non-shocked economy (e.g. France)
- Shock size: One, two, or twenty percent of Germany's GDP?

Temporal stability

German 1% FD shock on Spain, 1995-2009



Things to keep in mind about Input-Output analysis

- An Input-Output (IO) model is all linear: Economies of scale with a large shock?
- An IO model implies a Leontief production function $\rightarrow$ no substitution effect
- No price effects: No competitiveness effects through wage or non-wage cost, no exchange rate effects
- However: Where is currently a model that gives you results at this level of detail (per country)?

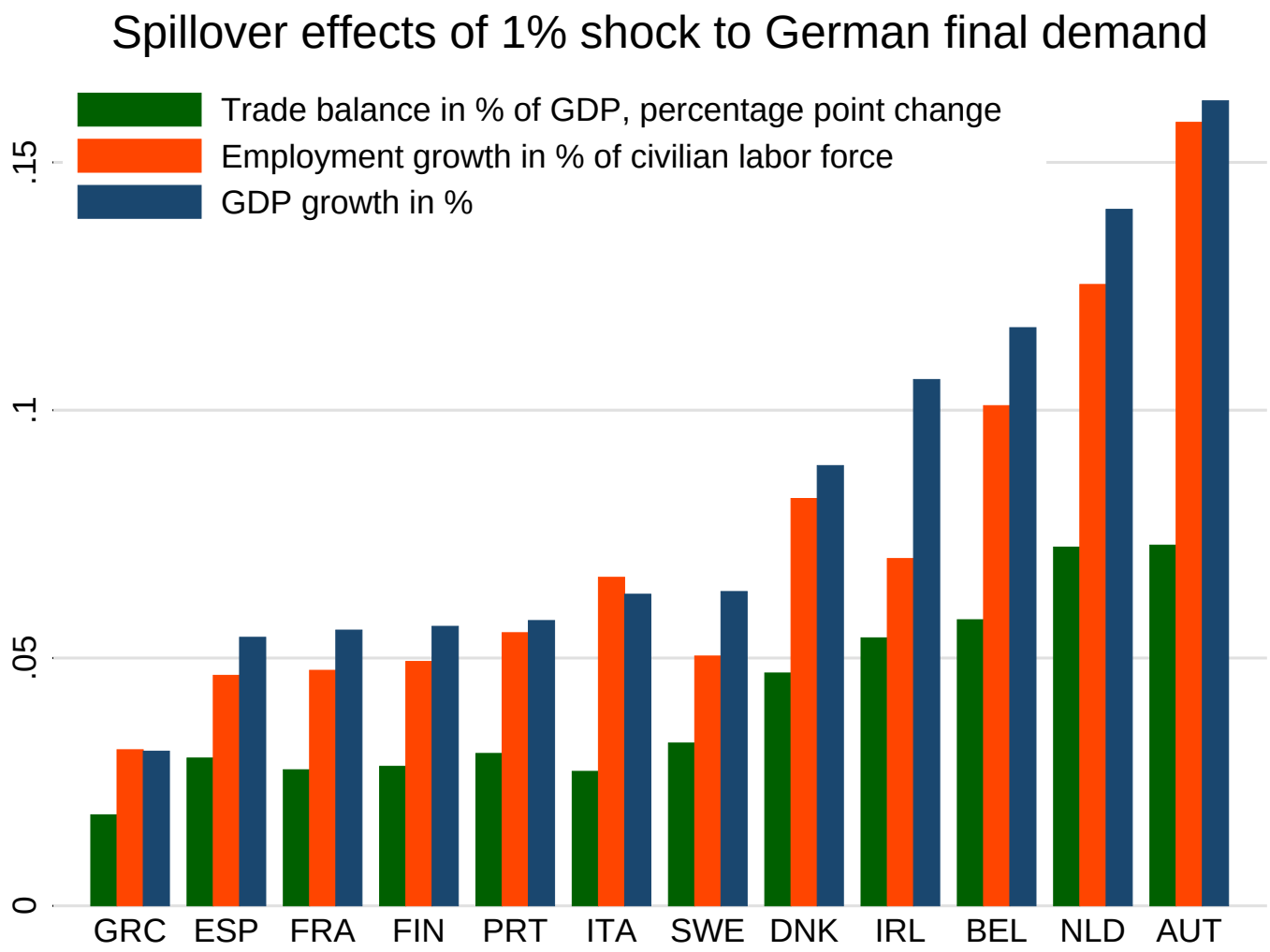
Data

- Data from: World Input Output Database (WIOD)
- 35 Industries and 41 regions (40 countries and a model for the rest of the world) from 1995 – 2011, one table per year.
- Tables measure the flows of goods and services from industries to intermediate and final users, broken down by country of origin and by country of destination.
- Socioeconomic Accounts (SEA-WIOD): Auxiliary data necessary to close the model with respect to households (labor income, employment and hours worked by industry)
- $\rightarrow$ 2009 Table for open and closed model, 2011 (latest available data) for open model.

Domestic effects of incremental shocks, Germany

Model	**FD shock**	**GDP growth rate**	**Change in employ-ment**	**Trade Balance over GDP**
		in %	in p.p. of labor force	Change in ratio
Open	1% GDP	0.839	0.783	-0.307
Closed	1% GDP	1.380	1.233	-0.508
Closed2	1% GDP	1.835	1.641	-0.672
for comparison:				
Closed	1% FD	1.211	1.081	-0.446

German spillover effects on EU-12 (closed model)



