INTERNATIONAL MONETARY FUND

IMF Country Report No. 25/70

BELGIUM

SELECTED ISSUES

March 2025

This paper on Belgium was prepared by a staff team of the International Monetary Fund as background documentation for the periodic consultation with the member country. It is based on the information available at the time it was completed on March 3, 2025.

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March 3, 2025

Approved By
European Department

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INCREASING PUBLIC INVESTMENT, FOSTERING DIGITALIZATION, AND SUPPORTING THE GREEN TRANSITION: A DIFFICULT CHALLENGE UNDER FISCAL CONSOLIDATION[1]

Public investment in Belgium has been low historically. Against severe budgetary constraints and fiscal consolidation requirements, public investment should however be preserved or, ideally, increased to mitigate the demand impact of consolidation and enhance productive capacity to lift potential growth. Furthermore, there is growing need for strategic public investment to facilitate digitalization and the green transition. This paper examines these intertwined challenges and proposes policy measures to help bolster public investment.

A. Introduction

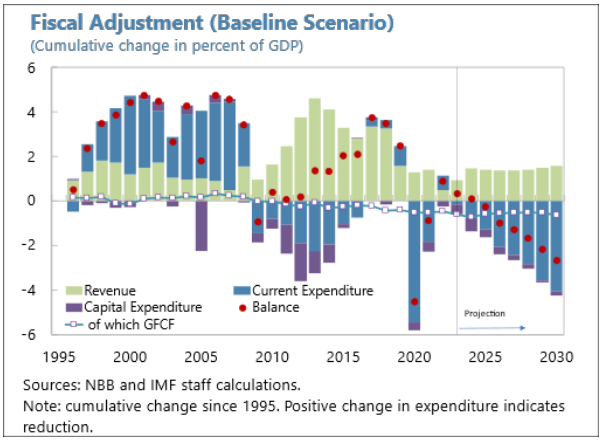
1. Belgium needs sustained fiscal consolidation. Despite the unwinding of pandemic and energy crisis support measures, public expenditure faces ongoing pressures from wage and social benefit indexation, interest expenses, defense spending, and aging costs, which are projected to persist into the medium term. If current policies remain unchanged, the fiscal deficit is expected to widen by 3 percentage points (ppts) of GDP to about 7.0 percent of GDP and public debt to increase by close to 20 ppts of GDP to 125 percent of GDP by 2030 compared to 2023 levels. The large budget deficits and rising public debt call for sustained fiscal consolidation efforts to rebuild buffers.

2. At the same time, higher public investment is needed to lift potential growth, promote digitalization, and foster the green transition. Rationalizing public consumption will need to be at the core of the fiscal adjustment. In contrast, public investment in infrastructure and human capital should be preserved or, ideally, increased to mitigate the demand impact of consolidation while boosting potential growth through increased productive capacity (Box 1). Notably, a higher level of investment is needed to support digitalization, which will enable businesses and public services to operate more efficiently, and foster innovation and productivity growth. Moreover, a substantial increase in investment for the green transition is essential to accelerate the development and use of clean technologies, reduce reliance on fossil fuels, and foster sustainable economic growth by reducing climate risks and losses in the long run.

3. Thus, securing a pivotal shift towards growth-enhancing public investment within a decreasing overall spending envelop is essential. Historically, Belgium has had relatively low levels of public gross fixed capital formation (GFCF). Capital spending has not declined significantly

[1] Prepared by Xun Li, and Yu Ching Wong (both EUR). The chapter benefited from useful comments by Jean-François Dauphin and Mark Horton. The authors also appreciate the helpful suggestions and discussions from Simon Black, Emanuele Massetti and Nate Vernon (all FAD), as well as Stefan Van Parys, Thomas Stoerk, and participants at a National Bank of Belgium seminar.

during periods of fiscal consolidation (1996–2007), nor has it increased in post-crisis periods, such as after the pandemic. The relatively large increase in capital spending in 2011–12 (by 0.9 and 0.4 ppt of GDP) was primarily due to changes in other capital expenditures. Looking ahead, amid severe budgetary constraints and the need for fiscal consolidation to address long-term spending pressures stemming from aging population and defense needs, fiscal adjustments will require larger reductions in current expenditures and/or increases in revenue to at least maintain capital spending at its current levels.



Sources: NBB and IMF staff calculations.
Note: cumulative change since 1995. Positive change in expenditure indicates reduction.

Box 1. Public Investment: A Catalyst for Demand and Growth Potential

Public investment is generally found to have a relatively strong short-term impact, despite uncertainty surrounding the size of the multipliers, which are typically influenced by factors such as country-specific conditions, time duration, macroeconomic conditions, financing, and debt sustainability (ECB, 2016; IMF 2020).

- Recent findings from Ciaffi et al. (2024) indicate that for OECD countries, public investment multipliers range between 1.36 and 2.30 over a five-year period, and are higher than public consumption multipliers (0.77-1.78). They emphasized that public investment leads to higher reduction in the public debt-to-GDP ratio than public consumption.[1]
- Small open economies, like Belgium, tend to have lower multipliers. NBB (2017) estimated a public investment multiplier of about 1.5 over 1-2 years and about 1.8 over 10 years and highlighted that debt-financed public investment tends to have a higher short-term GDP impact than tax-financed investment. Additionally, the efficiency of public investment is crucial, as investments that effectively enhance productive capacity generate larger multipliers.

A policy simulation using the IMF's Global Integrated Monetary and Fiscal Model (GIMF) indicates that a gradual expenditure-neutral shift from current spending towards public investment (peaking at 2 percent of GDP after five years) in Belgium could yield a cumulative GDP increase of about 6 percent in the long run, as general government fixed assets have been considerably lower as a share of GDP compared to peer countries since the 1980s. The GDP increase is driven by improved productivity, lower prices, and increased exports (IMF, 2018).

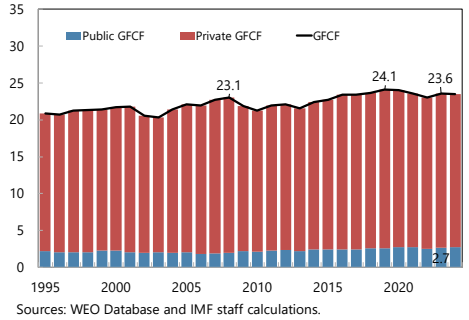
1/ Using the Local Projections approach to a dataset of 14 OECD countries, including Belgium, for the period 1981–2017.

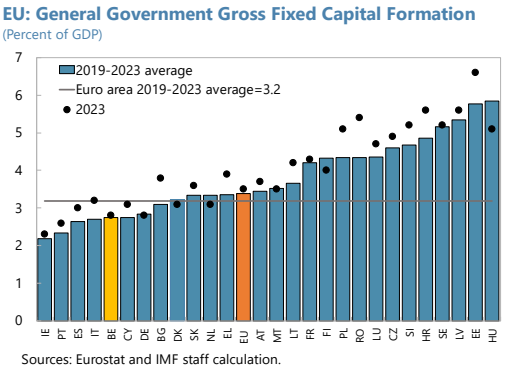
4. The reminder of the paper is as follows. Section B provides an overview of the current state of public investment in Belgium. Section C examines the need for public investment to support digitalization and the green transition in the medium term. Section D discusses policy options to overcome the challenges in gearing up public investment amid fiscal adjustment, including by improving the overall efficiency of public spending to create fiscal space, improving coordination of public investment, incentivizing private investment, and increasing the use of EU funding whenever possible. Section E concludes.

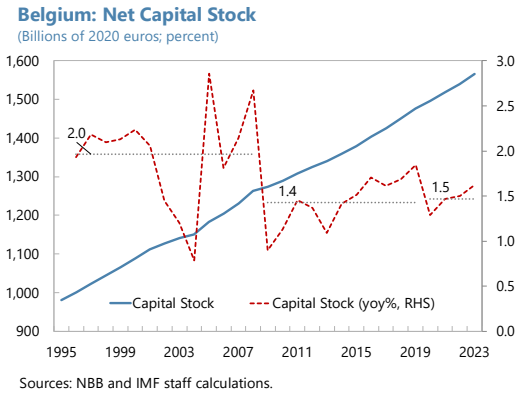
B. Current State of Public Investment

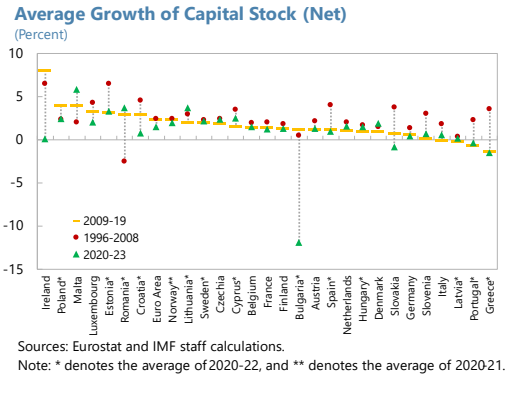
5. GFCF has gradually increased but remains low. GFCF—the acquisition of physical assets (e.g., building, machinery, and infrastructure) minus disposals—has increased marginally in Belgium over the last three decades. However, at 23.6 percent of GDP in 2023, it remains below the pre-pandemic peak of 24 percent of GDP in 2019. Public GFCF has remained below 3 percent of GDP since 1990s, accounting for about one-tenth of total GFCF and was only 2.7 percent of GDP in 2023. In comparison with neighboring economies, Belgium's public GFCF as a percentage of GDP has been consistently lower than those of France and the Netherlands, which have hovered in the 3.5-4 percent of GDP range, while it is comparable to that of Germany. More broadly, the average growth of total net capital stock—a key ingredient of future growth—slowed in Belgium following the global financial crisis during the period 2009–19, before seeing a slight recovery in 2020–23. Throughout all periods, Belgium's growth in total capital stock has consistently ranked slightly below the euro area average (Figure 1).

Figure 1. Gross Fixed Capital Formation and Capital Stock





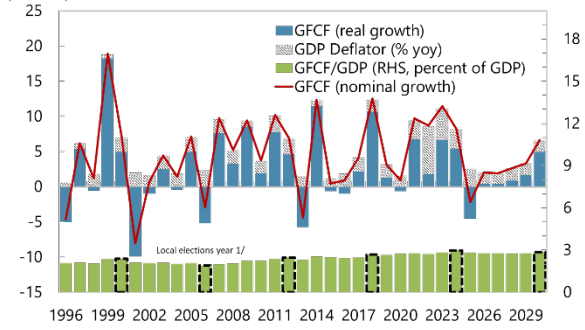




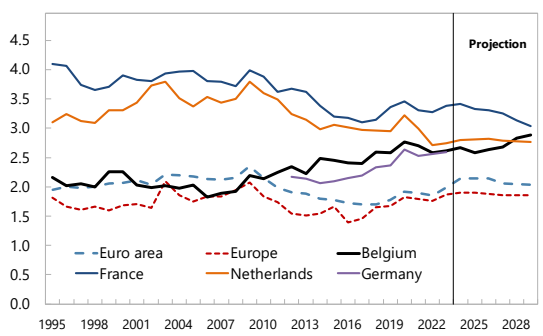
6. Public investment is expected to remain subdued over the medium term. The coalition government agreement in 2020 set a target to raise public investment to 4 percent of GDP by 2030, initially financed with Next Generation EU grants. However, NGEU-financed public investment under the Resilience and Recovery Fund quickly stalled making achieving this target unlikely. Indeed, the coalition agreement of the new government formed in February 2025 aims for an annual investment

of 3 percent of GDP over the next four years, marginally above the EC's economic governance rules requirement to exceed 2.8 percent of GDP (Figure 2). It is important to note that measuring the exact size of public spending that augments productive capacity is challenging as public GFCF itself does not cover it all. Taking into account capital transfers in addition to public GFCF, the overall level of public investment may be slightly higher (Box 2).[2]

Figure 2. Public Gross Fixed Capital Formation



Sources: NBB and IMF staff calculation.
1/ The planning of public GFCF tends to be influenced by the six-year local elections cycle.

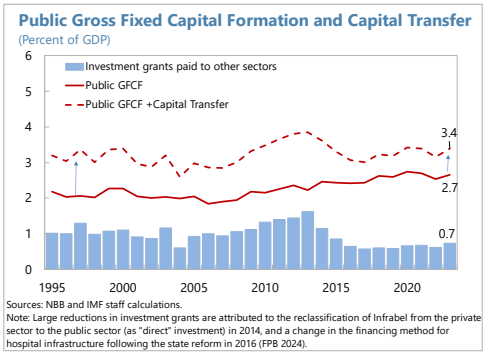


Sources: Eurostat, WEO (October 2024), and IMF staff estimates.

Box 2. Consideration on Measurement of Public Investment

A broader definition and data coverage would be useful in fully capturing the effective size and impact of public spending that augments productive capacity.

Capital transfers. One concept is accounting for capital transfers in the form of investment grants paid to other sectors (i.e., to companies that are not part of the government sector) which contribute to public investment (FPB 2024). The size of investment grants is typically around 1 percent of GDP in Belgium. Therefore, as of 2023, in addition to investments made directly by the government (public GFCF) of 2.7 percent of GDP, public investment (i.e., government expenditure on the purchase of fixed assets) including capital transfers of 0.7 percent of GDP amounted to 3.4 percent of GDP. The size of government capital transfers in Belgium is comparable to that of Germany and France (close to 1 percent of GDP) but higher than that in the Netherlands (about ¼ percent of GDP). Therefore, under the boarder definition of total public investment, sum of public GFCF and capital transfers, Belgium is at similar level to Germany and slightly lower than France and the Netherlands for 2005–22. (FPB 2024).



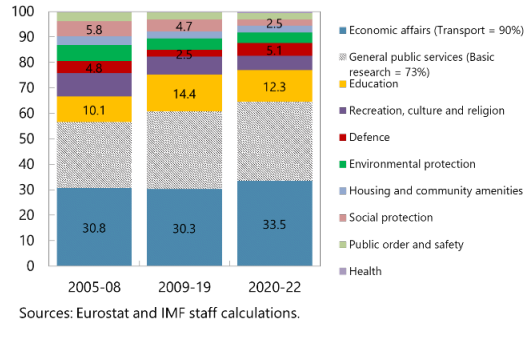
Sources: NBB and IMF staff calculations.
Note: Large reductions in investment grants are attributed to the reclassification of Infrabel from the private sector to the public sector (as "direct" investment) in 2014, and a change in the financing method for hospital infrastructure following the state reform in 2016 (FPB 2024).

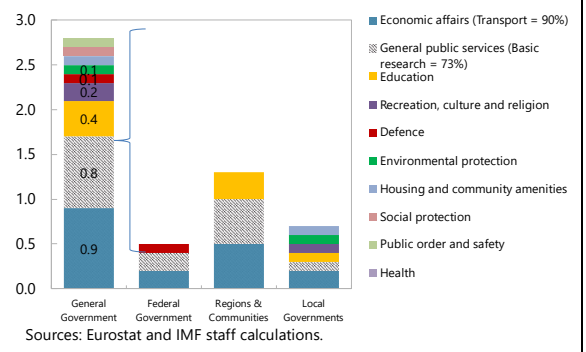
7. Half of total public GFCF under the general government account is concentrated in transport and basic research. The transport sector, which accounts for 90 percent of economic

[2] See Hallaert (2023) and accompanying SIP for discussions on public investment in human capital via healthcare and education.

affairs by function, received by far the largest share of public GFCF, accounting for 31 percent of total or 0.8 percent of GDP in 2022. This is primarily explained by the dense transport network and the classification of railway infrastructure companies in the government sector (FPB 2024b). The next largest is basic research, primarily conducted within universities, which accounts for 73 percent of general public services by function. It received 22 percent of total public GFCF or 0.6 percent of GDP in 2022.[3] Notably, in 2020-22, the share of public GFCF allocated for economic affairs increased to one third from about 30 percent of total, and the share for defense doubled to 5 percent of total, with corresponding share reductions in social protection and education (Figure 3).

Figure 3. Public GFCF by Function (COFOG)





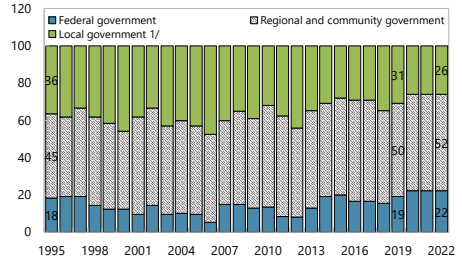
8. Over half of total public GFCF is made by regional and community governments, following successive rounds of state reforms and fiscal decentralization. The sixth state reform in 2011 transferred additional competencies from the federal to the regional and community governments. Regions are responsible for territorial matters, including economic development, infrastructure (excluding railway), environment, housing, and employment. Communities oversee language issues and policies related to individual and family such as culture, education, and family allowances. Public GFCF implemented by regions and communities increased to 52 percent of the total in 2022, from 45 percent in 1995. These investments cover key areas including education (75 percent of total public investment in education), economic affairs (63 percent), and general public services (56 percent) (Figures 3, 4). However, the total share of public GFCF undertaken by the federal government has increased in recent years due to rising defense-related investment. Public investment in defense is projected to double to 0.6 percent of GDP in 2026 compared to 2023, broadly in line with Belgium's commitment to progressively increase the defense budget to 2 percent of GDP in line with NATO obligations. Overall, the fact that territorial matters including environment, energy policy, transport, and public works are regional competences within the federal

[3] Public GFCF in R&D is predominantly fundamental research conducted in universities in Belgium. The government's support for applicational or commercial R&D is largely based on tax incentives rather than on direct financing (FPB 2024b).

structure adds complexities to the planning, selection, and implementation of public investment projects (see Hearne 2025).

