Public Investment in Belgium
Current State and Economic Impact

Bernadette Biatour
Chantal Kegels
Jan van der Linden
Dirk Verwerft

plan.be

Why this exercise?

- Investment Plan for Europe (IPE) launched by the European Commission in 2015
- Belgium National Strategic Investment Plan initiated by the Prime Minister
- Country Specific Recommandations: the third recommendation addressed to Belgium by the Council of the European Union in July 2016 included: '(…). Address shortfalls in investment in transport infrastructure and energy generation capacity.'
- Recommendation in EDRC of OECD and in IMF Country Report

Definitions

- Only one well-defined and measurable definition: General government gross fixed capital formation
  - General government (S13): central + state (Regions and Communities) + local governments + Social security funds
  - Gross: means that investment is measured before the deduction of consumption of fixed capital (depreciation)
  - Fixed capital formation (P51): tangible assets + some intangible assets, does not include usual maintenance costs of installed capital but only major improvements to a fixed asset

- Public investment = General government investment + investment by entities controlled by government (e.g. NMBS/SNCB or Fluxys)

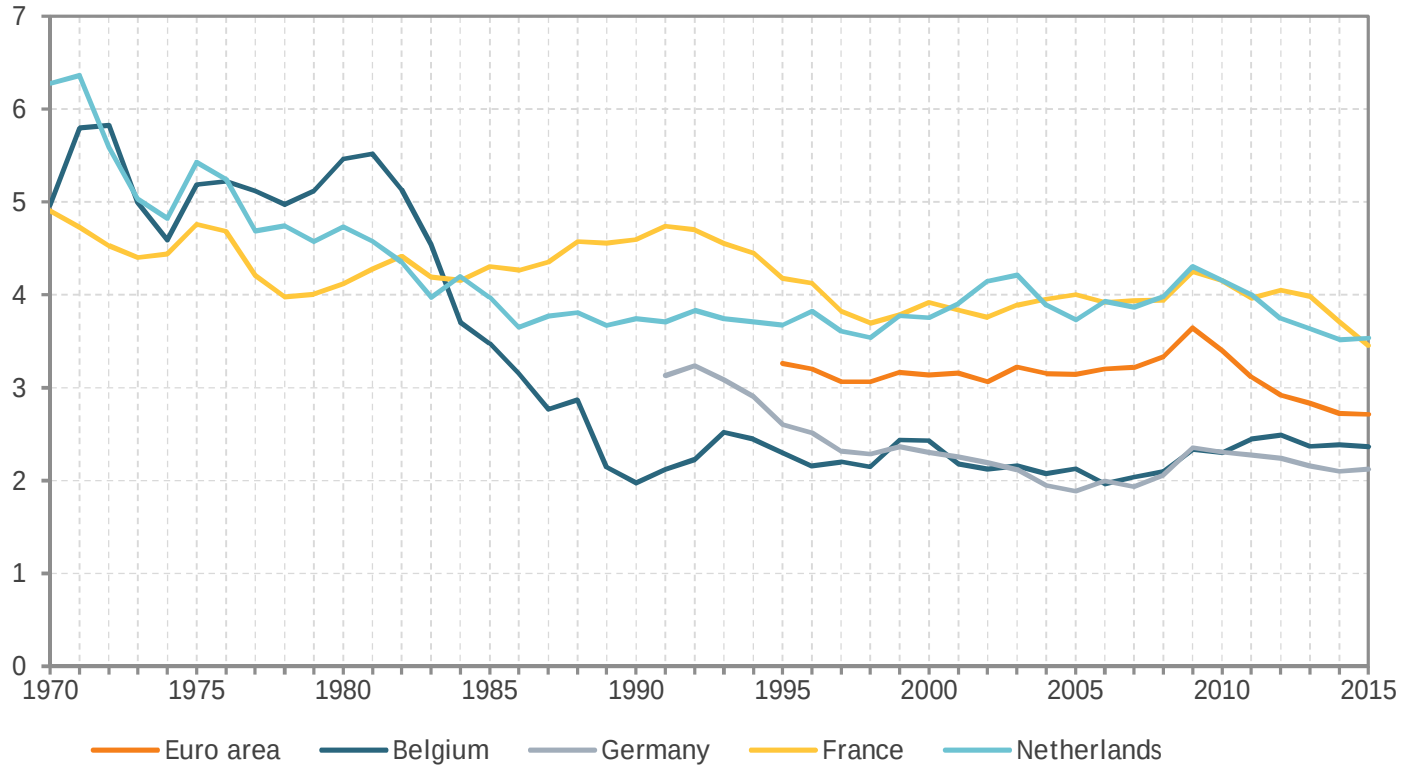
Definitions

Government investment classified by function:

Aggregation	COFOG codes	Share in total (%)
Infrastructure		26.1
	04.3 Fuel and energy	0.2
	04.4 Mining, manufacturing and construction	0.1
	04.5 Transport	23.1
	04.6 Communication	0.0
	04.8 R&D Economic affairs	0.4
	05.1 Waste management	1.2
	05.2 Waste water management	1.1
	06.3 Water supply	0.1
Hospitals and schools		37.9
	07. Health	0.7
	09. Education	17.2
	01.4 Basic research	20.0
Public goods		19.1
	01. General public services (except 01.4)	9.5
	02. Defence	3.0
	03. Public order and safety	2.7
	05. Environment protection (except 05.1; 05.2)	1.5
	06.4 Street lighting	0.6
	04.1 General economic, commercial and labour affairs	1.7
	04.2 Agriculture, forestry, fishing and hunting	-0.3
	04.7 Other industries	0.4
	04.9 Economic affairs n.e.c.	0.0
Redistribution		16.9
	06. Housing & community amenities (except 06.3;06.4)	2.6
	08. Recreation, culture and religion	7.0
	10. Social protection.	7.3

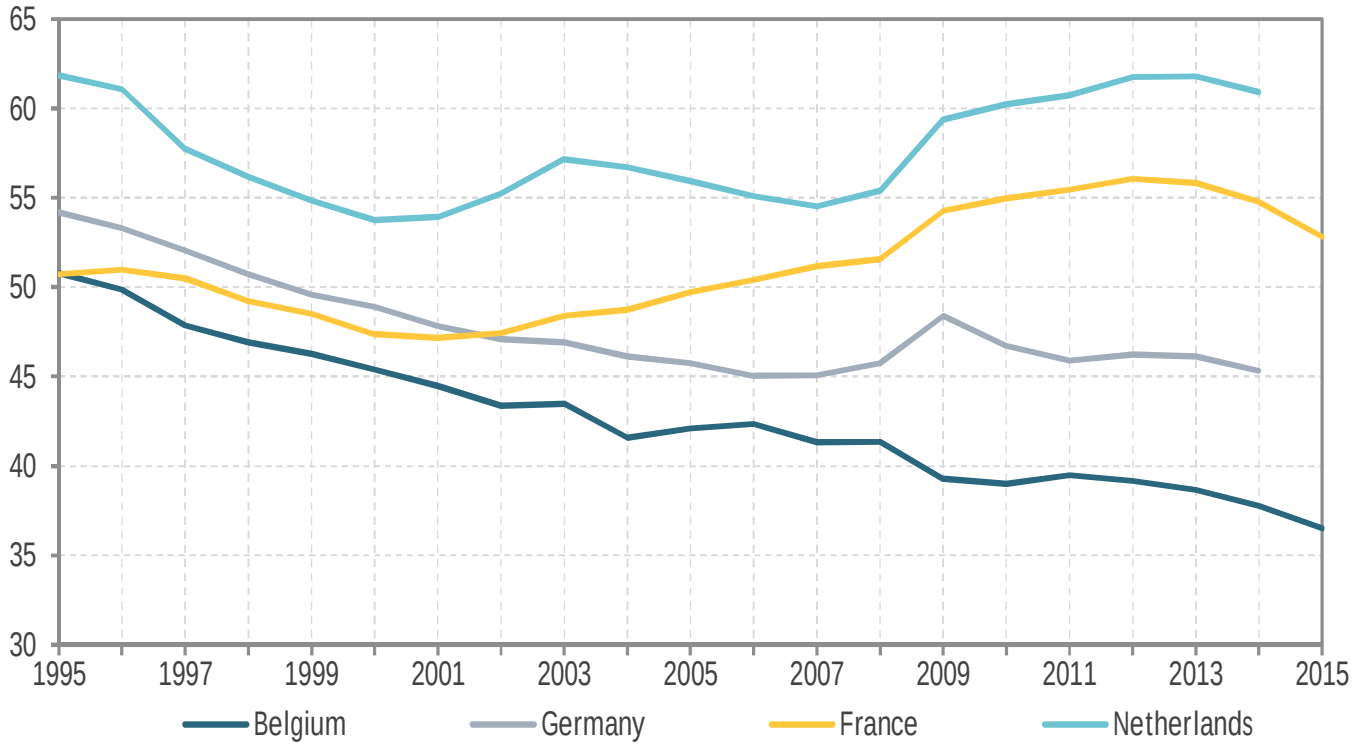
Evolution and trend

Government investment rate has been halved in Belgium since the beginning of the seventies



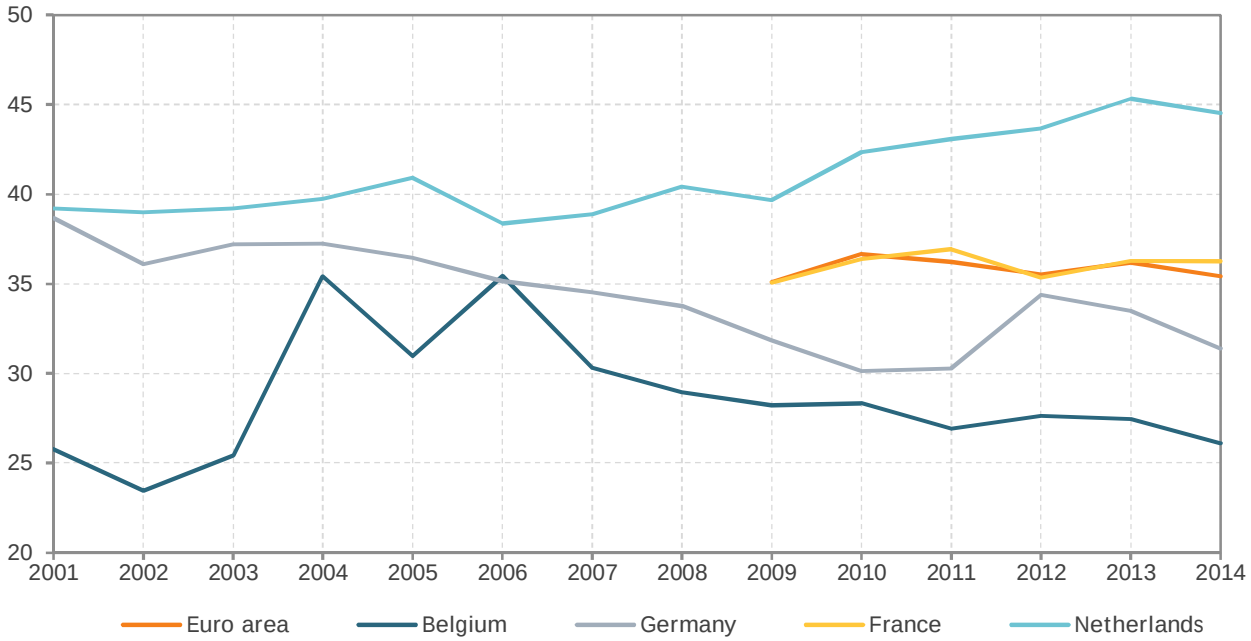
Evolution and trend

Government net capital stock in Belgium has decreased by almost 15 percentage points of GDP since 1995