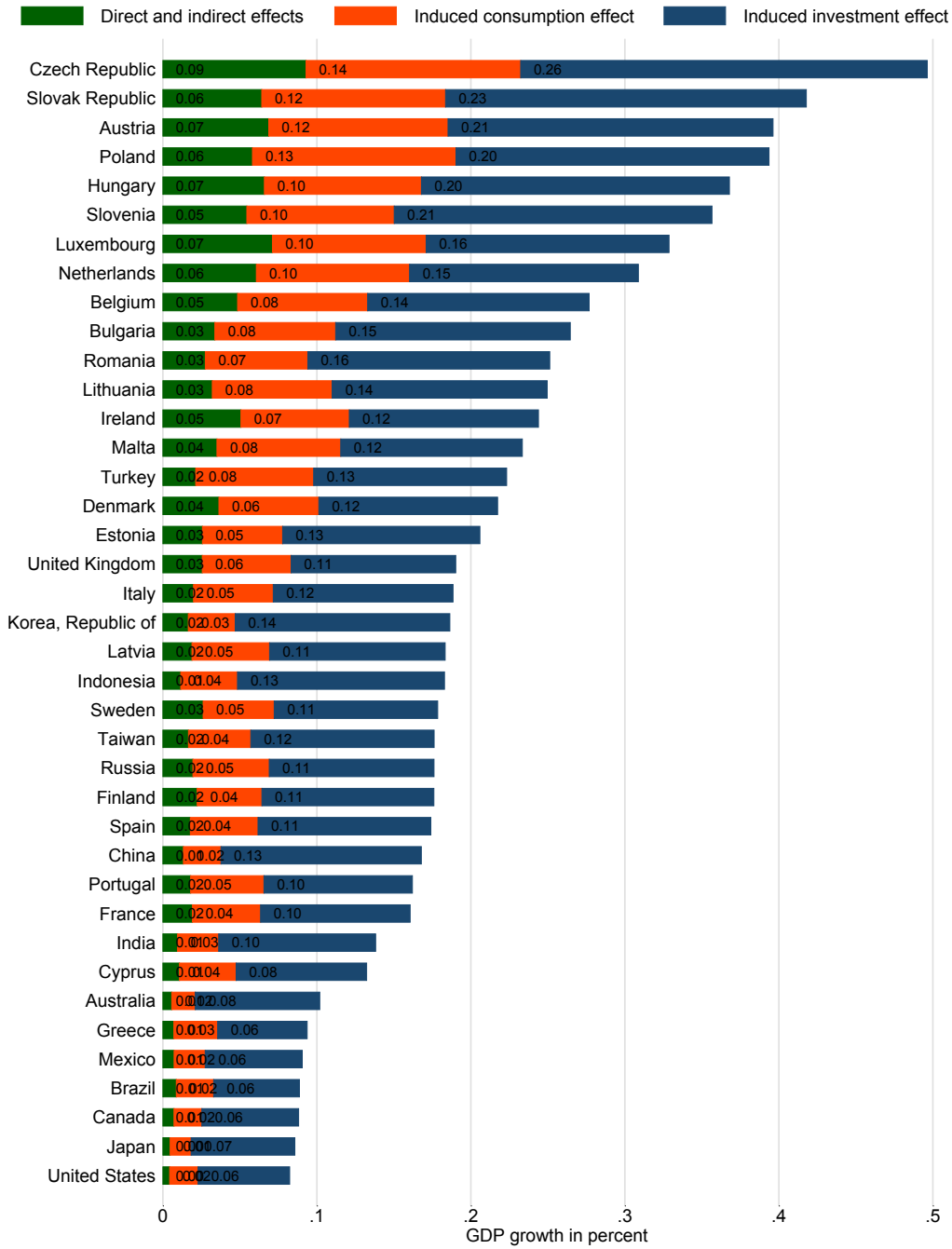
On the size of spillovers I

Spillover effects are

- highest for immediate neighbors Austria, Netherlands, Belgium
- similar and even higher for Eastern European countries in the “German production network”: CZ, SVK, PL
- on the smaller side for all Southern European countries (but Tourism?)
- Take a 10% final demand change in Germany (closed model):
  - Spain’s GDP would increase by 0.54%.
  - Italy’s GDP would increase by 0.63%
  - For comparison: 1.62% for Austria, 1.41% for the Netherlands, and 2.04% for the Czech Republic

On the size of spillovers II

- Open model: Spillovers are tiny (EC and WIFO studies based on it)
- In closed model with endogenous consumption, spillovers more than double, but from a very low level, so still small
- In the closed2 model with endogenous investment, spillovers are actually decent!
- Take a 10% final demand change in Germany:
  - Spain's GDP increases by 1.53%
  - Italy's GDP increases by 1.66%
  - For comparison: 3.48% for Austria, 2.71% for the Netherlands, and 4.35% for the Czech Republic
  - if FD shock is 10% of GDP: Italy 1.74% and Spain 1.88%


Direct and indirect effects
Induced consumption effect
Induced investment effect
Czech Republic 0.09 0.14 0.26
Slovak Republic 0.06 0.12 0.23
Austria 0.07 0.12 0.21
Poland 0.06 0.13 0.20
Hungary 0.07 0.10 0.20