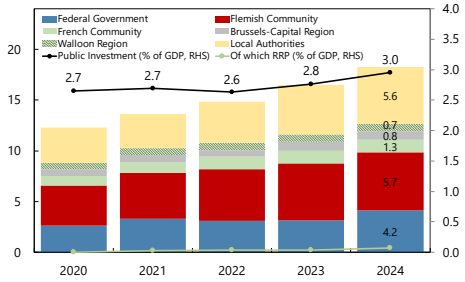
Figure 4. Public GFCF by Government

Public Gross Fixed Capital Formation by Federated Entities
(Percent; current prices)



Sources: Eurostat and IMF staff calculations.
1/ Calculated as general government minus federal and regional and community governments .

Public Investment
(Billions of euros)

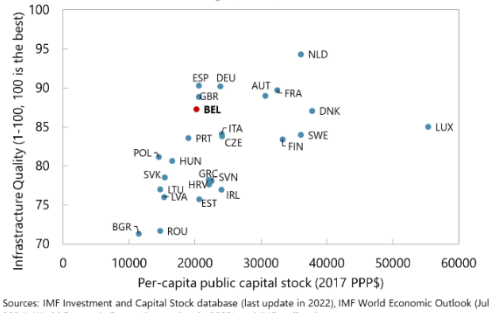


Sources: NBB projections and IMF staff calculations.

9. Existing public infrastructure in Belgium is not operating at the efficiency frontier. Belgium's infrastructure quality somewhat lags that of some European countries at comparable levels of per-capita accumulated public investment, such as Spain, the UK, and Germany. Overall transport infrastructure competitiveness also falls behind that of its neighboring countries, particularly in the road, railroad, and air transport sectors. Furthermore, Belgium's adoption of information and communication technologies (ICT) is below the midpoint level among European countries.

Figure 5. Infrastructure Efficiency

Infrastructure Efficiency (2019)



Sources: IMF Investment and Capital Stock database (last update in 2022), IMF World Economic Outlook (July 2024), World Economic Forum (last update in 2023), and IMF staff estimates.

Europe: Infrastructure Competitiveness (2019)
(Index, from 0 to 100, lower to higher performance)

	Infrastructure						ICT Adoption
		Transport				Utility	
	Overall	Railroad	Air	Road	Sea		
Netherlands	89.2	89.2	83.5	89.8	94.4	99.5	76.3
Spain	83.6	75.4	88.4	89.2	81.6	97.0	78.2
Germany	84.3	82.6	87.2	83.4	83.8	96.2	70.0
France	82.6	83.0	85.3	85.3	76.7	96.9	73.7
Austria	78.7	85.5	68.0	82.7	-	99.3	65.6
United Kingdom	81.0	77.6	86.1	77.9	82.4	96.8	73.0
Belgium	**75.6**	**75.8**	**69.4**	**73.7**	**83.6**	**98.9**	**67.0**
Denmark	75.7	79.5	72.8	81.4	69.0	98.5	83.3
Luxembourg	71.4	83.2	57.4	73.5	-	98.7	78.1
Italy	73.2	76.0	81.2	71.4	64.2	95.0	64.5
Sweden	69.1	54.4	72.7	83.9	65.5	98.9	87.8
Czechia	70.5	79.2	62.0	70.3	-	97.1	68.4
Portugal	71.2	61.7	69.6	88.7	64.9	96.0	71.2
Finland	67.2	62.2	73.9	81.3	51.5	99.6	80.4
Poland	67.8	74.2	64.3	71.6	60.9	94.5	65.4
Hungary	66.0	73.7	56.1	68.3	-	95.3	64.2
Slovak Republic	59.5	75.0	36.9	66.6	-	97.6	69.2
Croatia	62.1	62.0	58.9	77.6	49.7	94.4	60.7
Slovenia	58.3	67.8	44.9	70.1	50.5	97.9	69.2
Greece	60.7	38.5	74.9	68.3	61.0	94.7	64.7
Lithuania	59.2	68.0	50.5	76.3	42.1	94.8	81.5
Ireland	60.4	58.9	71.4	72.6	38.7	93.6	66.6
Latvia	57.3	67.5	58.8	66.1	36.7	94.8	79.7
Estonia	55.7	60.2	46.7	74.2	41.7	95.9	78.8
Malta	55.9	-	58.7	48.6	60.2	94.2	75.5
Cyprus	55.1	-	59.8	68.2	37.3	94.7	62.0
Romania	54.4	65.1	57.1	55.9	39.4	89.0	72.0
Bulgaria	51.7	64.0	53.3	58.4	31.1	91.0	73.4

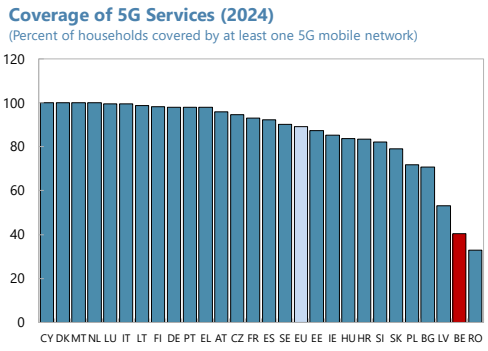
Source: World Economic Forum (last update in 2023).

C. Addressing Investment Needs for Digitalization and the Green Transition

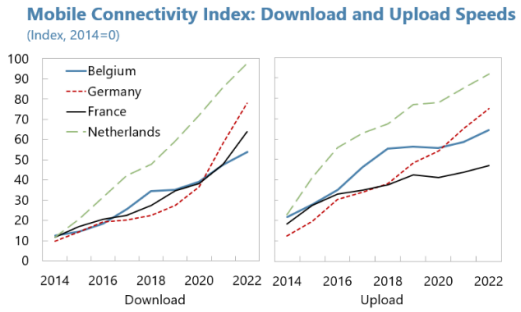
Digital Infrastructure

10. Deployment of ICT needs to be accelerated to close the gap with EU peers. As of 2024, only 30 percent of households in Belgium had access to at least one 5G coverage, ranking second to last in the EU. The mobile upload and download speeds in Belgium were lower than those of neighboring countries in 2022. In 2024, only 25 percent of Belgian households were covered by fiber optic to the premises (FTTP), which enables more seamless access to online services than traditional copper-based connections, placing Belgium the lowest among EU countries. While over 60 percent of companies in Belgium adopted artificial intelligence (AI), cloud computing, or data analytics in 2024 (Figure 6), inadequate digital infrastructure may hinder Belgium's ability to apply cutting-edge technologies in new fields such as telemedicine, autonomous port logistics, and smart cities. So that businesses can leverage the scale and network effects from digital transformation, it is essential to increase investment in telecommunication technologies for data transfer, to improve speed and capacity of wireless networks. According to the European Commission's Digital Decade Country Report, Belgium aims to increase public investment by €892 million or 0.2 percent of GDP by 2030 to align with the EU's 2030 ambitions covering most of the key performance indicators for digitalization.

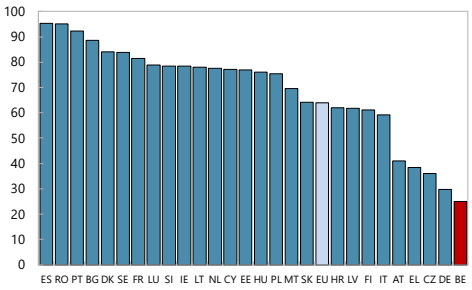
Figure 6. Current State of Digital Infrastructure



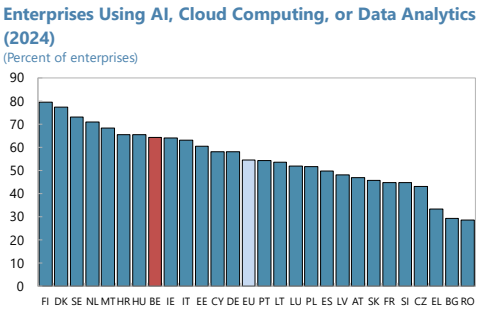
Source: European Commission.



Sources: Global System for Mobile Communications and IMF staff calculation.
Note: The original unit of measurement is in Mbps (from Ookla Speedtest Intelligence) and is indexed by GSMA.



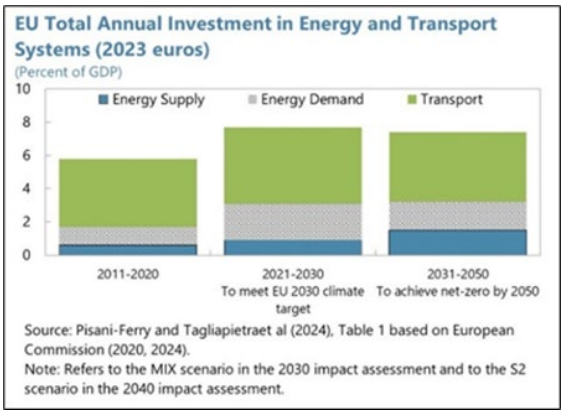
Source: European Commission.



Source: Eurostat.
Note: Enterprises with 10 or more persons employed. All manufacturing and service sectors, excluding the financial sector.

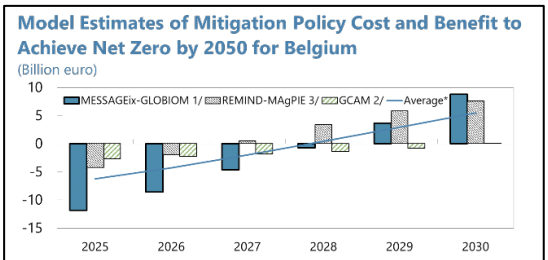
Energy Infrastructure

11. The magnitude of investment needed to achieve the green transition is difficult to quantify precisely but likely sizable. Projections of green investment needs vary among institutions and are subject to considerable uncertainty depending on factors such as underlying assumptions, methodologies, and implementation strategies (see ECB 2025 for recent comparison). For example, the European Commission identified a substantial investment gap in achieving climate objectives. Projections indicate that the EU as a whole must step up its investment to 7.7 percent of GDP in 2021–30, from 5.8 percent of GDP in 2011–20, to meet the EU 2030 climate targets. This level of investment must be sustained during 2031–50 to achieve net zero. The public sector share of the additional investments is expected to range between 0.5 to 1 percent of GDP in 2021–30 (Pisani-Ferry and Tagliapietra 2024). For Belgium, the National Bank of Belgium projects an investment need of 2.5 percent to 3.5 percent of GDP annually through 2050, while the European Investment Bank estimates the investment needed for the green transition at 1.4 percent of GDP annually until 2050 (2020/21 EIB Investment Report).



Source: Pisani-Ferry and Tagliapietraet al (2024), Table 1 based on European Commission (2020, 2024).
Note: Refers to the MIX scenario in the 2030 impact assessment and to the S2 scenario in the 2040 impact assessment.

12. Potential losses from the materialization of climate risks and mitigation costs will increase with slow green transion. The Network for Greening the Financial System (NGFS) uses three different models to estimate a range of possible economic impact of climate risks materializing and mitigation costs under different assumptions on how transitions are achieved. Under current policies ('hot house world scenario'), physical risks losses are projected to reach 6 percent of GDP in 2030 and continue to increase in the following decade.[4] In contrast, the early introduction of mitigation policies and adhering to them stringently to achieve net zero in 2050 could yield positive mitigation benefits by 2030 ('orderly scenario') (Box 3). These models incorporate a shadow carbon price as the primary channel to foster the transition. In the short term, rising energy costs could lower demand and GDP, while inducing modest increases in inflation and unemployment (NGFS 2023). The average estimated cost of implementing stringent mitigation policy is approximately €6 billion, or 1 percent of GDP in 2025 (text chart). This cost arises as the negative impacts on demand, driven by higher



Sources: Network for Greening the Financial System (2023) Scenarios Portal; and International Institute for Applied Systems Analysis (2023), NGFS Phase 4 Scenario Explorers; and IMF staff calculations.
Notes: (LHS and RHS Average*) Average of the three models:
1/ The Model for Energy Supply Strategy Alternatives and their General Environmental Impact-Global Biosphere Management Model (MESSAGE) evaluates the implications of energy and climate polcies, incorporating carbon pricing, renewable energy subsidies, and energy efficiency standards.
2/ The Global Change Analysis Model (GCAM) captures potential regulatory and fiscal policies, including coal phaseout, renewable portfolio standards, EV targets, and fuel efficiency standards on climate change mitigation and adaptation.
3/ The Regional Model of Investments and Development (REMIND) examines the optimal mix of investments in the economy and the energy sectors given a set of technology, policy, and climate constraints. It accounts for regional trade characteristics on goods, energy fuels, and emissions allowances. It includes a broader range of taxes than the other two models.

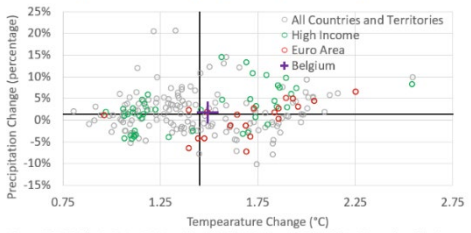
[4] Refers to the pledge targets of Nationally Determined Contributions (NDCs) for the Paris Agreement. It includes policies that might not been backed up by implementation and the currently implemented policies.

carbon prices and energy costs, are mitigated by recycling revenue into public investment, as indicated in the models (NGFS 2023) (Box 3). Fully recycling carbon tax revenue through public investments could lead to higher GDP than if recycled through tax cuts, transfer to households, or reimbursement of public debt (NGFS 2023).

Box 3. Climate Physical Risks and Economic Impact

Through 2050, Belgium is projected to experience increased precipitation and faster warming than most countries.[1] The average annual temperature in Belgium during 1991-2020 was more than 1.2 degrees Celsius higher than during 1961-90. The consensus among climate models is that in 2050, the average temperature in Belgium will be 1.5 degrees Celsius higher than during 1985-2014, reaching 10.3 degrees Celsius. This increase is more than the median expected change across all countries estimated at 1.4 degrees Celsius. The National Adaptation Plan for 2023-26 ('NAP') acknowledged the implications for critical infrastructures and warned about the pressure on the demand of key materials for the transition.[2]

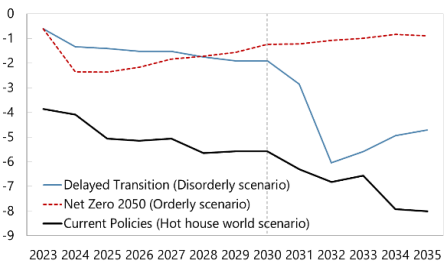
Cross-Country Comparison of Projected Temperature and Precipitation Changes (2050, SSP2-4.5)



Source: FADCP Climate Dataset (Massetti and Tagklis, 2024), using CMIP6 data (Copernicus Climate Change Service, Climate Data Store, 2021).
Notes: Bias-adjusted ensemble median projections of temperature and precipitation anomalies in 2036-2065 with respect to 1985-2014 data using CMIP6 data. The SSP2-4.5 scenario represents continuation of present trends. Solid lines display sample medians.

The public sector often bears the residual risk associated with increased frequency and severity of losses from climate-related catastrophes. For example, Belgium incurred €1.86 billion (0.4 percent of GDP) losses from floods in July 2021. The most severely impacted region was Walloonia, which has since pledged €1.03 billion for full recovery (European Commission, 2023). Less than 15 percent of the affected population were insured against natural disaster other than fire (Federal Public Service Health). The 2023–26 NAP, adopted thereafter, aimed to improve Belgian legislation on insurance for such large-scale natural disasters by expanding coverage and improving coordination in climate risk insurance.

Potential GDP Loss from Climate Risks for Belgium
(Percent of GDP)



Sources: Network for Greening the Financial System (NFGS) and IMF staff calculation.
Note: Average of three estimate models (GCAM, MESSAGEix-GLOBIOM, and REMIND-MAgPIE).

Source: FADCP Climate Dataset (Massetti and Tagklis, 2024), using CMIP6 data (Copernicus Climate Change Service, Climate Data Store, 2021) and CRU data (Harris et al., 2020).
1/ Projections are based on the SSP2-4.5 scenario, with CMIP6 bias-adjusted ensemble median projections of temperature and precipitation anomalies provided for a 30-year period centered around the chosen year with respect to CRU 1985–2014 (1999) averages. The observed temperature change compared to 1901–30 (1915) can serve as a proxy of warming relative to the pre-industrial period. The SSP2-4.5 scenario represents continuation of present trends.
2/ For example, the competing demand for sand to be extracted for building materials and those preserved to combat costal floods.

