

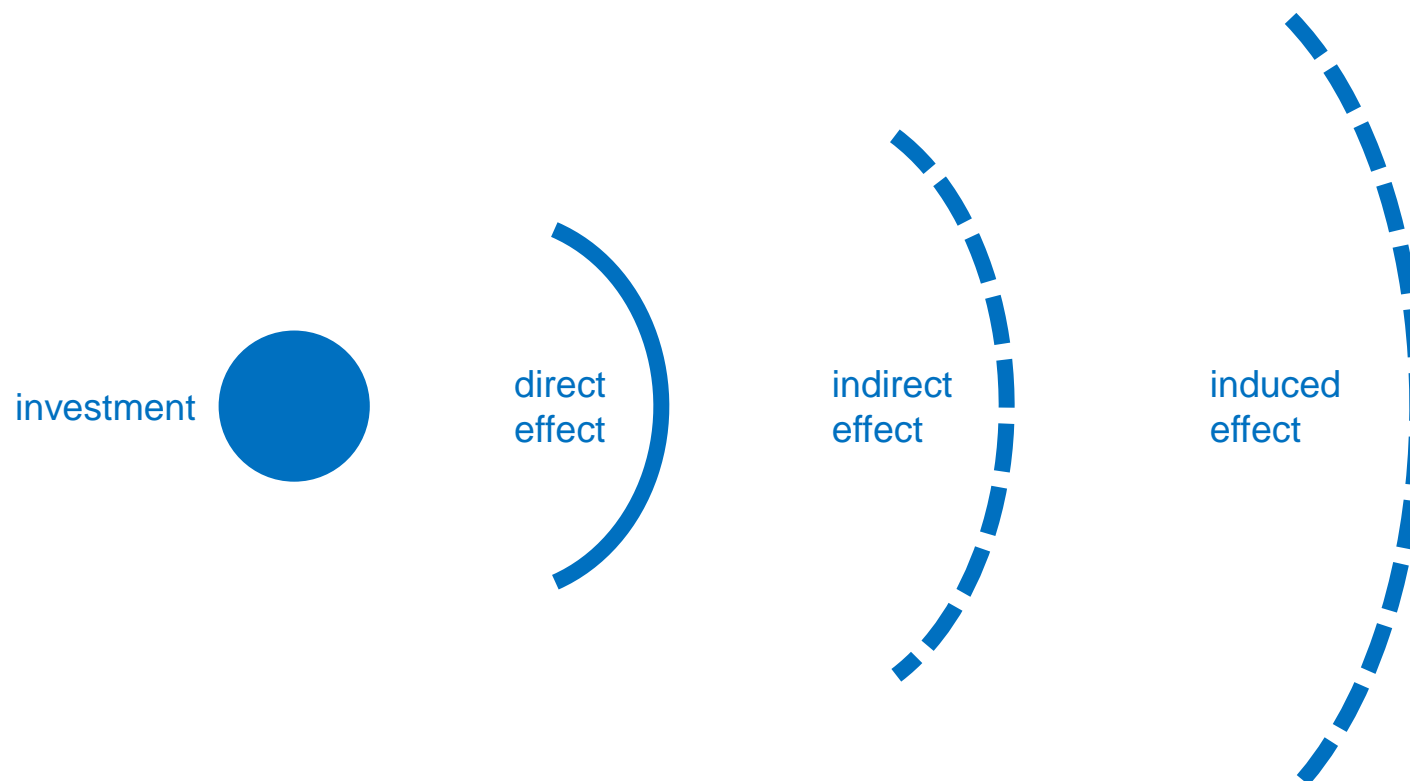
Measuring impact of EFSI in a CGE framework: the case of RHOMOLO

Francesco Di Comite (JRC) and Marcin Wolski (EIB)

“Micro- and macro-based methods in assessing the impact of investment”
Brussels, 5 April 2017

Why a macroeconomic assessment

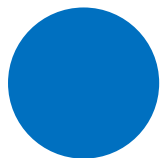
Looking beyond the direct effects of EIB supported activities



Why a macroeconomic assessment

Looking beyond the direct effects of EIB supported activities

investment



direct effect



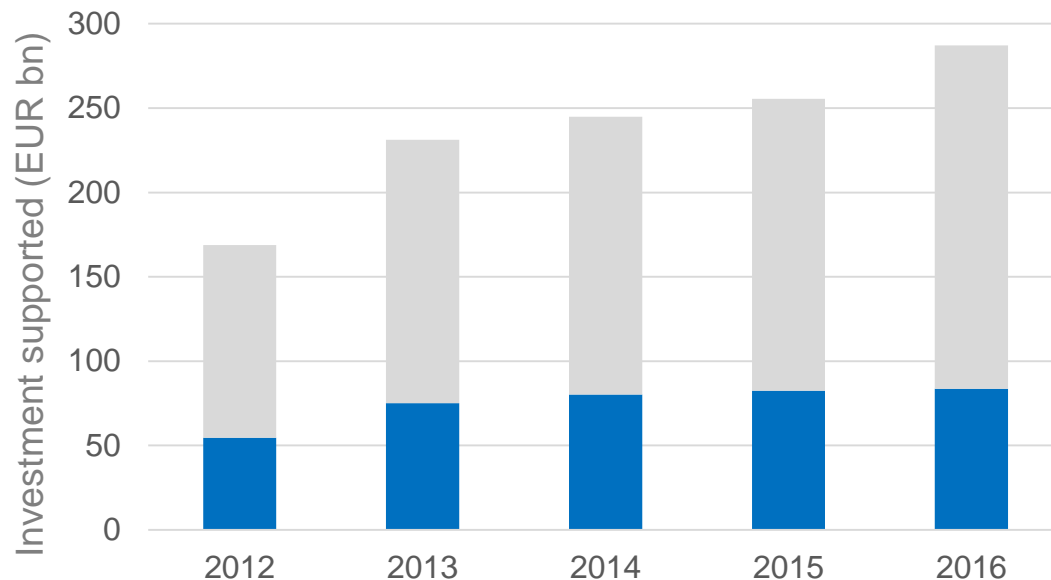
indirect effect



induced effect



EIB Group financing



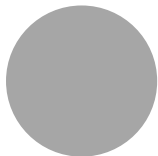
■ EIB Group signatures ■ EIB Group estimated investment supported