Slovenia 0.05 0.10 0.21
Luxembourg 0.07 0.10 0.16
Netherlands 0.06 0.10 0.15
Belgium 0.05 0.08 0.14
Bulgaria 0.03 0.08 0.15
Romania 0.03 0.07 0.16
Lithuania 0.03 0.08 0.14
Ireland 0.05 0.07 0.12
Malta 0.04 0.08 0.12
Turkey 0.02 0.08 0.13
Denmark 0.04 0.06 0.12
Estonia 0.03 0.05 0.13
United Kingdom 0.03 0.06 0.11
Italy 0.02 0.05 0.12
Korea, Republic of 0.02 0.03 0.14
Latvia 0.02 0.05 0.11
Indonesia 0.01 0.04 0.13
Sweden 0.03 0.05 0.11
Taiwan 0.02 0.04 0.12
Russia 0.02 0.05 0.11
Finland 0.02 0.04 0.11
Spain 0.02 0.04 0.11
China 0.01 0.02 0.13
Portugal 0.02 0.05 0.10
France 0.02 0.04 0.10
India 0.01 0.03 0.10
Cyprus 0.01 0.04 0.08
Australia 0.01 0.02 0.08
Greece 0.01 0.03 0.06
Mexico 0.01 0.02 0.06
Brazil 0.01 0.02 0.06
Canada 0.01 0.02 0.06
Japan 0.00 0.01 0.07
United States 0.00 0.02 0.06
0
.1
.2
.3
.4
.5
GDP growth in percent

Scenario 1: German elimination of current account balance I

- Current account surplus of 7.73% of GDP (MIP 2013-15)
- How much does final demand have to change to eliminate this surplus?
  - Nominal GDP would have to increase by around 26.2%, total final demand by even more than that
  - That is achieved by a 14.3% (of GDP) exogenous shock to final demand (closed2 model),
  - or a 19% (of GDP) exogenous shock to final demand (closed model)
  - or a 31.7% (of GDP) exogenous shock to final demand (open model)