13. Fiscal support measures and energy price signals are not conducive to the shift to renewable energy. According to the National Energy and Climate Policy (NECP), the public sector plans to invest about 0.7–0.8 percent of GDP annually in the mobility and energy sectors through 2030. Within this, 0.6 percent of GDP, will be directed to smart solutions and infrastructure for advancing digitalization and decarbonization. These investment amounts are much lower than current spending on fossil fuel subsidies, which is estimated to exceed 1.7 percent of GDP. Fuel

subsidies sustain demand for brown energy and contribute to GHG emissions.[5] Indeed, close to 60 percent of government energy spending is directed at mitigating high energy prices (IEA Policy Database, September 2024). In contrast, the Netherlands allocates only 15.2 percent of its energy spending to energy affordability, while more than half is dedicated to technological innovation. Furthermore, in Belgium, natural gas for residential use (mostly heating and cooking) receives the highest amount of explicit and implicit subsidies, whereas the residential electricity price remains higher than the cost of supply plus value-added tax (Figure 7).

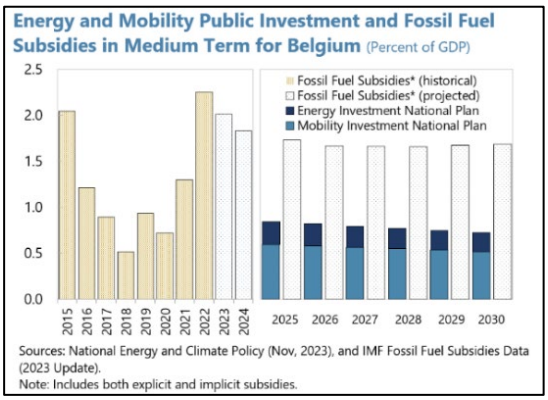
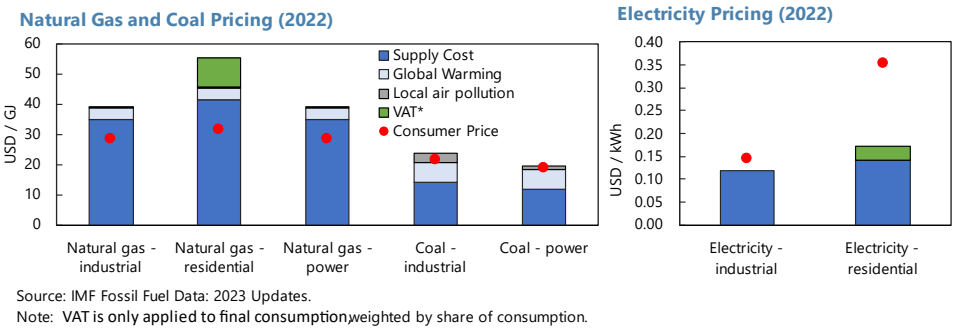


Figure 7. Fossil Fuel Subsidies and Electricity Prices

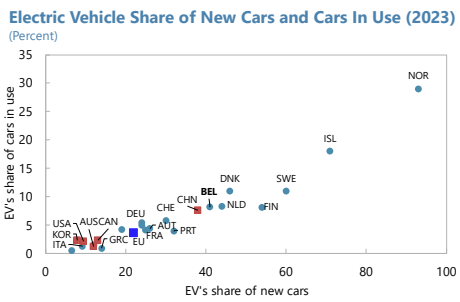


Source: IMF Fossil Fuel Data: 2023 Updates.
Note: VAT is only applied to final consumption,weighted by share of consumption.

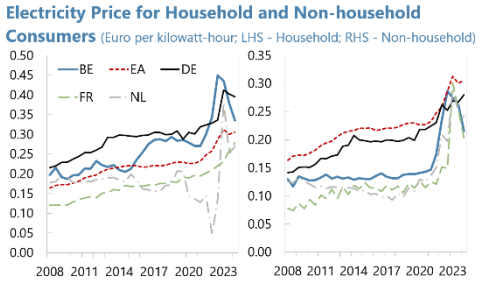
14. To advance the green transition, it is crucial to establish consistent energy pricing policies and mobilize investments to promote electrification. The above pricing distortion disincentivizes residential consumers to switch from fossil fuels to electrical applications powered by a mix of energy that includes renewables, such as heat pumps and hybrid and electric vehicles (EVs). Belgium has experienced a significant increase in EVs, which account for 8.2 percent of total vehicles in use in 2023, driven in part by tax incentives (Figure 8, LHS). The trend towards electrification may slows as electricity prices have risen sharply and become more volatile in the past four years, potentially discouraging further adoption of EVs and other alternatives to fossil fuel (Figure 8, RHS). The NBB has also recommended lowering the ratio between the electricity price and competing fossil fuel prices to increase the attractiveness of heat pump installation as a key mechanism to reduce GHG emissions produced by buildings. Additionally, inadequate power grid capacity underscores the urgent need for infrastructure upgrades to accommodate a larger share of renewable sources (Box 4). This includes supporting distributive storage capacities, such as utility-scale storage systems and EV batteries, and to facilitate broader electrification across all sectors.

[5] The staff's calculation of investment annualizes the estimates from the NECP for the period 2021–30 and applies them to the period 2025–30.

Figure 8. Electric Vehicles and Electricity Prices



Source: International Energy Agency Global EV Outlook (2024).
Note: Electric Vehicles include fully battery electric and plug -in hybrid (BEVs and PHEVs). Red squares are top five non-European countries.



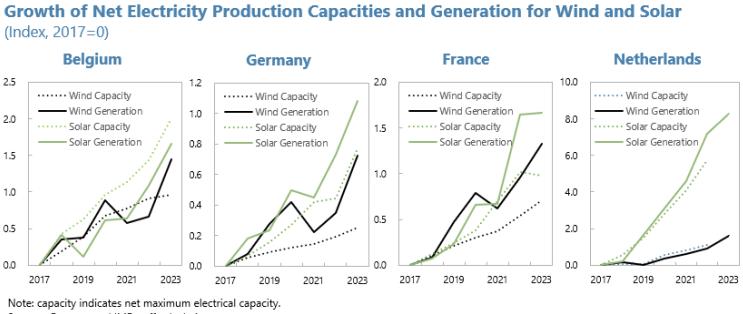
Source: Eurostat.
Note: Electricity price includes all taxes and levies. Household consumers is defined as medium-sized consumers with an annual consumption between 2500 kWh and 5000 kWh. Non-household consumers is defined as medium-sized consumers with an annual consumption between 500 MWh and 2000 MWh.

Note: Comparator countries are selected based on data availability. Electricity price compares prices in the neighboring countries.

Box 4. Investment in Electricity Grids

Timely improvements of electricity grids can enable low-emission and digitalized economic activities. Enhanced infrastructure can accommodate increased electricity usage by reducing grid congestions and lowering efficiency losses. Smart grids can help lower peak network prices by effectively predicting and responding to demand, thereby avoiding last-minute purchases from fossil fuels, which are typically more costly, and improving reliability of the grid. Deploying smart grids can also facilitate digitalization to benefit from cloud computing and instantaneous communications with distributed energy resources, creating a nexus between digitalization and green transition goals. The NECP estimates that private investment needs will amount to about €17 billion to expand the transmission and distribution network and support the transition to smart grids.

Upgrading grid infrastructure is essential for utilizing additional renewable energy for electricity generation. The growth of net electricity generation from wind and solar farms, which represent 85 percent of total renewable energy sources in Belgium, was trailing their capacity growth in 2017–23. In contrast, additional electricity generation using solar and wind energy has outpaced capacities growth of solar and wind in Germany and France. In the Netherlands, the growth of both generation and capacities has been more closely aligned. The gap in Belgium suggests inefficiencies in incorporating the significant increase in renewable energy capacities into the overall energy mix. Upgrading electricity grid is needed to address the aging of existing infrastructure and under-developed interconnectors, thereby increasing the capacity to manage the increased flows of renewable energy, and the deployment of emerging technologies such as storage solutions. Given the fast evolution of clean electricity production, timely upgrading of electricity grids infrastructure is paramount to avoid exponential cost increases from delayed actions (Ember 2024).



Note: capacity indicates net maximum electrical capacity.
Sources: Eurostat and IMF staff calculation.

D. Policy Recommendations

15. Raising the efficiency of public investment is critical for achieving more with less spending. This is particularly important given the need to secure fiscal space to accommodate substantial additional investments required to support the green transition and digitalization of the economy. As highlighted in the accompanying SIP by Hearne, this should include laying out clear infrastructure investment strategies, strengthening project appraisal, selection, and governance, and improving coordination within and among the federal and regional governments.

16. There is significant scope to improve the coordination and burden sharing of fiscal consolidation and public investment among federal and federated entities. Going forward, notwithstanding the lack of hierarchy, it will be crucial to adopt a pragmatic approach to foster coordination among federal and regional and community governments in achieving fiscal targets and establishing investment strategies, including national energy climate goals. This should contribute to the efficient planning and implementation of key public investment projects, reducing duplication of investment and resource waste while enhancing economies of scale. In this context, the establishment of the new Study Committee on Public Investment (SCPI) under the High Council of Finance in February 2023 could play a useful role in improving the coordination and efficiency of public investments. The SCPI is tasked to provide an inventory of public investment; identify public investments needs (with initial report on climate transition underway); identify implementation obstacles; methodological tools and procedures; and support technical dialogue among entities.

17. Clearly defined and communicated national goals would help anchor firms' expectation and guide their long-term strategies and investments in line with sustainability objectives. As Belgium stands at a pivotal point in fostering the digital and green transitions, establishing clear medium to long-term public investment objectives and highlighting investment gaps are essential to mobilize private sector investment. Indeed, public investment can play a strategic role in signaling the policy objectives and guiding private investors' expectations. Enhancing the prospects for private investments in electricity power grid is a case in point.

18. Fostering higher public investment in the green transition requires harmonizing energy policies, delivering clear market signals, and phasing out or repurposing fossil fuel subsidies. Repurposing subsidies currently allocated to petroleum, gas and coal should be a key part of the strategy to incentivize renewable energy adoption, reduce overall energy consumption, and address funding shortages. Belgium should redirect fiscal resources currently providing general price subsidies, which likely hinder or delay the transition, to renewable energy. At the same time, affordability measures should directly target the most vulnerable segment of the population. Looking forward, effectively utilizing the proceeds from carbon pricing under the new EU ETS2, which is expected to start in 2027 and will cover transport, buildings, and most small businesses, will be important. This includes determining the revenue distribution between federal and federal entities to augment fiscal resources for public investment. Additionally, increasing carbon pricing could further augment the fiscal envelope (Vernon 2022).

19. Increasing public investment could also involve enhancing public-private partnership (PPP) and blended finance initiatives. PPP investment across all sectors declined to less than 0.1 percent of GDP in 2019 from 0.2 percent GDP in 2014. Total PPP capital stock of Belgium is also relatively low at 1.1 percent of GDP (IMF ICSD database). In this context, increasing strategic public investment through private sector participation, with appropriate safeguards to mitigate fiscal risks, could be further explored to support large scale infrastructure projects. The increasing focus on blended finance, leveraging public funds to attract private investments for the green transition objectives, could help maximize the impact of limited fiscal resources.

20. Lastly, EU funding opportunities should be actively pursued to accelerate public investments in the green transition. The EIB Group committed in 2023 about €2.4 billion, of which €230.5 million through the European Investment Fund, for projects in Belgium, with close to 80 percent of these allocated to climate projects (EIB 2024). The Recovery and Resilience Facility (RRF) framework, set to expire in 2026, provided substantial financing for digitalization and climate resilience projects but this financing has so far been largely untapped as progress in achieving related milestones stalled. Looking ahead, the Medium Term Fiscal Structural Plan (MTFSP) under the EGF requires reforms and investments responding to country specific requirements (CSRs). Among the CSRs, investments to reduce overall reliance on fossil fuels and accelerate the deployment of renewable energies and related grid infrastructure have been recommended to Belgium, including through the implementation of the RRP and RePowerEU. Leveraging EU funds and prioritizing EU-backed investments can both alleviate budgetary constraints and ensure alignment with the European Green Deal objectives.

E. Conclusion

21. Belgium must secure a shift towards growth-enhancing public investment despite fiscal consolidation to boost its potential growth and address long-term investment needs, notably for digitalization and the green transition. Improving the efficiency of public investment is critical to deliver high-quality infrastructure within a constrained fiscal environment. There is significant scope to improve coordination across federal, regional, and community governments. Additionally, improving transparency in public investment policy and the establishment of clear, long-term objectives will help mobilize private sector investment and address the existing investment gap. Increasing public investment through public-private partnerships and actively pursuing EU funding opportunities, will further accelerate progress in the green transition and support Belgium's alignment with European sustainability goals.

22. Belgium has significant opportunities to enhance its digital and energy infrastructure, which are critical for closing competency gaps and achieving a successful green transition. The energy sector faces challenges due to high greenhouse gas emissions and reliance on fossil fuels, necessitating increased public investment to support clean energy initiatives. The government needs to reallocate funds from existing subsidies for fossil fuels to green investment and measures that support renewable energy adoption and technological innovation.

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IMPROVING THE EFFICIENCY OF PUBLIC INVESTMENT IN INFRASTRUCTURE IN BELGIUM[1]

Against a backdrop of constrained fiscal space, Belgium faces considerable investment needs. Improving infrastructure governance processes can enhance investment efficiency, achieving more "bang" for each investment "buck". This paper analyzes public investment management practices in Belgium, highlighting several areas for improvement by the federal and regional governments. The findings indicate an absence of clear infrastructure strategies, weak practices for project preparation (including project appraisal, selection and approval processes), fragmented governance, and an absence of coordination within and between entities. The "gatekeeping" role of the Ministry of Finance, common in most advanced economies, is largely absent in each of the entities in Belgium's federal state. Notwithstanding these areas for improvement, there are examples of good practices in individual agencies, and a number of promising reform initiatives are underway. The paper recommends taking a strategic and coordinated approach to investment planning, establishing standardized project preparation practices, enhancing coordination between federated entities and with the federal entity, and strengthening the role of departments of finance/budget in the public investment process. Together, these steps can improve infrastructure governance and support enhanced investment efficiency.

A. Introduction and Overview

1. Against a backdrop of constrained fiscal space, Belgium faces considerable investment needs. Public investment is required to improve the quality and coverage of physical infrastructure, to foster digitalization and spur productivity growth, to enable the decarbonization transition, and to ensure climate resilience and adequate maintenance of the existing asset base. These needs must be accommodated within a decreasing overall spending envelope.[2]

2. Belgium's capital stock is comparatively low relative to neighboring countries and peers, and investment efficiency lags leading performers. The public component of the capital stock has been below three percent of GDP since the 1990s. From an efficiency perspective, comparators such as the UK and Spain achieve a higher level of infrastructure quality for a comparable level of capital stock, and components of transport infrastructure competitiveness fall behind neighboring countries in the road, railroad, and air transport sectors and in ICT adaptation (Figure 1). This may understate the relative efficiency gap for Belgium given its high population density. For a densely populated country, a given level of capital stock in value terms should be expected to deliver a higher level of access to quality infrastructure compared to a more sparsely

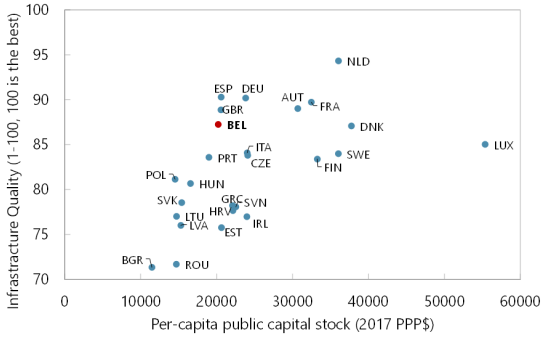
[1] Prepared by Ed Hearne (FAD).

[2] For a fuller discussion of this theme, see the accompanying selected issue paper by Wong and Li (2025), "Increasing Public Investment, Fostering Digitalization and Supporting the Green Transition: A Difficult Challenge Under Fiscal Consolidation.

populated country. Higher density can bring an efficiency in infrastructure provision compared to less densely populated countries where more distributed and less concentrated networks are required to bring services to remote locations, serving fewer inhabitants.

Figure 1. Comparative Infrastructure Efficiency and Competitiveness

Infrastructure Efficiency (2019)



Sources: IMF Investment and Capital Stock database (last update in 2022), IMF World Economic Outlook (July 2024), World Economic Forum (last update in 2023), and IMF staff estimates.