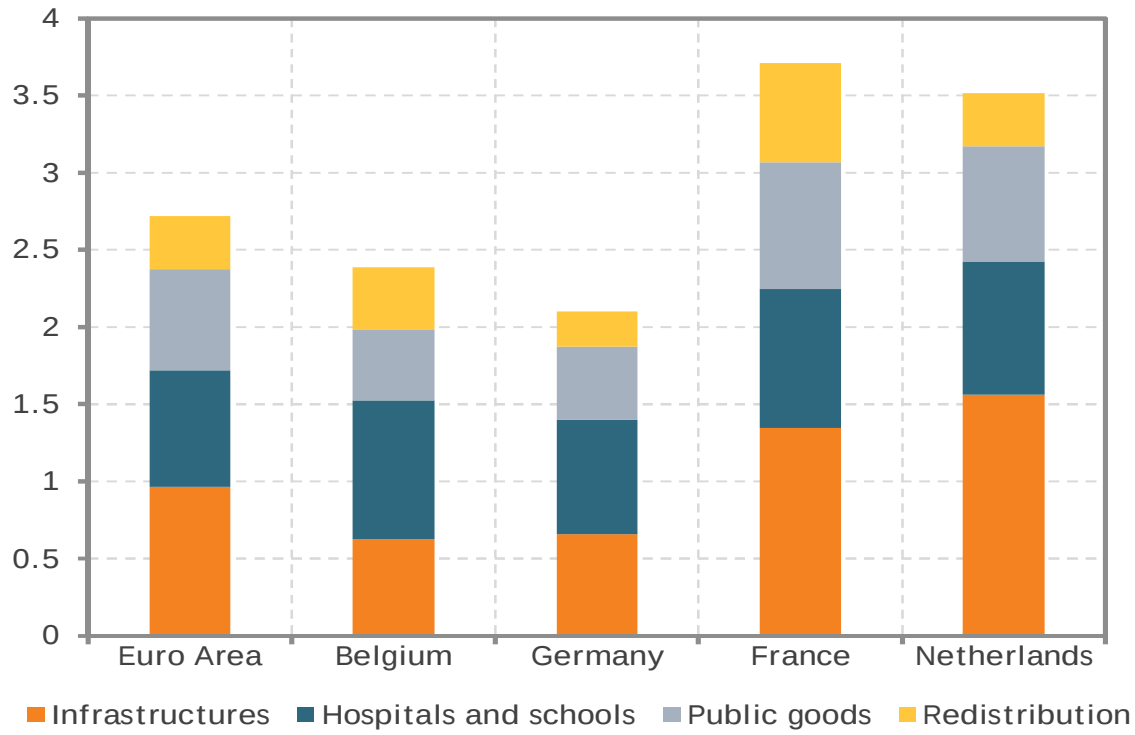
Evolution and trend

Government investment composition has changed: the share of infrastructure in total investment has decreased



Evolution and trend

Government infrastructure investment reached 0.6% of GDP in 2014



Channels of transmission

Increase in government investment could yield a double dividend:

- In short-term output raised by demand shock depending on the nature of additional investment, on the financing mode and on the macroeconomic context (zero-lower bound, negative output gap)

- In long term output raised by productivity shock depending on the impact of additional investment on TFP and on crowding in or out of private investment

Simulations with the European Commission model QUESTIII to also take into account the long term effect

Basic simulation

- The shock of public investment = 0.5% of GDP, permanently lifting the share of government investment from 2.36% to 2.86% of GDP
- This shock corresponds to around 2 billions of euros the first year
- This shock is in line with Belgian projects in the IPE infrastructure pillar (44 projects for 35.2 billions of euros over 15 years)
- Theoretical head tax (lump-sum tax) to keep debt-to-GDP ratio constant in the long run

Basic simulation

Economic impact of a 0.5 % of GDP shock to government investments in Belgium
Evolution in % deviation from baseline, except when mentioned otherwise

	1 year	3 years	5 years	10 years	20 years
GDP	0.24	0.48	0.82	1.63	2.77
Labour productivity	0.06	0.33	0.64	1.29	2.24
Employment rate (%-point deviation)	0.11	0.10	0.12	0.22	0.34
Private consumption	0.25	0.43	0.52	0.87	1.53
Private investment	0.02	0.13	0.30	0.76	1.51
GDP deflator	0.14	0.00	-0.21	-0.68	-1.32
Trade balance (% of GDP)	-0.40	-0.42	-0.32	-0.17	-0.05
Head tax (% of GDP)	0.07	0.24	0.33	0.32	0.13