Scenario 1: German elimination of current account balance II

	GDP growth rate	Employment growth	Trade balance to GDP
	in %	in % of labor force	Change of ratio in p.p.
Austria	5.8	5.4	1.17
Belgium	4.0	3.5	1.02
Germany	26.2	23.5	-7.75
Spain	2.5	2.1	0.63
Finland	2.5	2.2	0.68
France	2.3	1.9	0.65
Greece	1.3	1.4	0.43
Ireland	3.5	2.8	0.86
Italy	2.7	2.8	0.61
Netherlands	4.5	4.0	1.28
Portugal	2.3	2.2	0.66

Scenario 1: German elimination of current account balance III

- Spillover effects for the Southern Europeans are not negligible, decent, but still rather on the small side.
- A 14.3% of GDP exogenous shock to German final demand leads to a 2.7 and 2.5 increase in Italian and Spanish GDP, respectively.
- But what about other current account surplus countries?

Scenario 2: Surplus countries' expansion I

Surplus Country	Current account surplus MIP 2013-2015	Expansion factor	FD shock
	in % of GDP		in % of GDP
Denmark	7,28	2	14,56
Luxembourg	5,58	2	11,16
Germany	7,73	2	15,46
Malta	5,61	2	11,22
Netherlands	10,29	2	20,58
Slovenia	5,79	2	11,58
Sweden	4,87	2	9,74

Scenario 2: Surplus countries' expansion II

	GDP growth rate	Employment growth	Trade balance to GDP
	in %	in % of labor force	Change of ratio in p.p.
Austria	7,8	7,5	1,61
Belgium	7,9	7,0	1,93
Germany	29,6	27,4	-7,75
Spain	3,8	3,2	0,96
Finland	5,0	4,4	1,31
France	3,6	3,0	1,01
Greece	2,1	2,2	0,66
Ireland	5,7	4,6	1,34
Italy	4,1	4,3	0,91
Netherlands	31,0	30,0	-9,77
Portugal	3,6	3,5	1,01

Scenario 2: Surplus countries' expansion III

Interpretation of the "Surplus countries only expansion" scenario:

- Note: All scenarios with closed2 model (largest effects due to investment)
- Decent effects on Southern Europeans
- Is the size of required demand shocks in the surplus countries feasible and economically sensible?
- Spain, Italy, Portugal and France: improve trade balance by around 1%

Scenario 3: Coordinated final demand expansion I

Scenario 3: Coordinated, but asymmetric final demand expansion in EU-27

- Surplus countries expand same as before
- Relaxation in trade balance constraint of non-MIP countries based on the previous scenario:
- 20 EU non-surplus countries change final demand by 3 times their trade balance (e.g. the TB in Italy had improved by 0.91%, therefore the Italian final demand shock is 2.73%.
- Scenario chosen to eliminate the trade balance gains of Southern Europeans and “translate” them into GDP and employment gains through domestic demand

Scenario 3: Coordinated final demand expansion II

	GDP growth rate	Employment growth	Trade balance to GDP
	in %	in % of labor force	Change of ratio in p.p.
Austria	17,6	17,0	-1,13
Belgium	17,7	15,7	-1,36
Germany	32,9	30,3	-7,03
Spain	12,8	10,4	-0,02
Finland	13,3	11,7	-0,43
France	11,5	9,6	0,05
Greece	8,3	8,7	-0,04
Ireland	12,8	11,9	-1,34
Italy	12,2	12,5	-0,09
Netherlands	34,3	33,2	-8,78
Portugal	12,1	11,3	-0,10