Europe: Infrastructure Competitiveness (2019)

(Index, from 0 to 100, lower to higher performance)

	Infrastructure						ICT Adoption
		Transport				Utility	
	Overall	Railroad	Air	Road	Sea		
Netherlands	89.2	89.2	83.5	89.8	94.4	99.5	76.3
Spain	83.6	75.4	88.4	89.2	81.6	97.0	78.2
Germany	84.3	82.6	87.2	83.4	83.8	96.2	70.0
France	82.6	83.0	85.3	85.3	76.7	96.9	73.7
Austria	78.7	85.5	68.0	82.7	-	99.3	65.6
United Kingdom	81.0	77.6	86.1	77.9	82.4	96.8	73.0
Belgium	**75.6**	**75.8**	**69.4**	**73.7**	**83.6**	**98.9**	**67.0**
Denmark	75.7	79.5	72.8	81.4	69.0	98.5	83.3
Luxembourg	71.4	83.2	57.4	73.5	-	98.7	78.1
Italy	73.2	76.0	81.2	71.4	64.2	95.0	64.5
Sweden	69.1	54.4	72.7	83.9	65.5	98.9	87.8
Czechia	70.5	79.2	62.0	70.3	-	97.1	68.4
Portugal	71.2	61.7	69.6	88.7	64.9	96.0	71.2
Finland	67.2	62.2	73.9	81.3	51.5	99.6	80.4
Poland	67.8	74.2	64.3	71.6	60.9	94.5	65.4
Hungary	66.0	73.7	56.1	68.3	-	95.3	64.2
Slovak Republic	59.5	75.0	36.9	66.6	-	97.6	69.2
Croatia	62.1	62.0	58.9	77.6	49.7	94.4	60.7
Slovenia	58.3	67.8	44.9	70.1	50.5	97.9	69.2
Greece	60.7	38.5	74.9	68.3	61.0	94.7	64.7
Lithuania	59.2	68.0	50.5	76.3	42.1	94.8	81.5
Ireland	60.4	58.9	71.4	72.6	38.7	93.6	66.6
Latvia	57.3	67.5	58.8	66.1	36.7	94.8	79.7
Estonia	55.7	60.2	46.7	74.2	41.7	95.9	78.8
Malta	55.9	-	58.7	48.6	60.2	94.2	75.5
Cyprus	55.1	-	59.8	68.2	37.3	94.7	62.0
Romania	54.4	65.1	57.1	55.9	39.4	89.0	72.0
Bulgaria	51.7	64.0	53.3	58.4	31.1	91.0	73.4

Source: World Economic Forum (last update in 2023).

3. Belgium has an opportunity to narrow the efficiency gap by improving infrastructure governance practices. IMF research has shown that, on average, countries could close two thirds of the efficiency gap by improving public investment management (PIM) practices to the level of the most efficient comparator. Further, strong infrastructure governance practices are also associated with improved economic productivity of public investment: countries with better PIM systems get more growth "bang" for their investment "buck".[3] Accordingly, improving institutions for public investment can improve the quality and coverage of infrastructure delivered and improve the chances of that infrastructure enhancing growth prospects.

4. This paper assesses public investment management practices in Belgium, focusing on the planning phase of the infrastructure lifecycle. The approach draws on aspects of the IMF's Public Investment Management Assessment (PIMA) framework – the leading diagnostic to assess countries' infrastructure governance practices.[4] Belgium is a highly decentralized state and subnational governments have significant autonomy over fiscal policy.[5] While responsibility for the rail network, public buildings and prisons rests with the federal government, most other sectors of

[3] IMF (2015) Making Public Investment More Efficient.

[4] For more information see IMF (2022) Public Investment Management Handbook and the IMF's Infrastructure Governance Portal at https://infrastructuregovern.imf.org/.

[5] For a fuller discussion see Wong, Yu Ching (2023) Fiscal Federalism in Belgium: Challenges in Restoring Fiscal Sustainability. IMF Selected Issues Paper (SIP/2023/016). Washington, D.C.: International Monetary Fund.

public investment including roads, waterways, public transport, flood defense, water supply and wastewater treatment are the competence of the regions: Flanders, Wallonia and Brussels-Capital Region. Given the distribution of responsibilities for public investment across Belgium, this paper assesses each aspect of infrastructure government as they apply in the federal and each regional federated entity.

5. The remainer of this paper is structured as follows: Section B assesses the extent to which public investment is planned, budgeted and implemented within an overarching national, regional or sectoral strategy; Section C assesses the project preparation phase, including use of standard techniques like project appraisal, governance and decision-making protocols for public investment and practices for project selection; Section D reviews institutional arrangements and coordination structures for public investment management; Section E presents recommendations to address the issues identified.

B. Strategic Planning of Public Investment

6. To be effective and efficient, public investment should be guided by an overarching strategic plan. Investment strategies, or "National Development Plans" establish how public investment goals and objectives will be achieved through a broad portfolio of projects and programs that complement each other. A strategic approach can maximize the impact of individual investments and ensure alignment of infrastructure spending with other cross-cutting policy priorities including addressing climate change or promoting economic growth or sustainable regional development. Investment plans should be linked to available resources and must be feasible in the context of the medium-term macroeconomic context. In the absence of a national or regional investment plan, there is a risk that spending will be haphazard, opportunities for synergies and network benefits will be forgone, and investment efficiency will be eroded.

7. While there are reforms underway, there are significant weaknesses in strategic planning of public investment in Belgium at present. Integrated investment plans are not in place. While there are a number of published investment programs at the regional level, these are generally confined to sectors (such as mobility) or sub-sectors (such as roads). Where plans do exist, they are generally not in the context of a realistic assessment of available resources and hence aspirational. Frameworks for territorial development and spatial planning are generally well developed but these are undermined by absence of supporting infrastructure plans. Given the fundamental spatial nature of infrastructure, this is a significant weakness.

Federal Government

8. Belgium does not have a national investment strategy nor an integrated plan for the sectors within the competence of the federal government. The Federal Department of Budget does not oversee investment strategy. While the Study Group on Public Investment, supported by the Federal Planning Bureau, has undertaken valuable research and analysis on infrastructure issues, its role has not extended to policy development. In addition, there is no central assessment of investment needs and priorities in Belgium, whereas the highest performing countries undertake

such assessments. Nor does Belgium have sectoral strategies at the national level as standard.[6] Regional sectoral strategies, where they exist, are not integrated at the national level. Belgium is an outlier in this regard – as of 2022, nine EU member states had integrated national investment plans and a further 13 used national sectoral strategies.[7]

Flanders

9. Flanders does not currently have an integrated public investment strategy, but work is underway to develop a medium-term plan. Historically, investment programs were set out annually by each of seven entities within the mobility and public works policy area. A consolidated plan is in development, incorporating all transport modes and flood defense investment. Project proposals will be reviewed by an Investment Cell in the Department of Mobility and Public Works. Structures have been established to improve coordination, but this is limited to the policy areas under the remit of the Department. The plan will be more constrained by available resources than previous plans and is likely to result in many proposals not proceeding. The development of a consolidated plan is a positive step and can be built upon. Future iterations should broaden the coverage to other investment sectors and ensure a close alignment with policy objectives such as climate change and territorial development.

Wallonia

10. The Government of Wallonia has developed a number of public investment strategies, focusing on the transport sector. *Mobility and Infrastructure for All* set out a range of investment projects and programs designed to maintain existing networks, engender a modal shift to sustainable mobility and encourage active transport.[8] The plan included funding for all modes – public transport, roads, waterways and cycling. However, the plan did not incorporate complementary investment in other sectors. In addition, the plan was not sufficiently linked to available resources with the consequence that many projects were unaffordable and aspirational.

11. The Wallonia government is evaluating the domestically-funded component of the region's Recovery and Resilience Plan, and this will form the basis of a new medium-term investment plan. This iteration, planned for 2025, should be explicitly linked to a realistic assessment of available resources. Future iterations of the plan should aim to broaden the coverage to other sectors of public investment. This should include economic infrastructure such as water and sanitation, energy and communications, and social investment such as education, healthcare and public housing. To support maximum impact, the plan should be consistent with spatial policy in the region. At present, there is no explicit link between territorial/land-use planning and public investment, impeding effectiveness in both policy areas.

[6] An exception is investment planning in the rail network.

[7] Belu Manescu, C. (2022). New Evidence on the Quality of Public Investment Management in the EU. DG ECFIN Discussion Paper nr. 177.

[8] Government of Walloon (2020) Mobility and Infrastructure for All.

Brussels Capital Region

12. BCR does not have an integrated public investment plan or strategy. While certain sectors have established multi-annual investment plans, these are not consistently developed or presented. Plans are fragmented. For example, the BCR Ministry of Mobility has three: bridges and viaducts, public transport, and tunnels.[9] These amount to investment plans for individual asset classes rather than an integrated plan for mobility. Moreover, transport planning is a key enabler of other public investment sectors and there is no mechanism for strategic alignment across policy spheres.

13. BCR has a well-developed spatial planning framework, but this is not explicitly aligned to public investment policy. A Regional Designated Land Use Plan was adopted by the Brussels Government in 2001.[10] The plan governs the general use of the various zones of the Brussels-Capital Region and has primacy within the spatial planning hierarchy. Special Use Plans give effect to the regional plan at the municipal level.[11] BCR has also adopted a Regional Plan for Sustainable Development that sets out the sectoral and territorial development objectives in the years to 2040.[12] The Plan articulates objectives around four main themes:

- Developing new neighborhoods;
- Improving the living environment;
- Developing the urban economy; and,
- Promoting multi-modal travel.

14. Complementary public infrastructure is critical to achieving the objectives of regional and urban planning. Likewise, achieving wider objectives of urban planning such as densification is fundamental to maximizing the efficiency of investment projects. The absence of a strategic investment plan and the lack of alignment between public investment and territorial development therefore undermines effectiveness of policy in both spheres.

C. Project Preparation and Governance

Project Appraisal

15. Rigorous and objective project appraisals are fundamental to sound public investment management. To support the identification and selection of the highest impact projects, all investment proposals should be subject to consistent economic, financial and technical appraisal.

[9] EU Commission (2023). D6. Gap analysis for the Brussels - *Capital Region Enhancing public investment management at federal and regional (Brussels) level*. Report prepared by AARC, Amsterdam SEO and Aebel. REFORM/SC2022/049.

[10] Government of Brussels (2001) Regional Land Use Plan.

[11] Government of Brussels (2024) Spatial Planning Code.

[12] Government of Brussels (2018) Regional Spatial Development Plan.

Good project appraisal involves comparing all available options to achieve a policy outcome. To facilitate comparison of competing demands for scarce resources, appraisals should be completed in line with standard methodologies across ministries.

16. Belgium has significant weaknesses in project appraisal across each entity of government, contributing to cost overrun on major projects. Project appraisals should make adequate provision for the impact of risk and uncertainty on the case for a public investment project, and shortcomings in this regard can contribute to cost overrun, schedule delay and underachievement of planned benefits. There are numerous examples of cost overrun in Belgium (Box 1), and weak arrangements for project appraisal exacerbate the challenges of delivering complex infrastructure.

Federal Government

17. There are no standard arrangements for project appraisal at the federal government level. The infrastructure sectors within the remit of federal government are energy, public buildings, rail, and prisons. In the case of energy, investment is by the private sector or within a regulated asset-base regime. There are no requirements for economic appraisal in public buildings. In the rail sector, Infrabel undertakes economic and financial appraisal on large network investment projects. These are not published, nor independently scrutinized prior to investment decisions. In the past, PPP contracts have been entered into without appraisal, for example the DBFM prison investment program.

Flanders

18. Public investment projects in Flanders do not require appraisal prior to approval. A number of previous studies have pointed to the absence of arrangements for ex-ante project assessment, though there is little evidence of progress as a result.[13] Feasibility studies have been undertaken on some projects, but these are not completed to a common standard and are not routinely published. The absence of cost-benefit analysis (CBA) on road projects has been found to have contributed to problems with cost overrun, schedule delay and budgetary pressures, as too many projects were commenced without a clear indication of the relative socio-economic priority of each.[14] The current government agreement mentions the role of CBA as a guideline for political consideration of investment.[15]

[13] Studies include Dorren, L., Verhoest, K., van Dooren, W. and Wolf, E.E.A., (2018) Planning Beyond Borders – The Selection and Prioritization of Infrastructure Projects; and Tripple Bridge (2015) Towards a well-considered sustainable investment policy.

[14] Court of Audit (2020) Realization of Missing Links in Flemish Road Infrastructure.

[15] Government of Flanders (2024) Flemish Government Agreement 2024–2029.

Box 1. Cost Overrun in Public Projects

Belgium has experienced a number of challenges with public investment projects including cost overrun and schedule delay. Causes include optimism in early cost and schedule estimates, commitment to projects prior to conclusion of design, failures in front-end planning, inadequate risk assessment and mitigation plans, and weaknesses in the contracting process. High profile examples can be found in each federated entity:

- The Oosterweel ring road in Antwerp has experienced substantial cost escalation in excess of the originally-planned scheme. The initial tunnel concept was replaced by a design featuring two ring roads, public parks and other elements. From a 2010 estimate of €3 billion, the projected total scheme cost now stands at over €10 billion.
- The estimated cost of the Brussels Metro 3 line, connecting the north and south of the city, has increased from an initial estimate of €950 million in 2009 to €4.7 billion by 2024. Following the breakdown of the procurement process in 2024, project sponsors plan to retender the scheme after a cooling-off period.
- Modernization of the Mons Railway Station was completed in December 2024, nine years later than the original schedule. From an initial cost estimate of €60 million, the final outturn cost was €480 million. Contributory factors included persistent scope and design changes and weak forecasting practices. The Liege Tram has also experienced challenges and plans for the second phase have been canceled.
- A range of challenges and scope and design changes increased the cost the Regional Express Network rail project. By 2016, the estimated cost had increased from €1.5 billion to over €3 billion.

Among the most significant investment portfolios in Belgium over the last two decades was investment to address missing links in the Flemish road network. The portfolio has experienced major cost escalation: in 2001, 24 of 27 projects were estimated to cost €1.4 billion; by 2019, just nine projects were completed and the estimated cost to completion of the full 27 stood at €11 billion. This is all the more striking given international evidence that major road projects tend to experience lower cost overrun than other infrastructure classes. Causes of the overruns in the Flemish roads include inadequate appraisal, lack of prioritization, and disconnection of portfolio management from the budget.

Cost increases on smaller projects have been more modest, but there is some evidence that project performance has worsened in Belgium in recent years. A study of a set of rail, road and inland transport projects showed that investments undertaken since 2008 have a higher average cost overrun than those undertaken in the preceding decade. Factors including failures of coordination and weak stakeholder management are more pronounced as causes of cost overrun in Belgium than other jurisdictions.

Source: Staff analysis of Molinari, L., Haezendonck, E. and Mabillard, V., 2023. Cost overruns of Belgian transport infrastructure projects: Analyzing variations over three land transport modes and two project phases. Transport Policy, 134, pp. 167–179. Molinari, L., Haezendonck, E., Van Rompay, K., Mabillard, V. and Dooms, M., 2025. Persisting cost overruns in public infrastructure projects: Lessons from the Belgian case. Public Works Management & Policy, 30(1), pp. 36–57. Court of Audit (2017) Regional Express Network implementation and Financing. Court of Audit (2020) Realization of Missing Links in Flemish Road Infrastructure. Court of Audit (2022) Modernization and Development of the Site and Buildings of Mons Station. Court of Audit (2024) Alliance for the Future – Audit Report on the Fourth Financial Progress Report. Parliament of Belgium (2024) The Overrun of Deadlines for the Works at Mons Station – Hearing Sessional Paper, 22 November. Flyvbjerg, B. and Bester, D.W., 2021. The cost-benefit fallacy: Why cost-benefit analysis is broken and how to fix it. Journal of Benefit-Cost Analysis, 12(3), pp. 395–419.

Wallonia

19. There are no standard arrangements for project appraisal of public investment projects in Wallonia. Sectors have autonomy to prioritize projects without the need for financial, technical or economic analysis of the proposal. Absence of requirements for appraisal and quality assurance of the case for investment exacerbates the risk of cost overrun and schedule delay such as those experienced in the Liege Tram and the Mons Railway Station.

Brussels Capital Region

20. Public investment projects in BCR are not subject to standard economic and financial appraisal. While previous diagnostics have acknowledged the practice of environmental impact assessment, this is an EU-mandated process and does not constitute project appraisal.[1] Some individual major projects have been appraised, for instance in the mobility sector. Large public housing developments are subject to technical and financial appraisal but not economic analysis. Appraisals are not published or independently assured as standard. Investment decisions are generally taken at ministerial or governmental discretion, with no standard requirements for project-level analysis. Absence of a strong framework for assessing proposals prior to the decision to proceed undermines the quality of project proposals.

D. Project Selection and Governance

21. Strong arrangements for project preparation and governance can improve public investment efficiency. Frameworks that govern project preparation, decision-making and funding approval can help prioritize the highest impact projects, identify, mitigate and manage risks, and support the delivery of infrastructure on budget, on time and to required benefits. Many European countries now use some form of decision-gate structure to govern public investment decision-making (Box 2).