Alternative simulations: different financing schedules

Effects after 1 year of raising government investments by 0.5% of GDP
Evolution in % deviation from baseline, except when mentioned otherwise

	Head tax (basic sim.)	Labour income tax	Capital income tax	Consumption tax	Decrease government consumption	Debt financing
GDP	0.24	0.18	0.21	0.23	0.03	0.23
Labour productivity	0.06	0.09	0.07	0.07	0.05	0.07
Employment rate (% point deviation)	0.11	0.07	0.10	0.11	-0.01	0.11
Private consumption	0.25	0.18	0.38	0.35	0.60	0.32
Private investment	0.02	0.00	-0.26	0.01	-0.01	0.02
GDP deflator	0.14	0.17	0.15	0.16	0.04	0.16
Trade balance	-0.40	-0.40	-0.41	-0.44	-0.21	-0.43
Head tax (% of GDP)	0.07				-0.02	0.00
Respective implicit tax rate (percentage point increase)		0.08	0.08	0.07		

Alternative simulations: different financing schedules

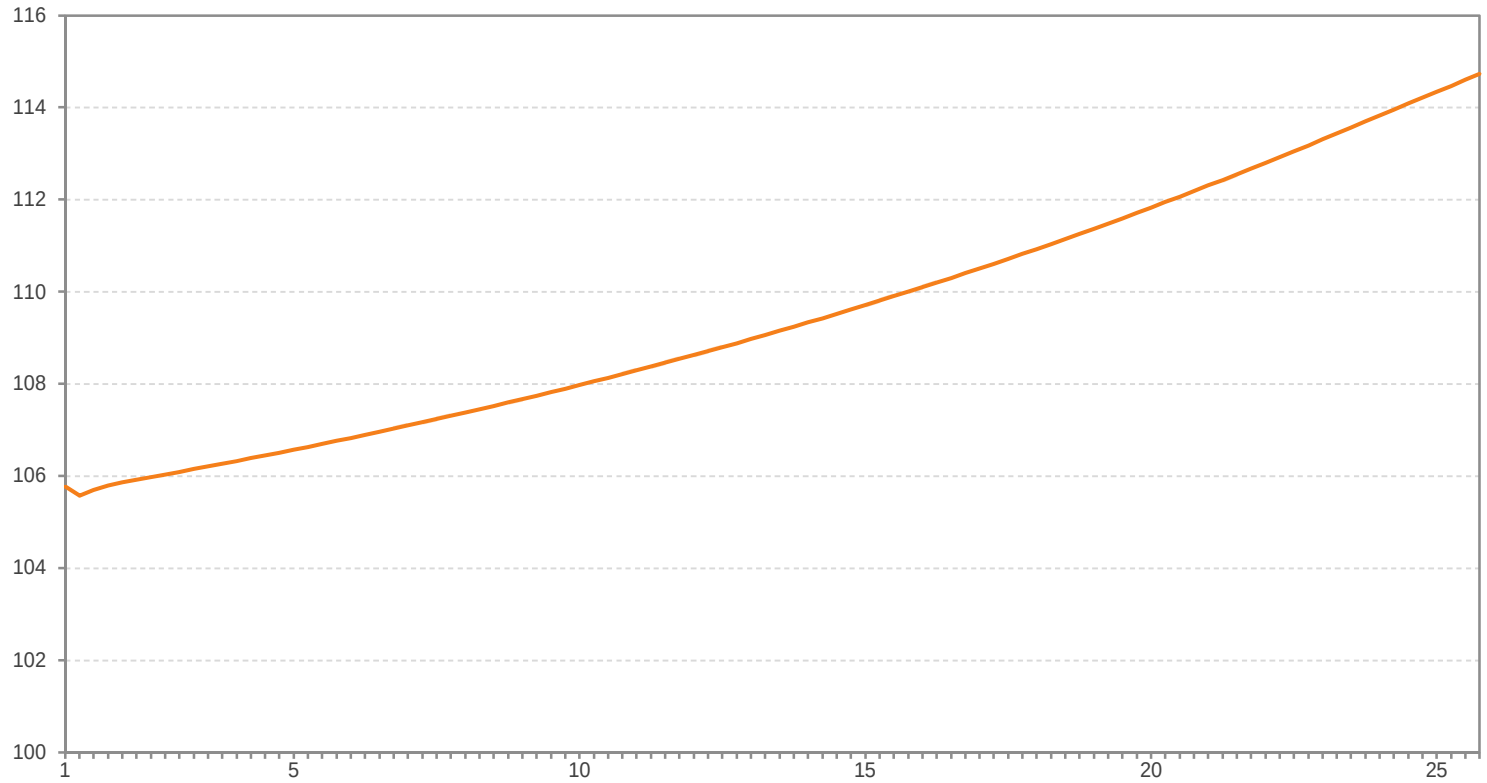
Effects after 20 years of raising government investments by 0.5% of GDP
Evolution in % deviation from baseline, except when mentioned otherwise