Source: EIB Annual Press Conference 2016

Why a macroeconomic assessment

Looking beyond the direct effects of EIB supported activities

investment



direct effect



JOB

4.4m jobs in small businesses



HEALTH

10m people with access to improved health services



EDUCATION

890 000 students benefiting from EIB projects

indirect effect



TRANSPORT

960m additional passengers



ENERGY

4m households powered by EIB projects



URBAN

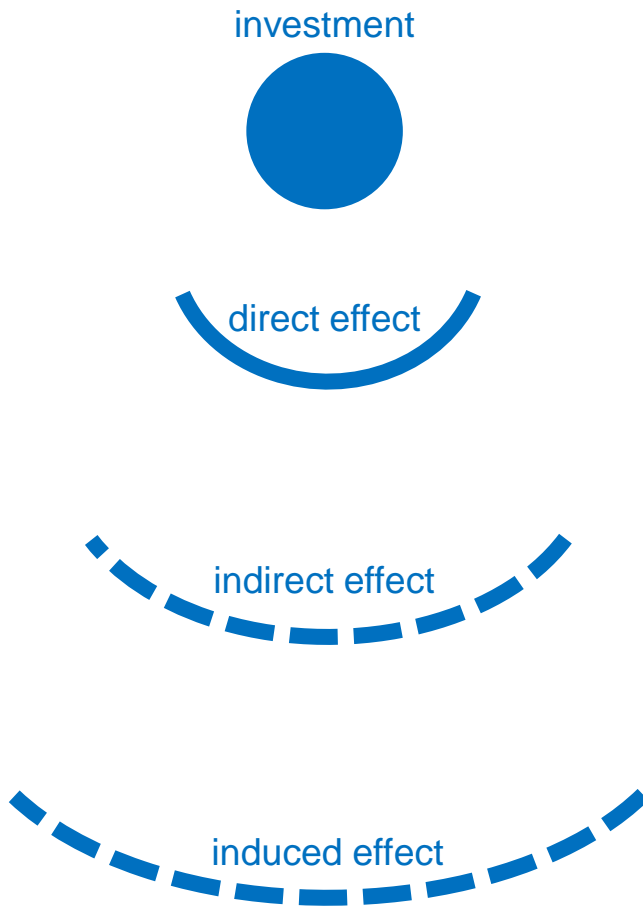
120 000 households in social and affordable housing

induced effect

Source: EIB Annual Press Conference 2016

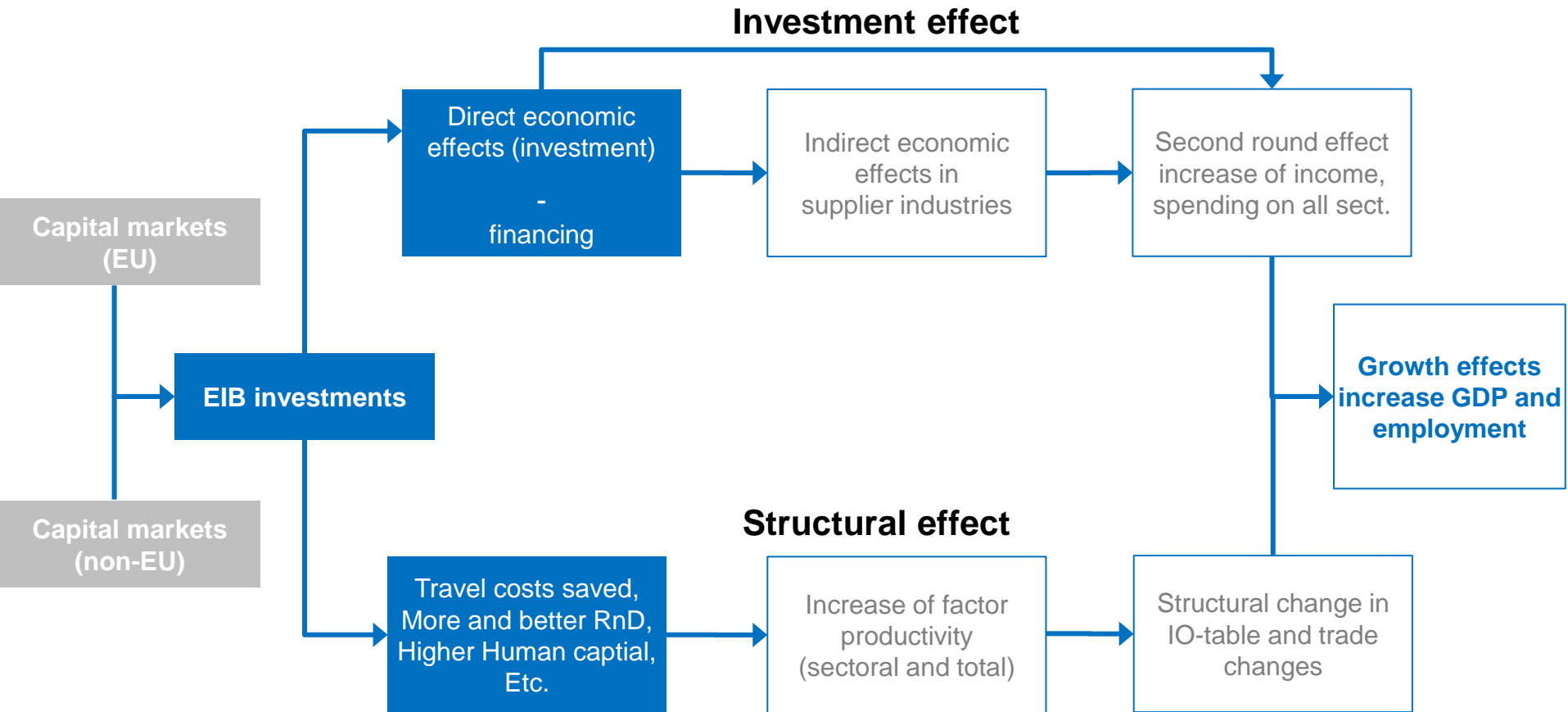
Impact assessment

What modelling framework?