22. Belgium does not use standard processes for selection and governance of new investment project proposals, but there are some pockets of good practice. Neither the federal government nor any of the regions have instituted standard procedures to oversee investment project preparation and scoping, risk management, and approvals at each point in the project lifecycle. However, there are some examples of good practice in individual sectors as noted below.

[1] Specially the 2021 PEFA and 2023 Gap Analysis.

Box 2. Major Project Governance Processes—Selected European Examples

Norway. All investment proposals with an estimated cost of NOK750m or above are subject to the State Projects Model. Proposals are required to undergo a quality assurance process at two stages of the project lifecycle – QA1 which examines the conceptual solution prior to submission to government and then QA2 which provides an external scrutiny of cost estimation prior to submission to parliament for decision to proceed.

Denmark. Road and rail projects with a value over DKK250m are subject to external assurance at two stages of the project lifecycle, known as Decision Levels 1 and 2. At Decision Level 1, it is decided which concepts will be taken forward, while Decision Level 2 considers whether the project should be implemented. The implementing agency undertakes a project appraisal, which is then subject to quality assurance by an external consultancy firm appointed by the Ministry of Transport. The implementing agency makes a recommendation to the Ministry of Transport, which is ultimately considered by Government prior to consideration by Parliament.

United Kingdom. The Treasury Department has developed detailed guidance and processes in relation to project governance and risk management, with the Government Major Project Portfolio comprising the largest, most novel and highest risk projects and programs. All projects with an estimated cost greater than £1billion, as well as other projects considered particularly novel or contentious, are subject to enhanced levels of scrutiny with assurance reviews by the Infrastructure & Projects Authority and review by the Major Projects Review Group. The Group's membership includes two independent members drawn from a pool of senior public and private sector experts. The Group challenges projects on deliverability, affordability and value for money at key points throughout the project life cycle.

Ireland. The Infrastructure Guidelines embed a project lifecycle with three discrete Approval Gates for all investment projects. Major projects (with an estimated cost over €200m) are subject to an external assurance process and then a review by the Department of Public Expenditure, NDP Delivery and Reform's *Major Projects Advisory Group* at *Approval Gate 1 – Preliminary Business Case*. The project's *Strategic Assessment and Preliminary Business Case* (which includes CBA for most sectors), external assurance review and the report of the Major Projects Review Group are submitted to Government at Approval Gate 1. The Group is comprised of independent experts and its reports are published. Government approval is also required at *Approval Gate 3 Final Business Case* prior to contract award.

Sweden. A governance process for major transport projects was introduced in 2013. Project ideas are initially subject to a *Choice of Concept Study*. CBA is undertaken on all proposals. Projects that receive approval are required to be reviewed again prior to formal approval to proceed. The Building Start Document is prepared and reviewed by and independent agency prior to final endorsement.

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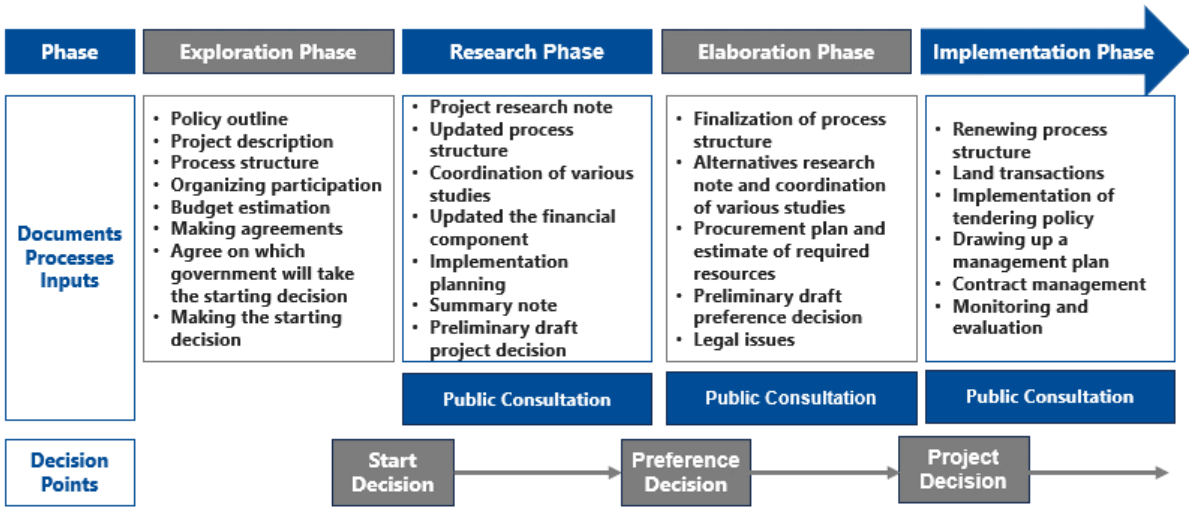
Sources: Samset, K.F., Volden, G.H., Olsson, N. and Kvalheim, E.V., 2016. Governance schemes for major public investment projects: A comparative study of principles and practices in six countries.; Parliamentary Budget Office, Ireland (2024) Capital Spending – An Overview of Ireland's Infrastructure Guidelines; IMF (2022) United Kingdom – Technical Assistance Report – Public Investment Management Assessment; Olsson, N.O., Nyström, J. and Pyddoke, R., 2019. Governance regimes for large transport infrastructure investment projects: Comparative analysis of Norway and Sweden. Case Studies on Transport Policy, 7(4), pp. 837–848.

Flanders

23. Flanders does not have standard procedures for project selection and governance but has established an optional process designed to expedite the delivery of complex projects. In 2014, the Flemish government instituted a process for complex projects (Figure 2), but this is optional for project sponsors.[1] Decisions on major investments are usually made by the government and do not follow a standard decision-making or governance process.

Figure 2. Flanders Complex Project Process



Source: Staff interpretation of 2014 Decree on Complex Projects and related government documents.

24. The optional process is underpinned by a range of supporting documents but has not been widely applied in practice, and there is limited evidence of its effectiveness to date. A number of high-profile megaprojects, including the Oosterweel in Antwerp, did not follow the process. Research on a sample of port projects that did use the model found that sponsors deemed that the process made project preparation more transparent and solution-driven, although there was mixed evidence as to whether the process expedited project delivery.[2] Nonetheless, key principles of the model such as standard project phases and document requirements, standard supporting guidance and formal decision points represent good practice and could form the basis of an improved – and mandatory - approach in the future.

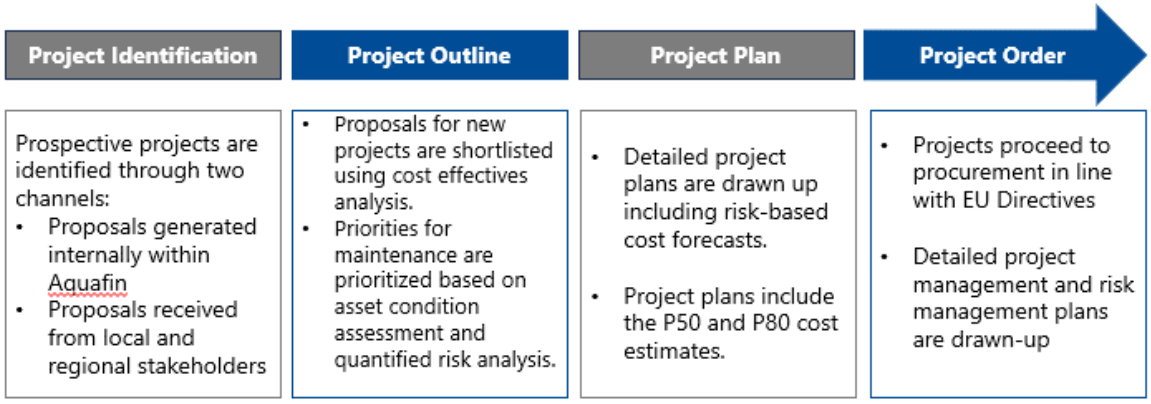
25. Notwithstanding the absence of mandatory processes, there are some examples of good practice in project preparation and governance. In wastewater infrastructure, Aquafin uses a structured approach to identifying project priorities and selecting investments for inclusion in a multi-annual investment plan that is updated annually (Figure 3). Project proposals are ranked based on environmental criteria derived from the EU Water Framework Directive, a measure of time

[1] Government of Flanders (2014) Decree on Complex Projects.

[2] Gosseries, M. (2020) Evaluation of the Complex Projects Decree. Master's Dissertation.

criticality reflecting regional policy priorities, and a measure of wider opportunities and risks.[3] Candidate projects' performance against these criteria are then assessed through a cost-effectiveness framework. Priority projects are prepared and developed using a new project management process with formal decision gates. Risks are identified as part of the project costing process, and the P50 and P80 project costs are estimated. Risk contingencies up to the P80 estimate are available to project sponsors, but can only be released where specified risks materialize. Aquafin reports that in the two years since the new governance process was introduced, about 80 percent of projects are on budget at the P80 level, indicating an accurate cost-forecasting regime on average.

Figure 3. Aquafin's Project Governance Process



Source: Aquafin and staff analysis

Wallonia

26. Wallonia does not have a standard approach to project governance and selection. Project selection is largely a political process. There are no regulations on project preparation, approval or risk management. There is a requirement for reporting project progress through a dedicated software system, but this is a reporting rather than a governance or oversight function.

Brussels Capital Region

27. BCR does not have standard processes for project selection or investment governance. In practice, selection of new investment projects is political.[4] There are no common steps for development and approval of projects across different sectors. Even within individual sectors, procedures for new project selection are weak: neither the Department of Housing or Mobility (the ministries with the largest public investment portfolios) have standard criteria to prioritize competing investments. Project costs are not explicitly set out as part of the Region's budget.

[3] For example, the potential benefits of flood risk amelioration that may arise from a proposed project.

[4] AARC Consultants (2021) Public Expenditure and Financial Accountability Performance Assessment Report.

28. There is some evidence of better approaches to prioritizing maintenance spending. For example, Vivaqua, which manages the 500km sewer network in BCR, uses a sophisticated risk-based approach to prioritize capital and operational maintenance interventions. The age of the network, coupled with the fact that 99 percent of the population is already served by the sewer system, means that maintenance and renewal is typically a higher priority than new infrastructure. The approach deployed by Vivaqua uses evidence on asset condition, assessment of consequences of infrastructure failure and financial information to prioritize a rolling 15-year investment program.

29. As the Brussels government aims to address these shortcomings, planned reforms should focus on high-impact early wins. Work has been ongoing in recent years to strengthen the approach to public investment in BCR. A gap analysis was undertaken[5] and a set of recommendations developed.[6] These are positive steps. On the point of project selection and governance, the region plans to develop a "Helper Tool" to assist in project selection.[7] While supporting IT systems can aid good public investment management, the focus in the near term should be on establishing a clear and transparent framework for project governance; establishing the minimum level of information required for approval decisions at each point in the process (particularly relating to project costs and risks) and setting out clear criteria to shape investment prioritization within a realistic and binding fiscal constraint.

E. Coordination and Institutional Arrangements for Public Investment

Coordinating Public Investment

30. Effective coordination is crucial when various layers of the public sector are involved in planning, funding and delivering public infrastructure. In this context, coordination means that the priorities of the different parts of government are made consistent with each other; budget funding, particularly to entities like local governments, is transparent and predictable; and risks arising from major investment projects, regardless of the implementing body, are well understood and managed appropriately and consistently.

31. There is fragmentation in public investment management and weak coordination among entities. Infrastructure is spatial in nature and discrete public investment projects form networks that work together to provide services to users. These network effects are particularly pronounced in geographically smaller and more densely populated contexts. At present Belgium does not have administrative structures to align infrastructure planning and development among sectors and across regions. There is no process to coordinate investments that are within the

[5] EU Commission (2023). D6. Gap analysis for the Brussels - Capital Region Enhancing public investment management at federal and regional (Brussels) level. Report prepared by AARC, Amsterdam SEO and Aebel. REFORM/SC2022/049.

[6] EU Commission (2024). D10. Enhancing public investment management at federal and regional (Brussels) level. Report prepared by AARC, Amsterdam SEO and Aebel. REFORM/SC2022/049.

[7] The "Helper Tool" is designed to systematize the project selection process, informed by harmonized selection criteria and linked to budgetary resources.

competence of the federal government and within the competence of the regions. For example, rail investment is planned and managed nationally, but road investment is planned and managed by the regions. The two modes interact as complements and substitutes in different circumstances, and, absent a coordinating mechanism, there is a significant risk of loss of efficiency. Even where public investment is managed nationally, there are cases where regional issues risk undermining efficiency, for example Infrabel's Regional Key (Box 3).

Box 3. Infrabel's Regional Investment Key

Infrabel has the mandate to design, construct, renew, maintain and manage railway infrastructure on a national basis. The company maintains a dense network of over 6,500km of track, 11,600 bridges and tunnels on which 4,400 trains run daily. Investment is undertaken through the Multiannual Investment Plan, 2023–32 (MIP), and the Strategic Multiannual Investment Plan, 2018–31 (SMIP). The MIP is part of Infrabel's performance contract and sets out investments across five pillars: safety, punctuality, digitalization and production, capacity, and accessibility to railway services. The SMIP is a cooperation agreement between the Federal State and the three regions designed to fund strategic projects in addition to the investments provided for under the MIP.

Despite its national mandate, arrangements with the regions introduce rigidity into Infrabel's infrastructure planning and risk undermining investment efficiency. Dating from a cooperation agreement between the Federal State and the regions struck in 2001 and enshrined in law in 2002, the volume of railway investment must be split in a ratio of 60 percent for the Flemish Region and 40 percent for the Wallonia Region. The ratio or "key" is applied to available resources for investment with the exception of funding for railway infrastructure in BCR and expenditure on rolling stock. Articles 132 and 133 of Infrabel's performance contract enshrine the key in formulation of the MIP and SMIP, respectively. The key applies to both new projects and maintenance of existing assets. The shares of spending must be achieved annually in the case of the MIP and on a cumulative basis over the duration of the plan in the case of the SMIP.

The regional investment key introduces risk of inefficiency in capital spending in a number of ways. First, the key could act as an artificial ceiling on investment in one or other region, leading to missed opportunities for projects with robust financial cases or above average socio-economic returns. Second, the key could act as a floor on investment in one or other region, leading to too high a level of spending on low value projects.[1] Third, the extent of the rail network is approximately equally distributed between Flanders and Wallonia. Because the key applies to maintenance spending, it could lead to a lower level of maintenance in Wallonia, risking degradation of network assets over time.

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Source: Staff analysis of Infrabel (2024) Facts and Figures; Ministry of Transport and Infrastructure (2002) Law approving the cooperation agreement of 11 October 2001; Ministry of Mobility (2023) Infrabel Performance Contract.

1/ The relative shares of Belgium's population between the regions (Flanders accounts for 58 percent, while Wallonia accounts for approximately 31 percent) illustrates the potential mismatch.

32. A federated government system should not preclude coordinated public investment management, and there is a case for structures to allow coordination among different competent bodies. Infrastructure has spillover effects from one region to another and many countries with decentralized autonomy for investment recognize the interconnected nature of infrastructure systems and plan investment accordingly. For example, in Germany, the Federal Government prepares 10–15 year strategies for transport spending. Germany's current plan, the *2030 Federal Transport Infrastructure Plan* is the primary transport infrastructure planning tool and addresses both maintenance needs and new investments in road, rail and waterways. The plan was

developed with input from the federal states, members of parliament, the Federal Government, railway infrastructure companies, members of the public, trade associations and other stakeholders.[8]

33. Even within the federated entities, there is a risk of fragmentation given the proliferation of agencies and absence of coordination structures or unifying policy vision. Each entity has numerous bodies tasked with investment delivery in sub-sectors. In addition, the use of special purpose structures for project or program delivery is widespread. On major investment projects, this practice risks diluting accountability and scrutiny of projects by government departments.

Institutional Arrangements for Public Investment

34. Appropriate structures and institutional arrangements are an important component of strong PIM systems. In addition to the technical role of delivery agencies in implementing investment projects, there are key functions for central government departments to align public investment with wider national and regional policy objectives and to ensure fiscal sustainability of infrastructure spending.

35. Within each federated entity, the budget/finance functions have a limited role in oversight of public investment. The Budget Ministry does not have an active gatekeeper role in public investment management in any of Belgium's entities. Belgium is an outlier in this regard – in most advanced economies, the Ministry of Finance plays a significant role in oversight of capital spending (Box 4). Strengthening the role of the budget/finance function would support improved coordination of public investment, support enhanced fiscal sustainability, and bring closer scrutiny of risks at the project and portfolio levels.

36. There are reform initiatives underway which are a positive starting point. Flanders has established a new public investment cell within the Department of Mobility and Public Works that will oversee public investment planning and the project selection process within the sectors under its remit. The Brussels-Capital Region has enacted legislation to establish a new PIM unit.[9] The unit will oversee project appraisal, selection and budgeting. These units should be adequately empowered to drive improved investment governance.