Scenario 3: Coordinated final demand expansion III

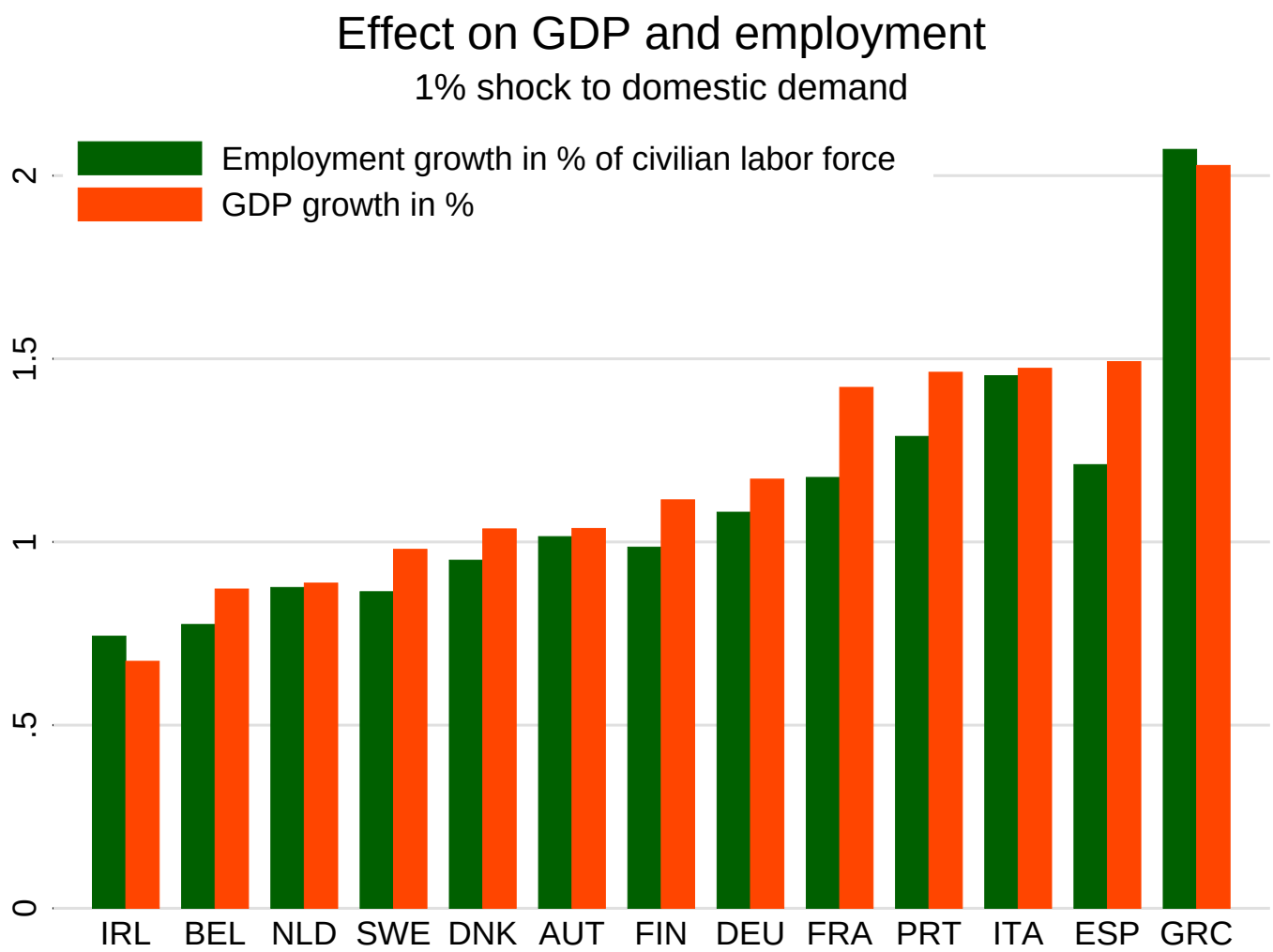
- Southern countries can use their improved trade balance to expand demand and not end up with a current account deficit!
  - Surplus countries TB improve slightly again
  - Italy's GDP increases by 12.2% instead of 4.1%
  - Spain's GDP expands by 12.8% instead of 3.8%
  - Greek GDP: 8.3% instead of 2.1%
  - Portuguese GDP: 12.1% instead of 3.6%

Own effects I

Why the large effects in the Coordinated final demand expansion scenario?

- Large domestic GDP and employment effects in the Southern countries due to increase in domestic demand, not sizable spillover effects.
- The “own multiplier” (elasticity from 1% of domestic FD to x% of domestic GDP) for each country is much larger than the spillover effects from other countries.
- Countries are still fairly closed economies.

Own effects II



What's left out of the model?

The input-output model assumes fixed input-coefficients, and fixed consumption and investment coefficients.