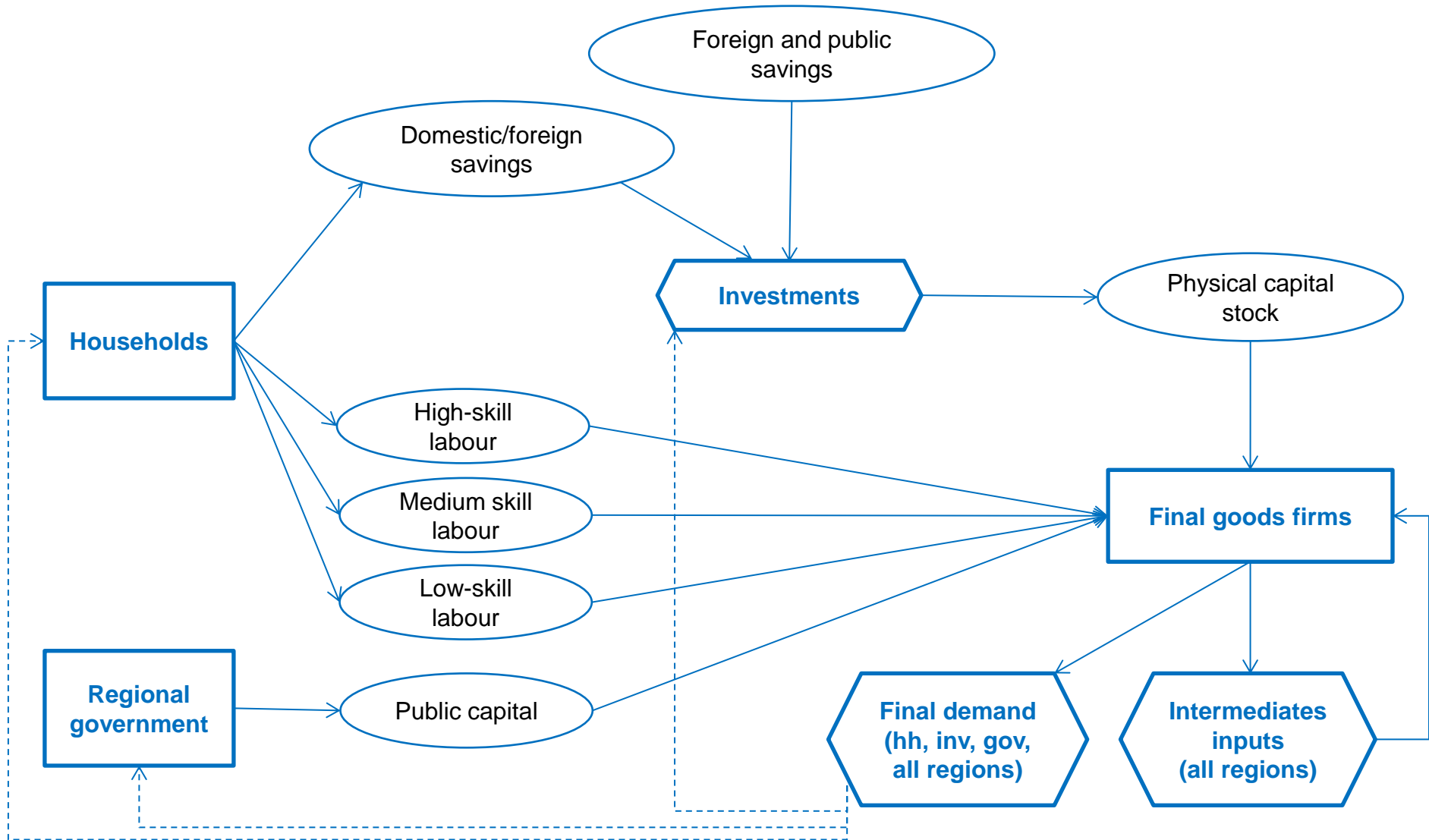
- Indirect and induced effects are not directly observable and require a careful analytical framework: **economic model**
- The model should include **crucial elements to address the problem**, including main economic agents, relations and behavioral principles
- **Modelling assumptions** should be well-recognized by scholars and practitioners
- Keep the balance between **applicability and complexity**
- Important to track on **short- and long-term** effects
- Be able to **recognize the caveats** and provide **sensitivity analysis** to different modelling shortcomings
- A good model is better than no model but not better than any model