[8] OECD (2019) Infrastructure Toolkit

[9] Government of Brussels-Capital Region (2024) Decree of the Government of the Brussels-Capital Region on budgetary funds, the budgetary framework, the revenue and expenditure budget and budgetary amendments.

Box 4. Gatekeeping Functions of Finance Ministries in Public Investment in Advanced Economies

In most advanced economies, the Ministry of Finance plays an important role in public investment management processes and has clear "gatekeeping" functions. Responsibilities can span across the investment lifecycle and may include some or all of the following tasks:

- Setting overall national investment policy.
- Determining a binding medium-term expenditure framework for public investment, consistent with a sustainable and realistic fiscal position.
- Providing ministries with annual and multi-annual capital spending ceilings.
- Establishing rules for project appraisal and providing guidance and training.
- Quality assurance of project appraisals, establishing processes for project governance, and approval and approving or rejecting proposals at various points in the lifecycle.
- Monitoring and managing fiscal risks from infrastructure, including through PPPs.
- Oversight of the aggregate portfolio of public investment projects.
- Monitoring during execution including approval of substantial change in budget.

F. Recommendations

Investment Planning

37. To address weakness in strategic planning and increase public investment efficiency:

- Mandate and resource the Federal Planning Bureau – or a similarly competent body - to undertake periodic assessments of the existing capacity and condition of public infrastructure in Belgium and make recommendations on the optimum focus of public investment on a national basis.

- Introduce requirements in each entity to publish periodic public investment strategies, constrained by a realistic assessment of available resources, linked to spatial policy objectives and incorporating all budget-funded investment sectors.

Project Preparation and Governance

38. To improve investment efficiency and mitigate against the risk of major cost overrun:

- Introduce a requirement for economic and financial appraisal for all public investment projects, with larger and more complex investments requiring more detailed analysis:
    - Develop a common standard and accompanying guidelines for project appraisal.
    - Determine thresholds that set the required form of appraisal for projects of different sizes.
- Establish a standard governance process for public investment projects and programs, incorporating explicit decision gates and approval processes.

- For megaprojects, clearly set out the required level of project maturity and supporting information required at each point in the process including:
    - Economic and financial appraisal;
    - Project governance and organization structure;
    - Design and technical brief;
    - Risk assessment, mitigations and management plan;
    - Commercial and procurement plan;
    - Cost management plan; and,
    - Benefits realization plan.
- For megaprojects, introduce a requirement for expert assurance of project documentation prior to progression at each decision gate.

Coordination and Institutions for Public Investment

39. To tackle inefficiencies through weak coordination and fragmentation:

- Establish a structure to bring together federal and regional policy makers in public investment to enhance coordination, examine common challenges, and identify opportunities for efficiency improvements.
- To foster construction industry confidence and prepare the supply side of the market, publish a rolling combined national pipeline of construction tenders, updated every six months.
- Introduce new regulations to empower the finance and budget functions in each entity to play a defined gatekeeper role in project appraisal, selection budgeting, and implementation (drawing on the potential functions set out in Box 4).
- Build on the nascent public investment units in each region to drive to a step-change in the quality of public investment policy, project appraisal and governance, risk management, portfolio monitoring and ex-post review.
- Resource and mandate the Study Committee on Public Investment to develop new research and analytical tools for better public investment management.

Taken together these steps can improve infrastructure governance and support enhanced investment efficiency, supporting Belgium in meeting its investment needs in the context of a constrained fiscal position.

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PUBLIC EDUCATION IN BELGIUM: IMPROVING OUTCOME WHILE REDUCING COST[1]

Educational outcomes in Belgium are comparable to peers but achieved at a higher cost and have been deteriorating. The public wage bill for education is markedly higher than in peers, reflecting comparatively smaller student-to-teacher ratios and less teaching time. Yet, Belgium experiences teacher shortages and the highest share of grade repetition in the EU. Reforms should aim at increasing the efficiency of public spending on education while achieving greater equality of educational outcomes irrespective of students' economic or migrant backgrounds and a lower skills mismatch. This would help increase the employment rate, reduce the need for firms to provide training to upgrade inadequate skills, boost productivity, and increase the creation and diffusion of innovation. Ultimately, these reforms would also improve potential growth. The reforms would imply ensuring that the curriculum is better aligned with firm needs and reorganizing the educational system to better leverage teachers' time and strengthen support provided to students who face difficulties.

1. Increasing public spending efficiency can contribute to the fiscal consolidation that Belgium needs to undertake. Greater efficiency allows to preserve and even increase the impact of public spending at a lower fiscal cost. In several analyses, IMF staff have documented that the efficiency of public spending can be markedly increased in Belgium in many areas (Hallaert, 2016 and 2023; Kemoe, 2020; Wong, 2023).

2. This paper focuses on education spending, where potential efficiency gains are large enough to reverse the decline in educational achievements while also reducing spending. Increasing the efficiency of education spending could yield fiscal savings in the medium term as the impact of necessary organizational reforms gradually materializes. Besides supporting fiscal consolidation, reforms should aim at better aligning skills with labor market demands and reducing the gaps in education achievements resulting from students' diverse background. This would help increase the employment rate, reduce the need for firms to provide training to offset inadequate skills (which increases labor cost and weighs on firms' competitiveness), boost productivity, increase the diffusion and creation of innovation, and foster social mobility. Thus, reforms would contribute to higher potential growth and enhanced fiscal sustainability.

3. This paper is organized as follows. The first section focuses on spending, showing that public education spending is significantly higher in Belgium than in peers and that long-term demographic changes will provide comparatively little savings.[2] The second section highlights

[1] Prepared by Jean-Jacques Hallaert (EUR). The author thanks Jean-François Dauphin, Mark Horton, Iglika Vassileva, and participants at a National Bank of Belgium (NBB) seminar on January 31, 2025, for insightful comments as well as Wouter Duyck, Jean Hindriks, Dirk Van Damme, staff and officials of Federal Planning Bureau, NBB, Cabinet of Minister of Education for the Fédération Wallonie-Bruxelles, Cabinet of Education for Flanders, Minister of Education Gatz for the Dutch Speaking Community of Brussels for discussions. Xun Li provided excellent research assistance.

[2] In this paper, comparators are France, Germany, and The Netherlands. Peers are other EU members. EU25 are the 25 EU members covered by OECD data.

that, despite higher level of spending, educational achievements are not better than in peers. The gap between spending and outcomes, points to significant potential efficiency gains that are quantified in Section 3. Section 4 looks at the allocation of resources and the organization of the education system to identify reforms that can increase efficiency.

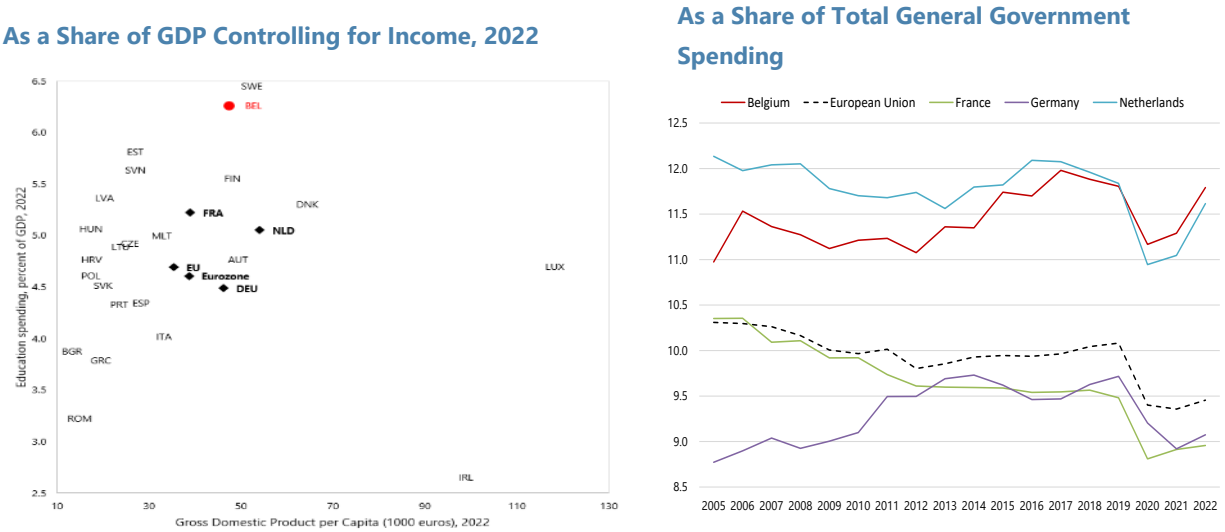
A. Belgium Spends More on Education Than Peers

4. Whatever the metrics, public spending on education is comparatively high in Belgium.

- *As a share of GDP.* At 6.3 percent of GDP in 2022, general government spending on education is the second highest in Europe (Figure 1).[3] The ratio is 34 percent larger than EU average (1. 6 percentage point of GDP higher), 40 percent larger than in Germany (1.8 percentage point higher), 34 percent larger than in France (1.0 percentage point higher), and 13 percent larger than in The Netherlands (0.7 percentage point higher). Figure 1 shows that the higher spending is not explained by difference in income.

- *As a share of public spending.* Education accounts for 11.8 percent of total general government expenditure in 2022. This share is 30 percent larger than in France or Germany, 25 percent larger than EU average, and 2 percent larger than in The Netherlands (Figure 1).

Figure 1. Evolution of Public Expenditure on Education
(In percent)



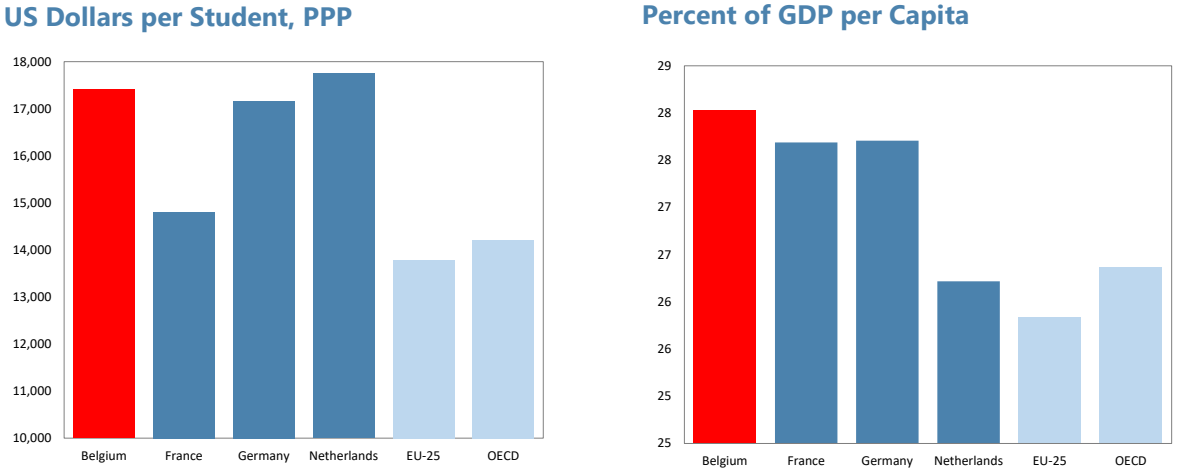
Sources: Haver and IMF Staff calculation.

- *As spending per student.* Though growing less in recent years (2019 to 2021) than comparators (except France) and EU25 and OECD averages, spending per student remains larger in Belgium

[3] See Table 2 for the list of items included in education spending.

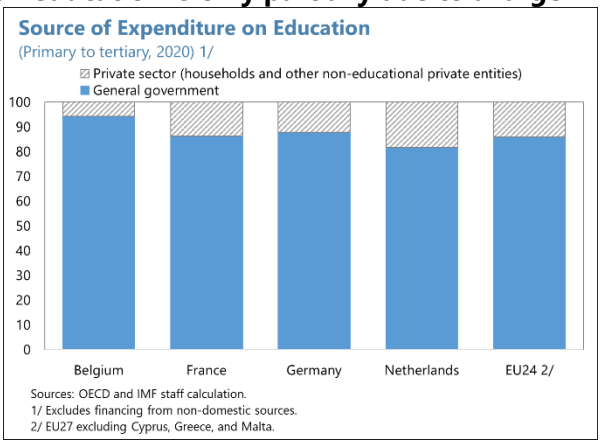
than in most peers whether measured in nominal terms or as a share of GDP per capita (Figure 2).[4] This reflects a strong focus on basic education, as spending per student is higher than any comparator at primary and lower secondary levels (Appendix I). In contrast, at the upper secondary level, Belgium's spending per student is lower than comparators.[5] At the tertiary level, Belgium's spending is in an intermediate position.

Figure 2. Spending Per Full-Time Equivalent Student
(2021, primary to tertiary education)



Source: OECD.

5. The comparatively high public spending on education is only partially due to a larger public financing of education. Private financing (including the financing by international organizations and the rest of the world) is smaller than in other European countries in part because, except for a small number of schools not recognized by the government, private schools receive public financing.[6]

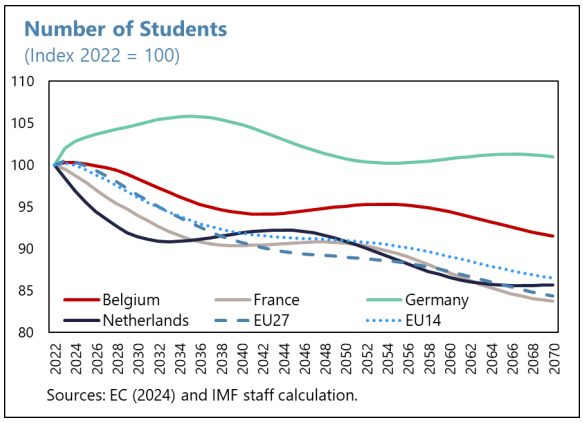


[4] Education spending differs across communities. For example, the spending per full-time equivalent student in primary and secondary education was 7.5 percent higher in the Flemish community (16,456 US dollars PPP) than in the French Community (15,310 US dollars PPP) in 2021 (OECD, 2014a).

[5] Except than in The Netherlands when measured as a share of GDP per capita (but not when measured in US dollars, PPP).

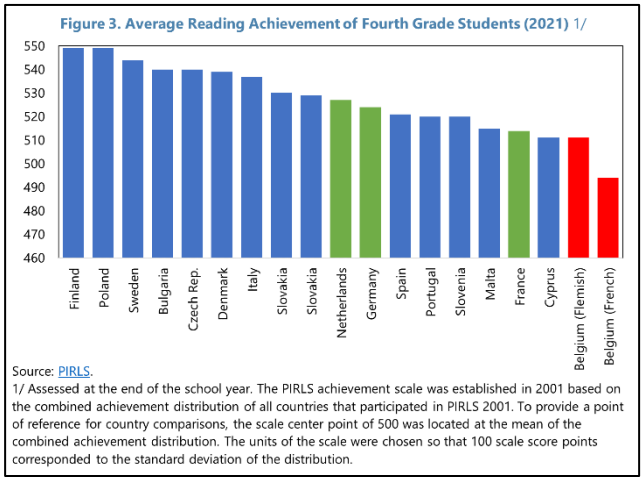
[6] For more details on the organization of the education system in each community (Flemish, French, and German-speaking communities), see Eurydice.

6. Population aging will result in limited saving on education. According to the 2024 Aging Report, the student population is expected to decline by 8½ percent between 2022 and 2070. This is much less than for the EU as a whole, for France, and for the Netherlands (which will experience a decline in student populations of 14½–16½ percent).[7] As a result, demographic developments are expected to reduce spending on education by 0.8 percent of GDP between 2022 and 2070.[8] They will not support fiscal consolidation in the coming years as education spending is projected to decline by barely 0.2 percent of GDP by the end of the decade, while spending pressure from pension and healthcare are mounting rapidly (EC, 2024a; Hallaert, 2023).[9]



B. Education Outcomes are Comparable to Peers and Deteriorating

7. Higher spending does not translate into better education outcome. The reading score of fourth graders in the Flemish and French communities is the lowest among the EU countries that participated in the PIRLS assessment (Progress in International Reading Literacy Study). Belgian scores are also among the lowest in the EU for science and mathematics according to the TIMSS assessment (Trends in International Mathematics and Science Study) (Figures 3 and 4). Though they differ significantly across communities, the performance of 15-year-old students in Belgium measured by scores in the OECD's Programme for International Student Assessment (PISA) is broadly similar to that of peers, but these spend less on education in all three domains tested: reading, mathematics, and science (OECD, 2024a and b; Figure 5).