- Expenditure-switching? (+)
- Will higher profits really turn into investment spending? Role of capacity utilization (-)
- Balance sheet effects ala Fisher and Koo (-)

Study	Model, regions	Shock type, size, and duration	Shock where?	Spillover effects
in 't Veld (2013)	QUEST, Germany, France, Italy, Spain, Ireland, Portugal, Greece, ROEA, ROEU, and ROW	Public investment, 1% of GDP, 2 years	Germany and ROEA	0.2-0.3% GDP growth and less than 0.1pps current account improvement in France, Italy, Spain, Ireland, Portugal, and Greece
Elekdag & Muir (2014)	GIMF, Germany, EA5, ROEA, United States, emerging Asia, and ROW	a) Public consumption, 1% of GDP, 2 years; b) public investment, 0.5% of GDP, 4 years	Germany	a) less than 0.1% GDP growth and less than 0.05pps current account improvement in EA5; b) 0.2% GDP growth and 0.05pps current account improvement in EA5
IMF (2015)	GIMF, Germany, EA5, ROEA, United States, emerging Asia, and ROW	Private consumption (preference parameter shock), 2% of GDP, 2 years	Germany	0.1% GDP growth and negligible current account improvement in EA5
BMWi (2015)	GEM, 80 countries plus some regions	Public investment, 1% of 2014 GDP, 4 years	Germany	0.1% GDP growth in Greece, France, Spain, and Portugal (less if efficiency of public investment is high), slightly more in ROEA; 0.1pps current account improvement in ROEA
Bundesbank (2016)	NiGEM, 44 countries plus 6 regions	Public investment, 1% of GDP, 2 years	Germany	0.2% GDP growth in France, Italy, and Spain, 0.1% in Greece and Portugal (0.26% in ROEA on average); less than 0.1pps current account improvement in ROEA
in 't Veld (2017)	QUEST, Germany, Netherlands, France, Italy, Spain, ROEA, and ROW	Public investment, 1% of GDP, 10 years	Germany and Netherlands	If efficiency of public investment is high: 0.5% GDP growth but almost no current account improvement in France, Italy, Spain, and ROEA

Mechanisms in DSGE models

- Interest rate channel: Domestic expenditure elastic with respect to real interest rate. Monetary accommodation crucial.
- Competitiveness channel: Regulated by elasticity of substitution. About 20 percent of total spillover effect (BMWi 2015).
- Productivity of public capital: Output elasticity of public capital is parameter. Larger own effect in the long-run, but weakens competitiveness channel.
- Import intensity across demand categories: Public investment has low import intensity (BMWi).

Two views on current account rebalancing in EMU

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The "symmetric rebalancing" view

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Policy conclusions: The model matters I

Up to the closed model, we are all Bundesbankers, after the closed2 model we turn into enthusiastic rebalancers:

1. CLOSED: Spillover effects are very small: North cannot help the South directly by correcting the demand deficiency in the North.
2. CLOSED: The notion that Northern Europe and in particular Germany should run more expansionary policies in the common European interest is misleading.
3. CLOSED-2: Spillover effects are decent: North can help the South to an extent by correcting its demand deficiency.
4. CLOSED-2: North should run more expansionary policies in the common European interest, although it won't be the single solution to all European imbalance problems

Policy conclusions: Other effects, and a universal solution I

1. About calls for higher wages we can't say much:
   - We could say something about the direct demand effect of higher wages if we were to estimate how much consumption expenditure higher wages would bring about.
   - Second channel missing: No "change in competitiveness" effect in the IO model. Would potentially increase the size of the effects in favor of the Southern European economies.
2. Does not invalidate helping the Southern countries: A Northern expansion would improve the trade balance of the Southern countries.
   - Own-country multipliers in the closed model are large in the Southern countries

Policy conclusions: Other effects, and a universal solution II

- This is also true for models with lesser expansion and spillover effects like the closed model

3. If no rebalancing, then successful polies must target economic activity in the deficit countries directly. Policy proposals that are on the right track:
Marshall plan for (Southern) Europe, Juncker Plan (times 10), IMK monetary financing proposal of investment, EU financed infrastructure investment in the South, European unemployment insurance, transfer mechanisms