(stylized) EIB business model



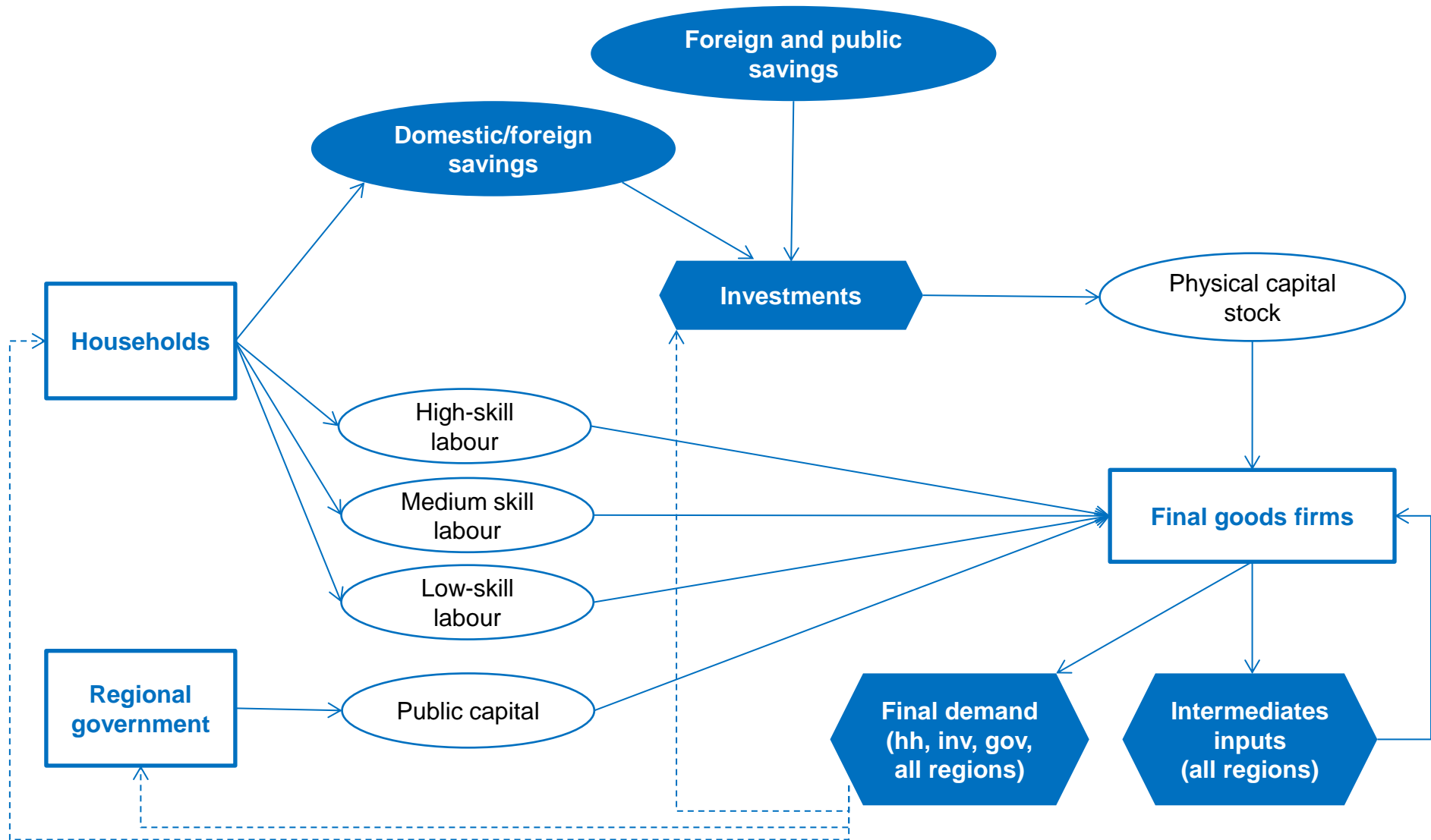
The model: RHOMOLO

Model setup



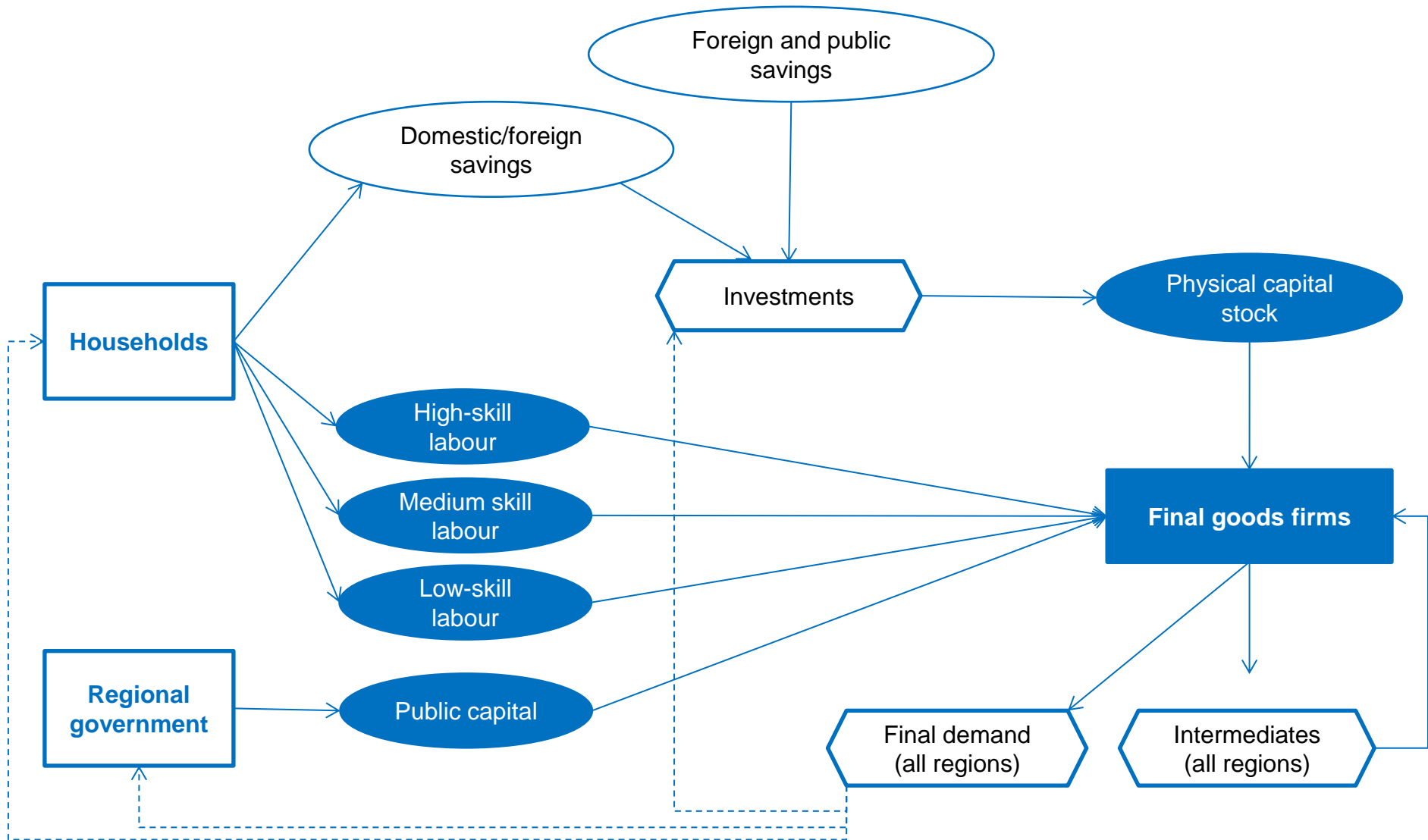
The model: RHOMOLO

Model setup: demand effects



The model: RHOMOLO

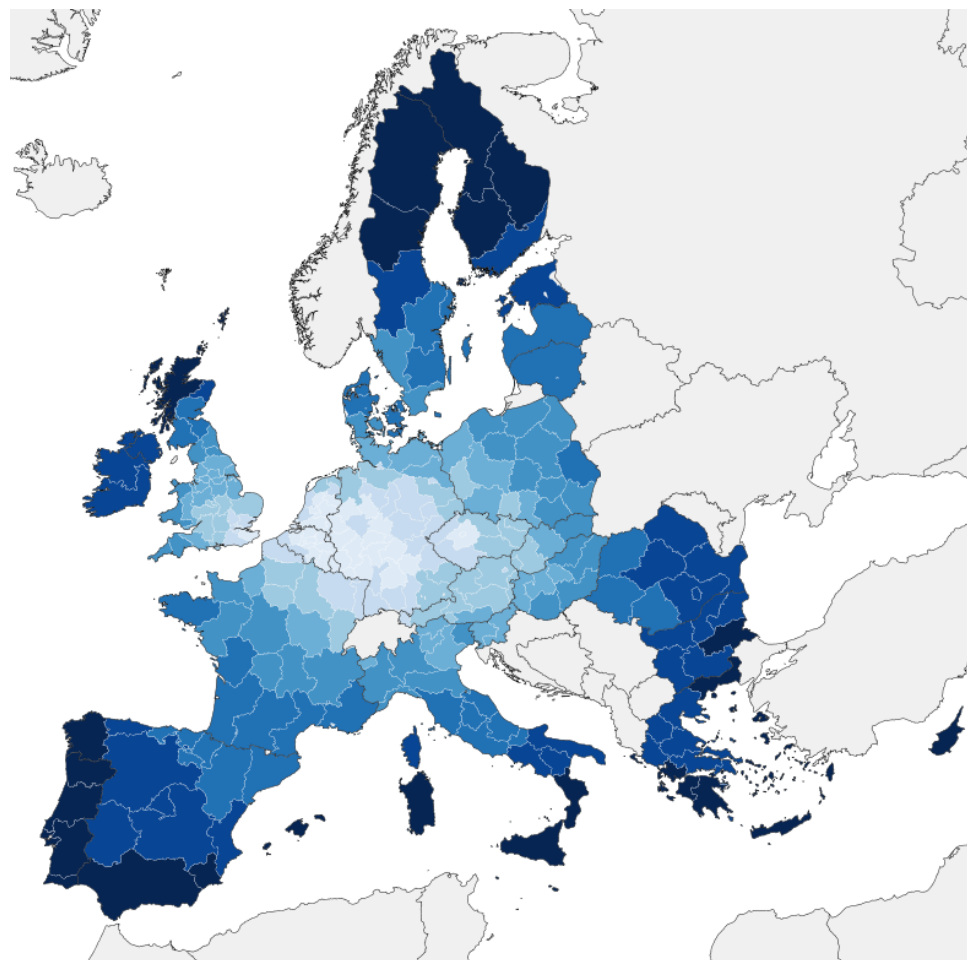
Model setup: structural effects



NACE Rev. 2 sectors

A	Agriculture , Forestry and Fishing
B,D,E	Mining and Quarrying + Electricity, Gas, Steam and Air Conditioning Supply + Water Supply; Sewerage, Waste Management and Remediation Activities
C	Manufacturing
F	Construction
G-I	Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles + Transportation and Storage + Accommodation and Food Service Activities
J	Information and Communication
K	Financial and Insurance Activities
L	Real Estate Activities
M-N	Professional, Scientific and Technical Activities + Administrative and Support Service Activities
O-Q	Public Administration and Defence; Compulsory Social Security + Education + Human Health and Social Work Activities
R-U	Arts, Entertainment and Recreation + Other Service Activities + Activities of Households As Employers; Undifferentiated Goods- and Services-Producing Activities of Households for Own Use + Activities of Extraterritorial Organisations and Bodies

NUTS2 regions (Transport accessibility index example)