	Head tax (basic sim.)	Labour income tax	Capital income tax	Consumption tax	Decrease government consumption	Debt financing
GDP	2.77	1.69	1.89	2.69	2.43	2.69
Labour productivity	2.24	2.35	1.63	2.25	2.23	2.22
Employment rate (% point deviation)	0.34	-0.43	0.17	0.29	0.13	0.31
Private consumption	1.53	0.63	1.46	1.17	2.33	1.67
Private investment	1.51	0.81	-1.15	1.53	1.24	1.33
GDP deflator	-1.32	-0.74	-0.95	-1.31	-1.27	-1.25
Trade balance	-0.05	-0.05	0.10	0.05	-0.06	-0.11
Head tax (% of GDP)	0.13				-0.40	0.00
Respective implicit tax rate (percentage point increase)		1.40	2.49	0.73		

Alternative simulations: different financing schedules

Evolution of the debt-to-GDP ratio in the debt financing scenario

Debt in % of GDP



Other simulation: different types of investment

- Budget neutral shift of government investment in favour of infrastructure
- government infrastructure investment increases from 0.6% of GDP to 1.1% of GDP and other government investment decrease from 1.8% of GDP to 1.3% of GDP
- Infrastructure more productive than other investment => Output elasticity of government infrastructure > Output elasticity of other government investment
- Modified specification of QUEST (2 types of government investment)

Other simulation: different types of investment

Effects over 20 years of raising government infrastructure investments by 0.5% of GDP
Evolution in % deviation from baseline, except when mentioned otherwise

	1 year	3 years	20 years
GDP	0.26	1.20	8.32
Labour productivity	0.21	1.47	7.64
Employment rate (% point deviation)	0.04	-0.18	0.42
Private consumption	2.14	4.14	8.00
Private investment	0.02	0.26	4.22
GDP deflator	0.23	-0.14	-4.07
Trade balance	-0.71	-1.22	-0.24
Head tax (% of GDP)	-0.09	-0.39	-1.29

Conclusion

- Government investment rate and net capital stock ratio in Belgium are comparatively low
- The share of infrastructure in government investment in Belgium is also relatively low
- Given the current context of low interest rate, low inflation and negative output gap, an increase in government investment could support both short term and potential growth
- The QUEST simulation shows a positive impact on short term and long term growth without inflationary effects but not sufficient to allow the shock to be self-financed (no fiscal free lunch)

Summary of key effects of different financing schedules

Relative intensity of long term effects

	Labour income tax	Capital income tax	Consumption tax	Decrease government consumption	Debt financing
GDP	+	+	+++	++	+++
Labour productivity	+++	+	++	++	++
Employment rate (% point deviation)	-	+	++	+	+++
Private consumption	+	++	+	+++	++
Private investment	+	-	+++	++	++
Respective implicit tax rate (percentage point increase)	1.40	2.49	0.73		

Conclusion

- More realistic financing modes lead to different impacts not only on the GDP growth but also on the different components of GDP (Private consumption and investment)
- A mere shift of government investment in favour to infrastructure without additional budgetary means has already in the short term a quite substantial effect on GDP and its main components

Thank you

plan.be