8. Educational outcomes have deteriorated over time. As for peers, Belgian average scores have experienced a decline in the last decade (Figure 3). Moreover, despite some improvement in mathematics and reading in the last round of test, the share of low performers is higher in 2022 than

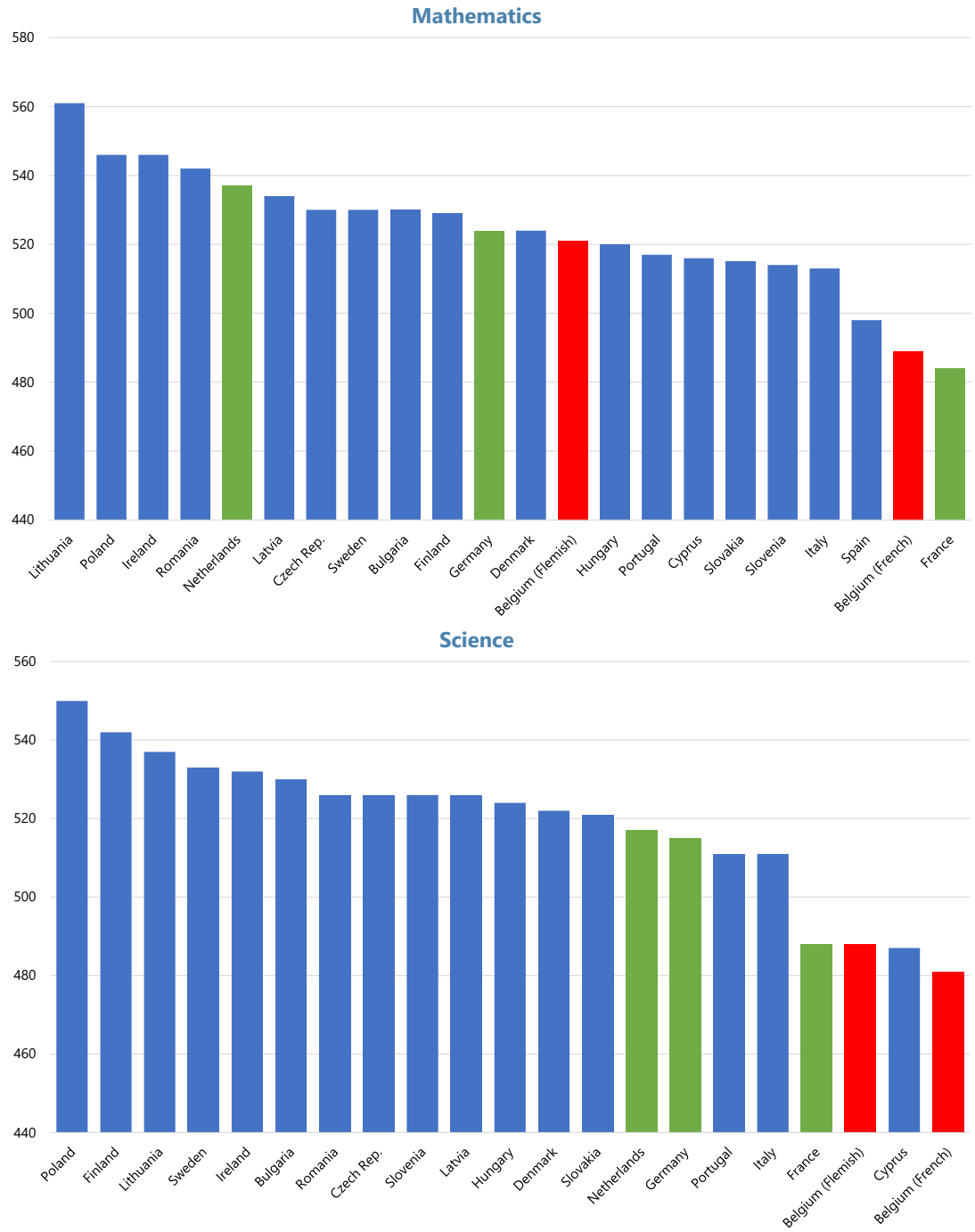
[7] Student population is projected to increase by 1 percent in Germany.

[8] The Federal Planning Bureau projects a smaller decline of 1.3 percent between 2022 and 2070. This would result in an even smaller fiscal saving than projected by the 2024 aging report.

[9] Moreover, the aging report projects a slight increase in education spending by 2030 if the enrollment rate gradually increases to the average of the three best EU performers (EC, 2024a).

it was in 2012 in both the French and the Flemish Communities. The EC (2023) highlights that for fourth graders' reading "the proportions of low achievers have increased considerably since the previous two testing rounds (2011 and 2016) in both communities (the shares of low achievers in 2021 were 38 percent in the French Community and 29 percent in the Flemish community), and the average performance of pupils has declined in the past decade." At the same time, it points to a decline in the share of high performers. Nonetheless, as most EU countries experienced a deterioration in average test scores, the share of low performers in Belgium remains one of the lowest in the EU (Figure 6). Notably, the share of low performers in all three domains tested is the fifth lowest in the EU.

Figure 4. Achievement in Mathematics and Science of Fourth Graders (2023) 1/



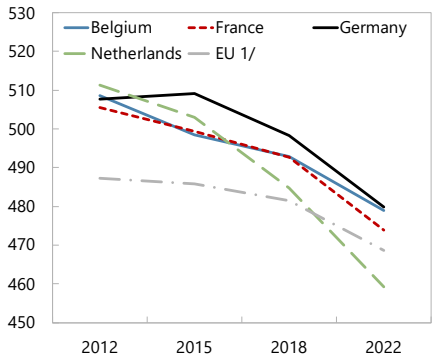
Source: TIMSS.

1/ For mathematics, the assessment covers of number, measurement and geometry, and data. For Science, it covers life science, physical science, earth science. TIMSS uses scale anchoring to summarize and describe student achievement at four points on the mathematics and science scales—Advanced (625), High (550), Intermediate (475), and Low (400) international benchmarks. For details, see http://timss.bc.edu/publications/timss/2015-methods/chapter-14.html.

Figure 5. Educational Achievement of Fifteen-Year-Old Students

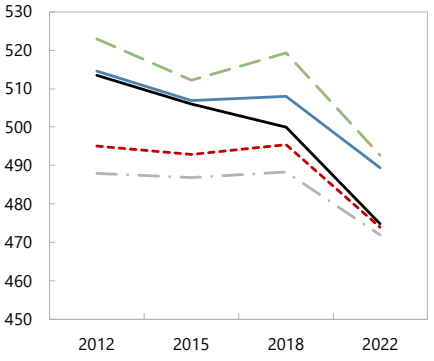
Compared to EU Peers

Reading
(Mean Score)



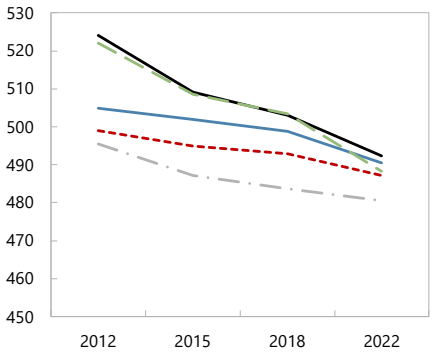
Sources: OECD and IMF staff calculation.
1/ EU27 (simple average) excluding Luxembourg due to data limitations.

Mathematics
(Mean Score)



Sources: OECD and IMF staff calculation.
1/ EU27 (simple average) excluding Luxembourg due to data limitations.

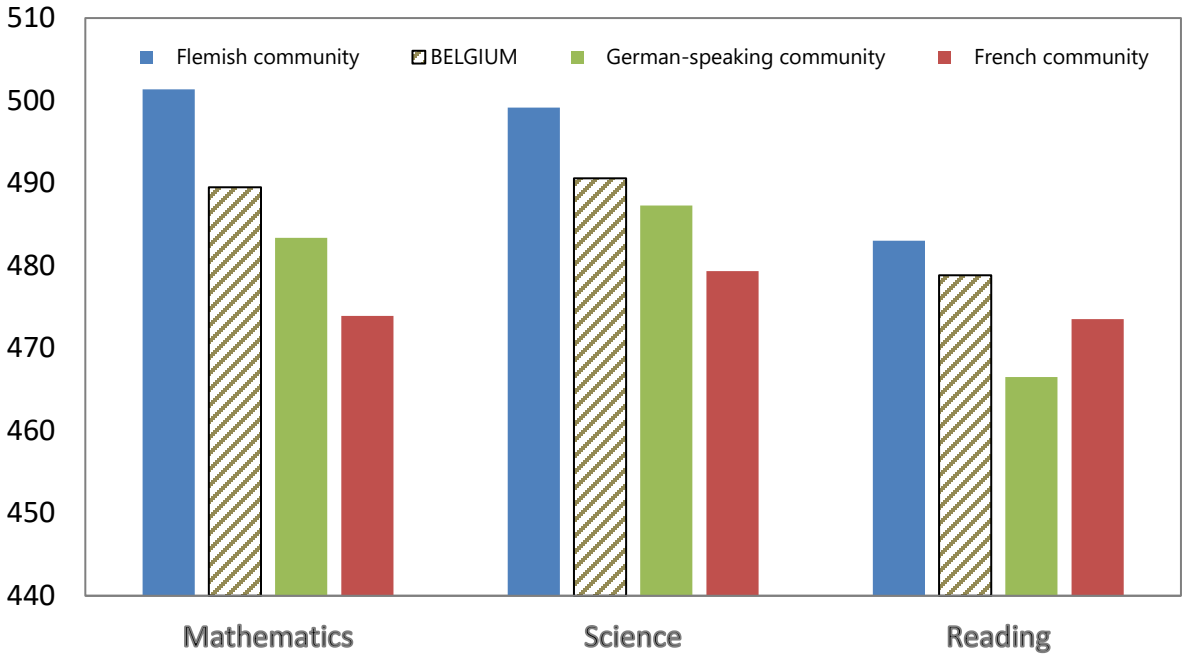
Science
(Mean Score)



Sources: OECD and IMF staff calculation.
1/ EU27 (simple average) excluding Luxembourg due to data limitations.

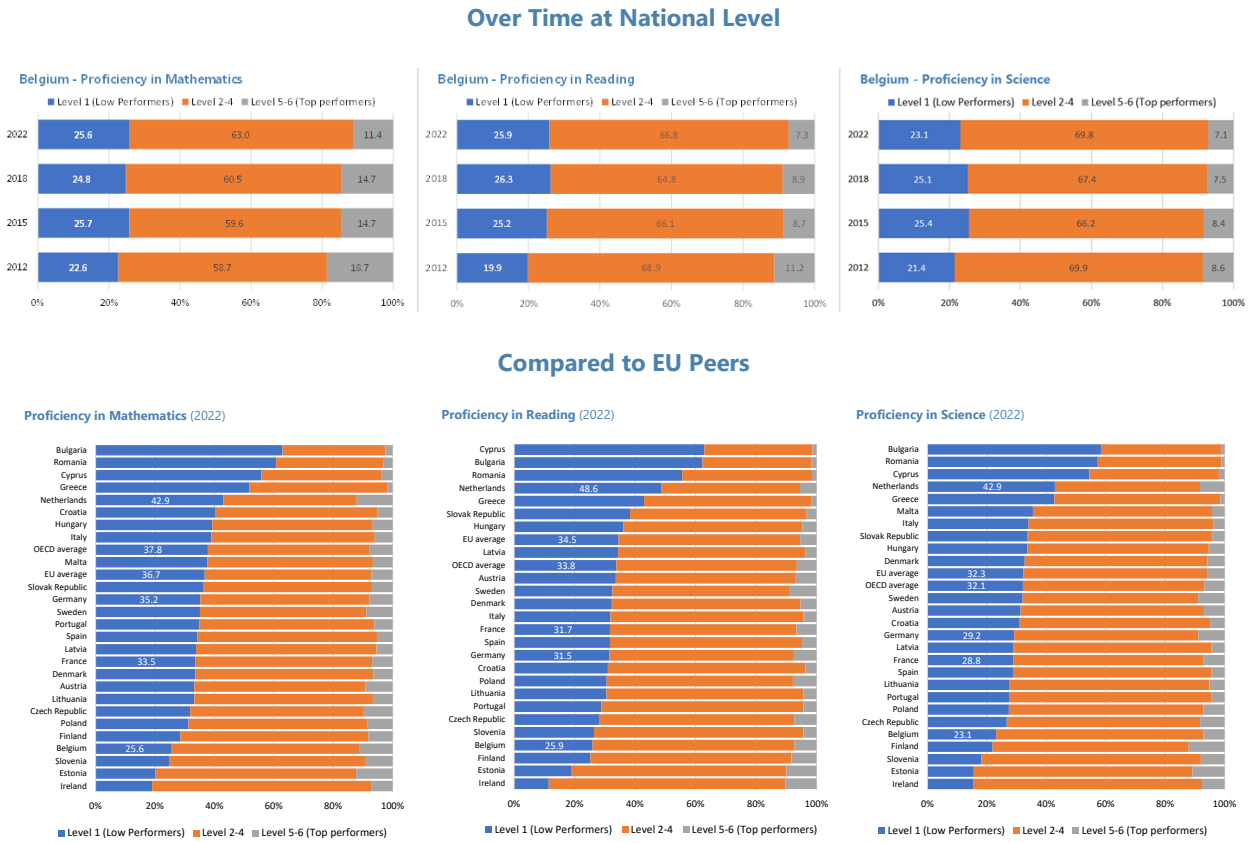
Belgium: Regional Disparities

Education Outcome (Mean PISA Overal Score, 2022)



Source: OECD.

Figure 6. Share of Low and High Performers Among the Fifteen-Year-Old Students 1/



Sources: OECD and IMF staff calculation.

1/ The OECD considers that level 2 is the baseline level of proficiency that is requires to participate fully in society.

C. Potential Efficiency Gains are Large

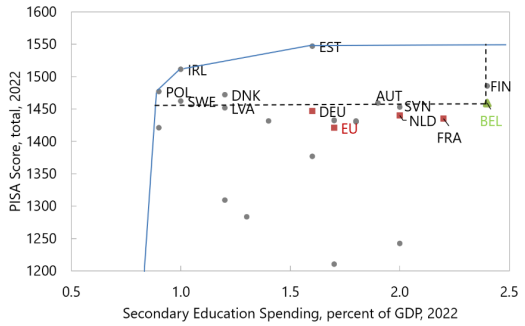
9. That a higher level of education spending is not reflected in better student test scores points to lower spending efficiency than in most peers. Belgium achieves a mean overall PISA score similar to many other EU countries, but at a significantly higher fiscal cost. This is true at the secondary level as well as cumulatively from the pre-primary to the secondary level (Figure 7).

10. Reforms that would increase efficiency of spending to the level of EU best performers would allow significant fiscal saving and/or better educational achievements. If education spending was as efficient as best EU performers, Belgium could achieve higher outcomes (PISA scores) for the same level of spending (vertical dotted line) or achieve the same outcome at a

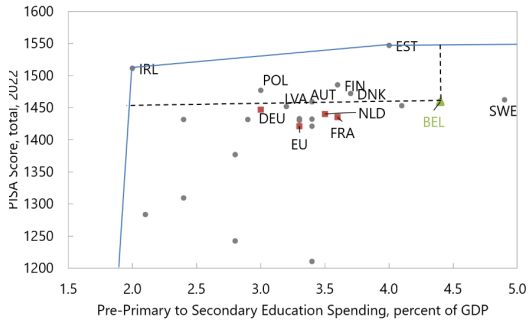
significantly lower cost (horizontal dotted line) (Figure 7). Potential fiscal saving ranges from 0.75 to 1.4 percent of GDP; increases in PISA scores range from 20 to 45 percent (Table 1).[10]

Figure 7. Efficiency of Education Spending (2022)

PISA Score and Secondary Education Spending



PISA Score and Pre-Primary, Primary, and Secondary Education Spending



Sources: Eurostat and OECD.

Table 1. Belgium: Potential Efficiency Gains (2022) 1/, 2/

If Belgium's education system was as efficient as	*Fiscal saving (ppt of GDP)*
France	0.74
Germany	1.38
Netherlands	0.85
	Increase in overall PISA score (percent)
France	20
Germany	45
Netherlands	24

Sources: OECD, Eurostat, and IMF staff calculation.

1/ Pre-Primary, primary, and secondary education spending.

2/ The table reports fiscal saving or increase in PISA score, if Belgium spending on education was as efficient as each comparator.

[10] Because education is a cumulative process, pre-primary to secondary spending is used to estimate the potential efficiency gains rather than the secondary level of spending. As difference in spending can be in part due to structural differences (e.g., demographic, distribution of students across level of education), the estimated efficiency gains and fiscal savings should be interpreted as "potential." For that reason, a range rather than a point estimate is preferred. Nonetheless, alternative measurements confirm that potential efficiency gains are large (Appendix II).

D. Efficiency-Increasing Reforms

11. Several reforms could increase the efficiency of education spending. Structural reforms of the educational system are required to increase spending efficiency in support of fiscal consolidation and/or improved educational achievements, to leverage the significant potential highlighted in Figure 7 and Table 1.