RHOMOLO

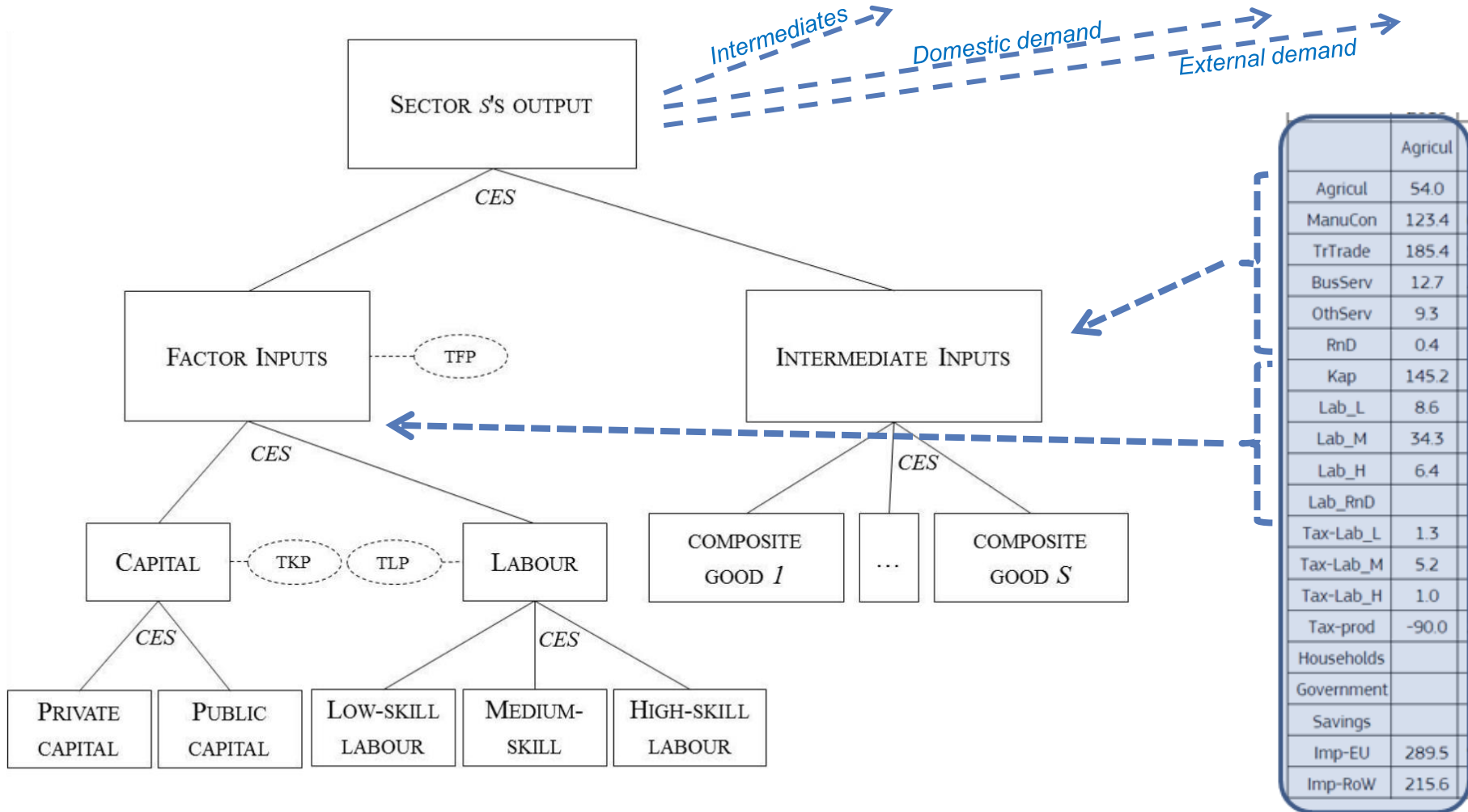
Regional database: example

	2010	LU00																		
	Agricul	Manu Con	TrTrade	BusServ	OthServ	RnD	Kap	Lab_L	Lab_M	Lab_H	Lab RnD	Tax Lab_L	Tax Lab_M	Tax Lab_H	Tax-Prod	Households	Government	Investor	Exp-EU	Exp-RoW
Agricul	54.0	309.6	72.7	4.1	2.2											363.1	0.0	2.8	184.2	9.8
ManuCon	123.4	5256.8	2415.4	1277.8	1162.8											8614.5	238.3	6203.9	9136.3	2659.7
TrTrade	185.4	5851.8	2231.9	2271.4	178.9											1991.9	121.7	0.0	2216.4	4242.0
BusServ	12.7	2810.1	4587.6	44721.1	802.9											3424.6	73.9	478.5	6526.1	39620.6
OthServ	9.3	37.3	84.4	123.4	402.1											1609.8	6413.8	20.0	786.3	4.8
RnD	0.4	221.5	302.8	582.2	56.8															
Kap	145.2	1252.5	3813.8	10841.4	1142.2															
Lab_L	8.6	965.9	706.3	489.4	358.3															
Lab_M	34.3	1349.6	1493.1	1766.6	1576.5															
Lab_H	6.4	841.8	934.0	2878.4	2257.1															
Lab_RnD						1163.7														
Tax-Lab_L	1.3	168.7	98.4	69.2	66.4															
Tax-Lab_M	5.2	232.9	209.9	248.5	293.4															
Tax-Lab_H	1.0	144.5	130.1	559.9	429.1															
Tax-prod	-90.0	2364.9	-71.8	2046.8	44.5															
Households							16398.2	2694.5	6480.2	7185.3	1163.7						-3891.5			2085.0
Government							797.0					404.0	989.9	1264.6	4294.3	5186.0				
Savings																10231.8	9979.6		16199.1	-29705
Imp-EU	289.5	9264.2	1681.6	23393.9	419.1															
Imp-RoW	215.6	5016.9	601.2	11784.0	298.9															

RHOMOLO

Production structure

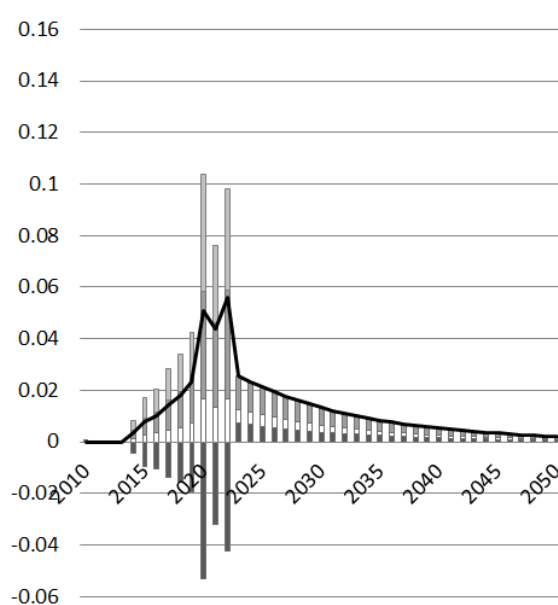
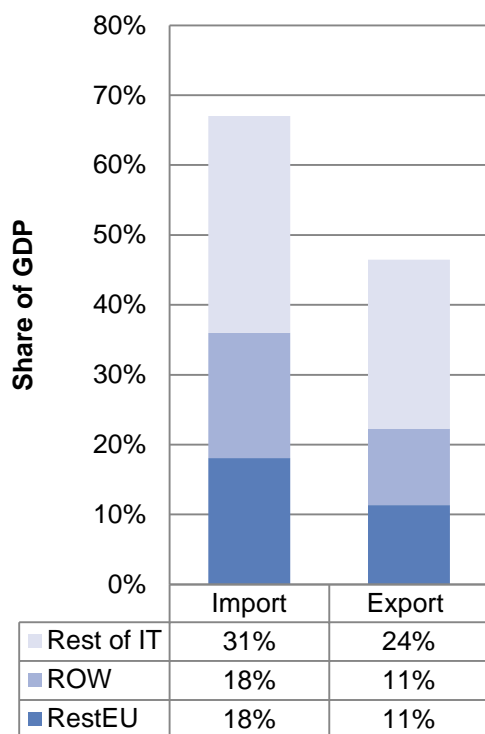
	Agricul	Manu Con	TrTrade	BusServ	OthServ	RnD	Kap	Lab_L	Lab_M	Lab_H	Lab_RnD	Tax Lab_L	Tax Lab_M	Tax Lab_H	Tax-Prod	Households	Government	Investor	Exp-EU	Exp-RoW
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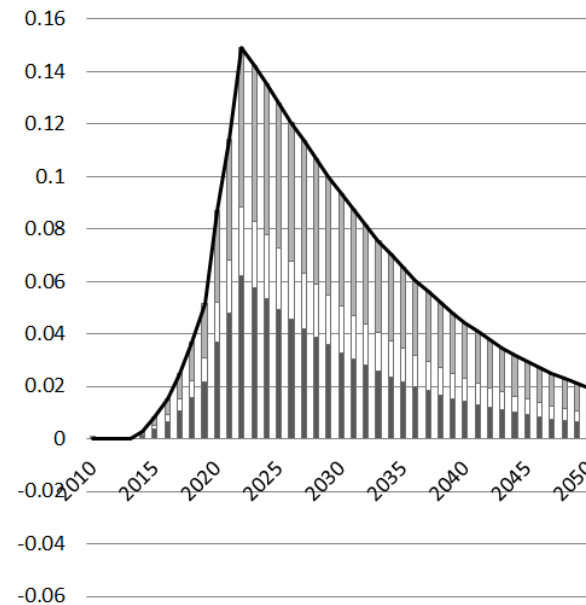
Example of typical demand and structural effects in open economies

GDP impacts of ERDF T01 and T04 investments in Apulia, by demand component, percent deviations from baseline. Demand (left pane) and structural (right pane) effects

Regional trade openness



- Public consumption/GDP,% changes
- HH consumption/GDP,% changes
- Investments/GDP,% changes
- Net trade/GDP,% changes
- change in public consumption/base year GDP,%
- GDP,% changes

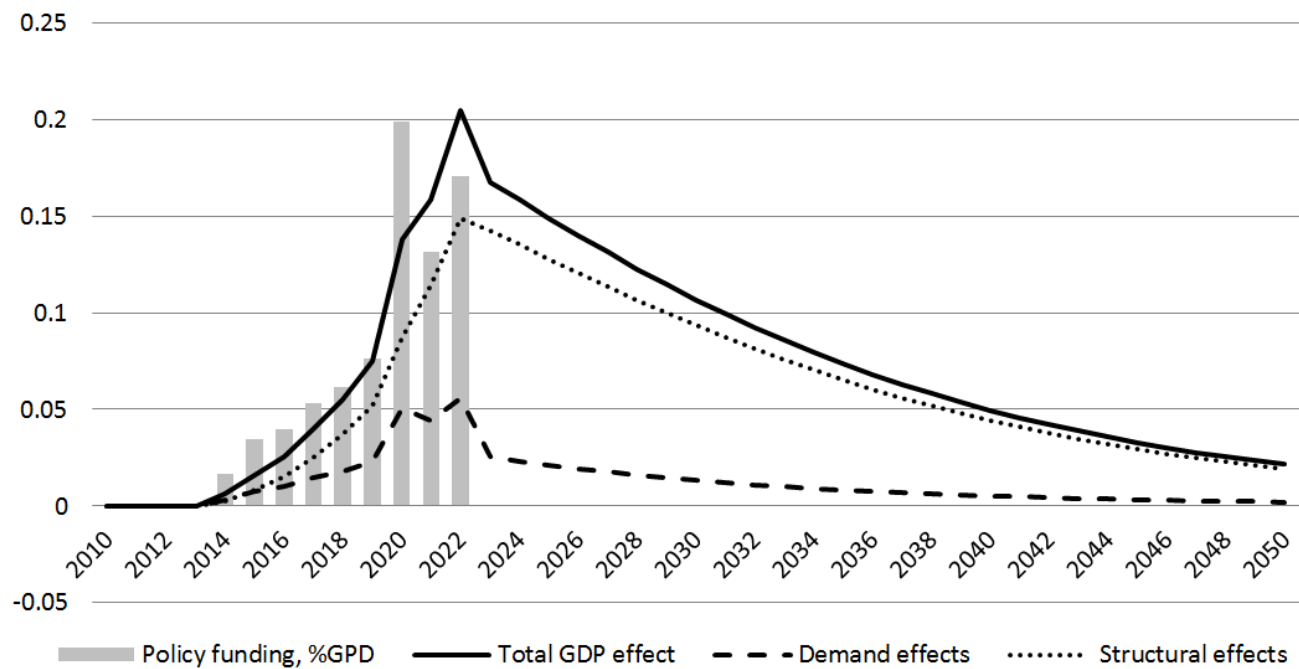


- HH consumption/GDP,% changes
- Investments/GDP,% changes
- Net trade/GDP,% changes
- change in public consumption/base year GDP,%
- GDP,% changes

RHOMOLO

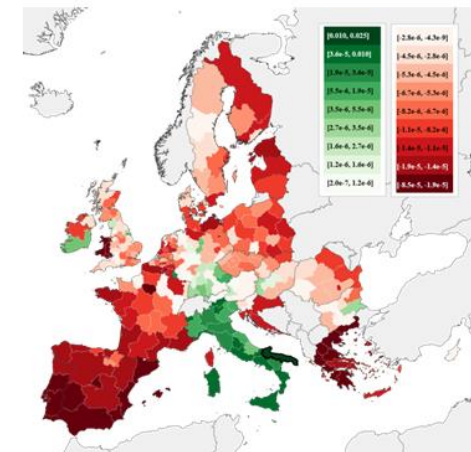
Example of typical demand and structural effects

Demand and structural effects on GDP in Apulia, percent change from baseline

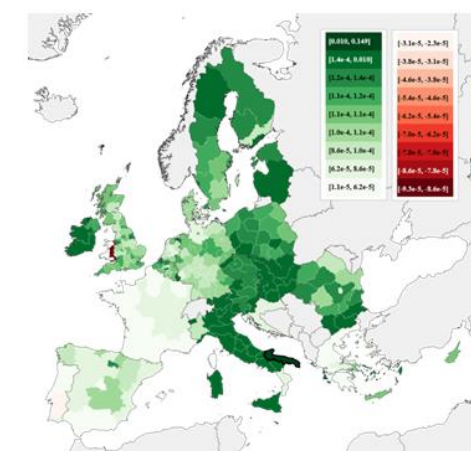


GDP changes in NUTS2 regions due to policy funding

2016

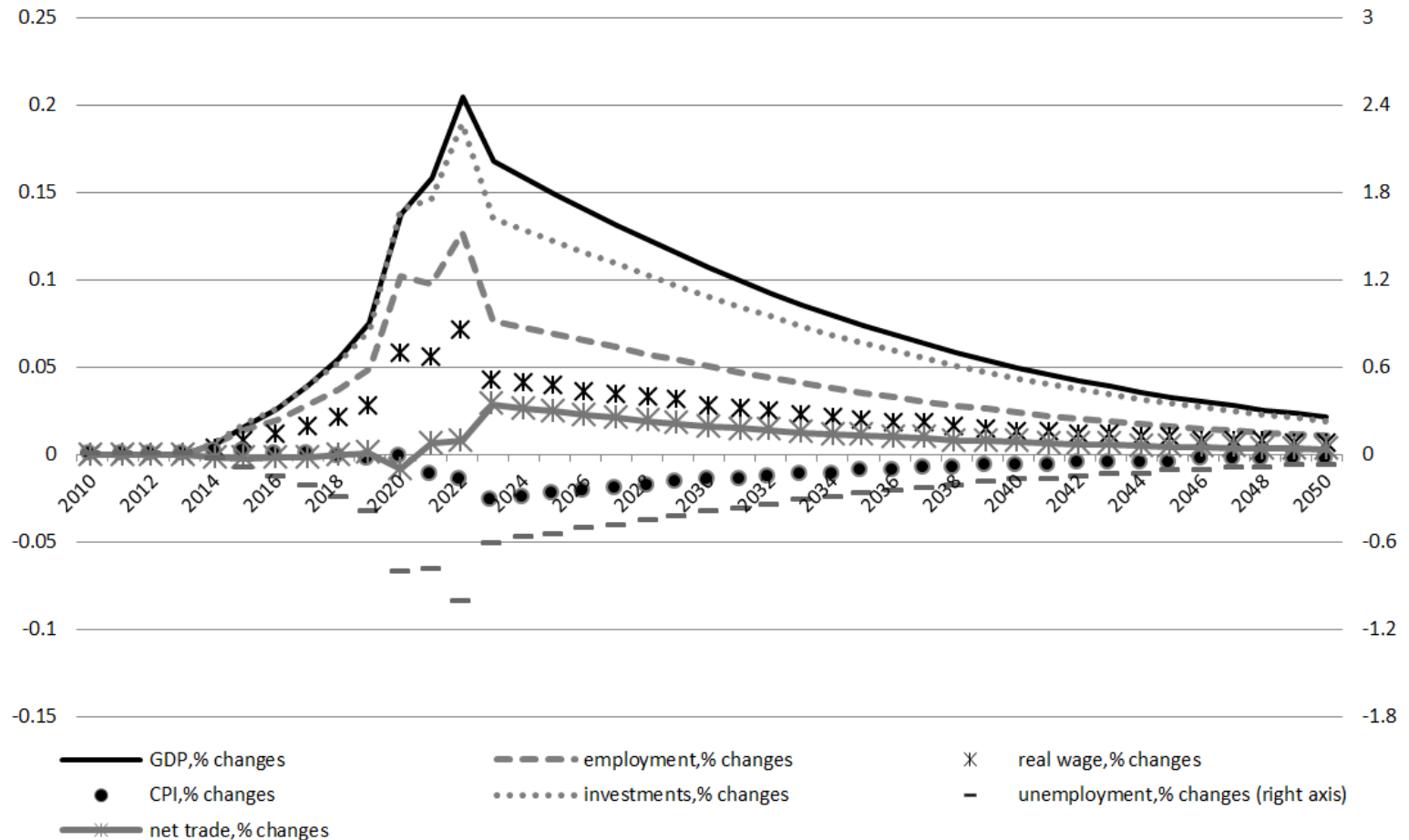


2025



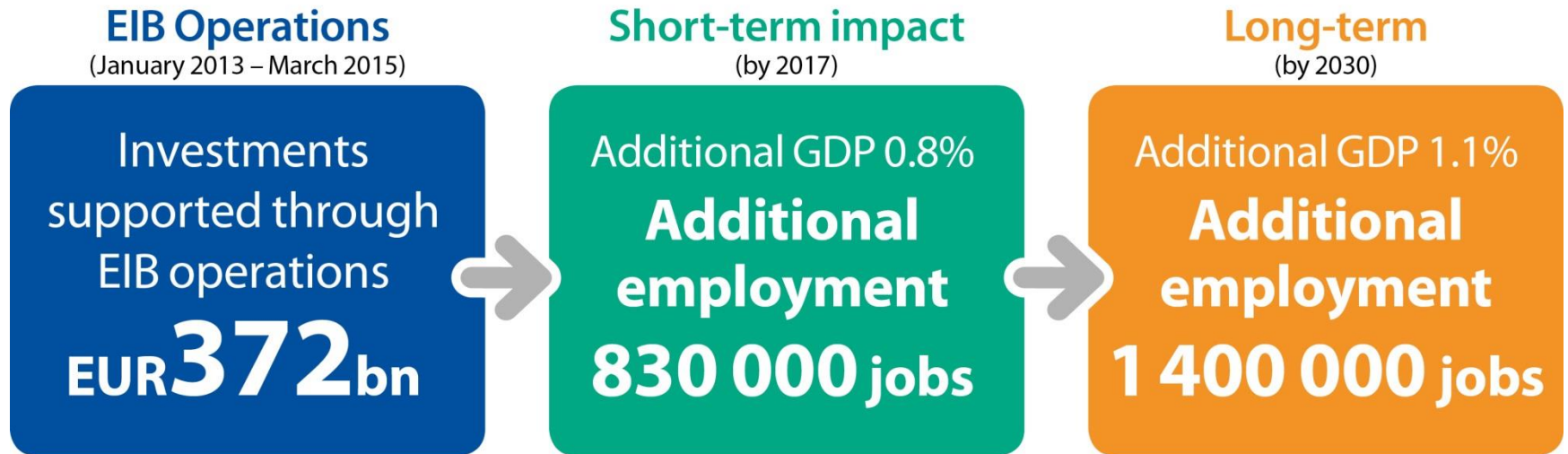
Example of typical demand and structural effects

Percentage deviation for a set of key macroeconomic indicators in Apulia due to the policy funding of T01 and T04 objectives



Macroeconomic impact of EIB activities

Pilot: assessing EIB impact during the capital increase.



Assessing EIB impact during the capital increase.

- Scope: all lending operations between January 2013 and March 2015
- Effects over 2010 baseline
- Full project investment costs
- All loans fully financed and repaid

Next steps in model fine-tuning

- Finalising methodology choices for:
 - Turning investment data into
 - Investment-induced demand shocks;
 - Investment finance;
 - Structural shocks.
- Identifying elasticities of structural parameters to investments;
- Run robustness checks and sensitivity analyses.

Thank you for your attention

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