Cost-Reducing Reforms

12. The wage bill explains why Belgium spends more on education than peers. Compensation of employees of the education system accounts for over 5 percent of GDP. This was 1.4 to 2.6 percent of GDP higher than European peers in 2022 and more than explains the difference in total public spending on education (1.0 to 1.8 percent higher). Although compensation of employees of the education system was the same as a share of GDP in 2022 as in 2012, it represents a growing share of total government wage bill. This increase has been much larger than in peer countries over the past two decades. The wage bill now accounts for 81 percent of education spending, while it ranges from 56 percent in Germany to 71 percent in France; compensation of employees in education accounts for 41.5 percent of general government total wage bill, 10 percentage points or more than in France, Germany or the EU and 6 points more than in the Netherlands (Tables 2 and 3).

Table 2. Belgium: Composition of General Government Spending on Education
(Percent of GDP unless otherwise specified)

	Total	Current spending	Compensation of employees	Goods and services	Subsidies	Interest payments	Current transfers	Social benefits	Capital spending 1/
				2022					
Belgium	**6.3**	5.9	***5.1***	*0.7*	*0.0*	*0.0*	*0.0*	*0.0*	0.4
EU	**4.7**	4.3	*3.0*	*0.6*	*0.1*	*0.1*	*0.3*	*0.3*	0.4
France	**5.2**	4.8	*3.7*	*0.5*	*0.1*	*0.1*	*0.2*	*0.3*	0.4
Germany	**4.5**	4.0	*2.5*	*0.7*	*0.1*	*0.0*	*0.5*	*0.1*	0.5
Netherlands	**5.1**	4.5	*2.9*	*1.1*	*0.1*	*0.0*	*0.0*	*0.4*	0.5
				2012					
Belgium	**6.3**	5.9	***5.1***	*0.7*	*0.0*	*0.0*	*0.0*	*0.1*	0.4
EU	**4.9**	4.5	*3.1*	*0.7*	*0.1*	*0.1*	*0.2*	*0.3*	0.4
France	**5.5**	5.1	*3.8*	*0.6*	*0.2*	*0.0*	*0.2*	*0.3*	0.4
Germany	**4.3**	3.9	*2.5*	*0.7*	*0.1*	*0.0*	*0.5*	*0.1*	0.3
Netherlands	**5.5**	5.0	*3.1*	*1.2*	*0.1*	*0.0*	*0.0*	*0.6*	0.6
				Change in percentage points 2012-2022					
Belgium	**0.0**	0.0	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	0.0
EU	**-0.2**	-0.2	*-0.1*	*-0.1*	*0.0*	*0.0*	*0.0*	*0.0*	0.0
France	**-0.3**	-0.3	*-0.1*	*-0.1*	*-0.1*	*0.0*	*0.0*	*0.0*	0.0
Germany	**0.2**	0.1	*0.0*	*0.0*	*0.0*	*0.0*	*0.1*	*0.0*	0.1
Netherlands	**-0.5**	-0.4	*-0.1*	*-0.1*	*0.0*	*0.0*	*0.0*	*-0.2*	0.0

Sources: Haver and IMF staff calculation.

1/ Capital spending includes gross capital formation and capital transfers.

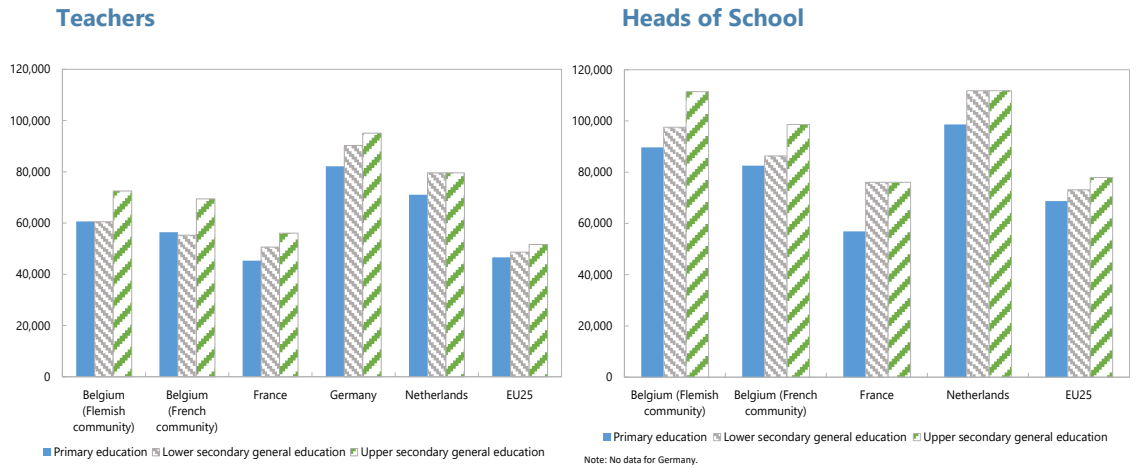
Table 3. Belgium: Wage Bill in Education
(Percent of general government wage bill)

	2002	2007	2012	2017	2022	Changes in ppt 2012 to 2022	Changes in ppt 2002 to 2022
Belgium	39.1	38.5	39.9	41.1	41.5	1.7	2.4
EU	31.3	30.0	29.5	29.7	29.8	0.2	-1.5
France	31.6	29.2	29.2	29.9	29.7	0.5	-1.9
Germany	32.3	32.3	31.7	31.7	31.5	-0.2	-0.8
Netherlands	34.1	34.3	34.5	34.5	35.5	1.0	1.3

Sources: Haver and IMF staff calculation.

13. Salary levels do not explain the comparatively high wage bill. For both the French and the Flemish communities, teachers' actual salaries are in an intermediate position among comparators (Figure 8).[11] Moreover, since 2015, the actual and statutory salaries of teachers declined in real terms in both communities.[12] This decline preceded the post-COVID high inflation period (OECD, 2022, 2024c and d). This evolution may have affected the attractiveness of the teaching profession although teacher salaries are relatively more attractive than in EU peers as they are closer to the wages of the population with a similar level of education (Table 4).

Figure 8. Actual Salaries
(2022, US dollars PPP)



Source: OECD.

[11] Actual salaries of comparators are also comparatively high when compared to EU level but are also, with the exception of France, well above OECD average (OECD, 2023a).

[12] "The subnational variation in *actual* salaries was less than 11 percent for all levels of education for both teachers and school heads, and greater for school heads than for teachers." Moreover, "the variation in *statutory* salaries between subnational entities remains relatively consistent across all levels of education and stages of teachers' careers (a range of 3–7 percent)" (OECD, 2024c; emphasis added).

Table 4. Belgium: Teachers' Actual Salaries Relative to Earnings of Tertiary-Educated Workers
(Ratio)

		Actual salaries, relative to earnings for full-time, full-year							
		Similarly educated workers (weighted averages, 25-64 year-olds)				With tertiary education (ISCED 5 to 8, 25-64 year-olds)			
		Pre-primary	Primary	Lower secondary	Upper secondary	Pre-primary	Primary	Lower secondary	Upper secondary
Belgium (Flemish community)	2020	0.98	0.96	0.94	0.99	0.88	0.87	0.87	1.04
Belgium (French community)	2020	0.93	0.89	0.85	0.91	0.84	0.81	0.79	1.00
France	2019	0.75	0.72	0.79	0.88	0.76	0.74	0.83	0.92
Germany	2021	...	0.83	0.91	0.96	...	0.97	1.07	1.12
Netherlands	2021	0.84	0.84	0.89	0.89	0.79	0.79	0.89	0.89
OECD average		...	...	...	...	0.81	0.87	0.90	0.95

Source: OECD (2023b).

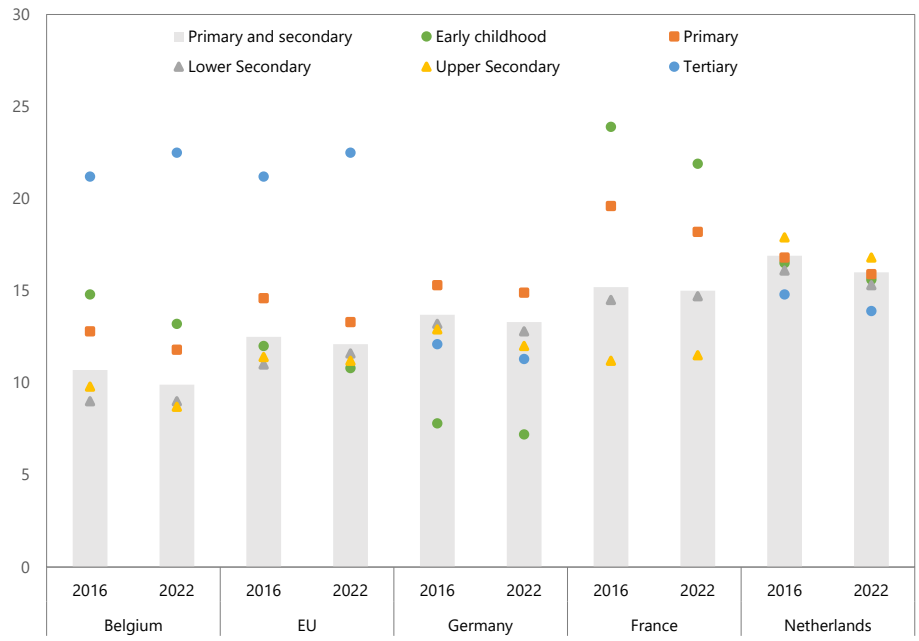
14. The main reason for the higher wage bill is the employment level. From the primary to the secondary level, the number of students per teacher is much lower than in any of the comparators. The student-to-teacher ratio has also declined in the recent past at all levels of education, except tertiary (Figure 9). In most OECD countries, the decline in class sizes over the past decade was driven by an increase in the number of teachers outpacing the increase in the student population. In Belgium, the students-to-teacher ratio shrank because the number of teachers increased notwithstanding a drop in the number of students and attempts to limit the increase in the number of teachers (Hallaert, 2016; OECD, 2024c). Between 2016 and 2022, the number of students from early childhood to tertiary declined by 4 percent while the number of teachers increased by 7 percent. This is a larger gap than in any of the comparators. The increase in teachers is driven mostly by early childhood, primary and (upper) secondary levels (Figure 10). These developments contribute to a significantly higher spending per student on basic education (Appendix I).

15. Relatively low teaching time is another reason for the high wage bill. In both the French and the Flemish communities, teachers' statutory teaching time is significantly lower than in any comparator (Figure 11). It is higher in the French community than in the Flemish community at all levels of education. Data for statutory *working* time (rather than statutory *teaching* time) is only available for primary education in the French Community. It is only 54 to 60 percent the statutory working time of teachers in comparators while for statutory teaching time the gap is 72 to 98 percent.[13,14]

[13] See OECD (2024c, Chapter D4) for a description of the working/teaching time requirements.

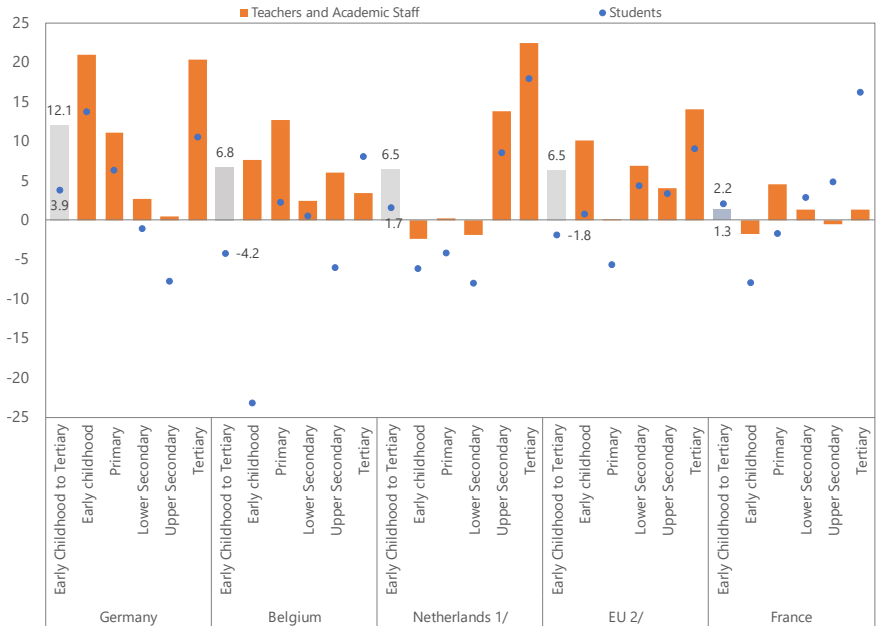
[14] The share of teachers working part-time is higher than in France or for the EU27 at all levels of education but lower than in the Netherlands. It is also higher than in Germany at secondary level but lower at primary level.

Figure 9. Students-to-Teacher Ratio (2022)



Source: OECD.

Figure 10. Change in the Number of Students and Teachers
(2016–22, Percent)

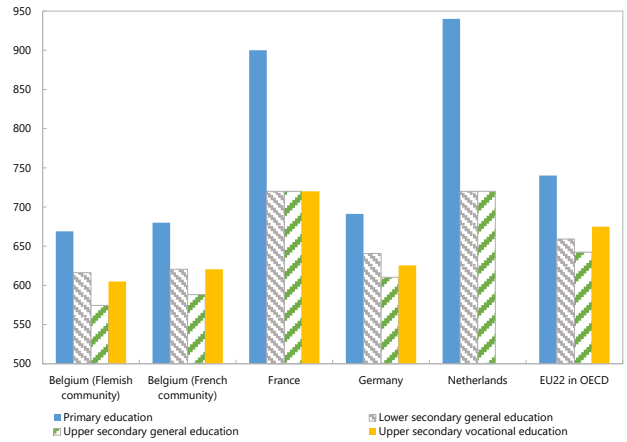


Sources: Eurostat and IMF staff calculation.

1/ Growth in the number of students is for 2016–21 for "Early childhood to Tertiary" and "Tertiary" due to data availability.

2/ Excludes post-secondary non-tertiary education due to data issues.

Figure 11. Statutory Teaching Time
(2021, hours per year)



Source: OECD.

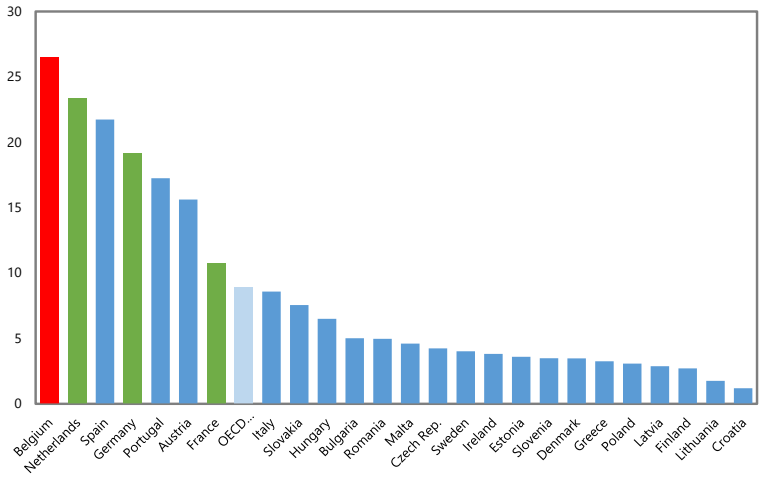
16. A review of schemes that allow education employees to reduce their working time would lower the wage bill without affecting outcome. Under certain circumstances, teachers and employees of the education system appointed on a permanent basis and aged 55 and over can reduce their working time. At 58, they can stop working while receiving a reduced salary. In the French community; 23.4 percent of the employees over 55 percent benefited from such a scheme (*Départ Préalable à la Pension de Retraite*) up from 18.7 percent in 2019. The reduction accounted for 13.2 percent of full-time equivalent of employee 55 and over, up from 9.5 percent in 2019 (Fédération Wallonie-Bruxelles, 2024).

17. Another reform would be to improve the allocation of teachers and better leverage teachers' time. "While lower student-teacher ratios allow teachers to focus more on the needs of the individual, they require higher overall spending on teacher salaries and have to be weighed against alternative spending priorities" (OECD, 2024c). However:

- Lower student-to-teacher ratios do not appear to lead to a better focus on the needs of students in difficulty as Belgium has the highest rate of grade repetition in the EU, which is a cause of excessive spending in primary and secondary education (Figures 12). The effectiveness of grade repetition is debated but, in Belgium, it affects more socio-economically-disadvantaged students, students with a migrant background, and boys than in other EU countries (Appendix III). It is noteworthy that, both the French and the Flemish communities are taking measures to reduce grade repetition (EC, 2023; Kemoe, 2020; OECD, 2024c and d, *Pacte pour un Enseignement d'excellence*).[15]

[15] In the Flemish community, "starting from the 2023/24 school year, all first graders of primary education will be required to either change their study programme (B-certificate) or repeat a year (C-certificate) if they fail the end-of-year exam. Normally, this process only started from the second year onward" (OECD, 2024c).

Figure 12. Share of Students Repeating a Grade at Least Once in Primary and Secondary Education
(All students, 2022, percent)



Source: OECD.

- Lower student-to-teacher ratios (or lower teaching time) do not appear to be associated with comparatively higher educational outcomes in Belgium (Figures 13). This is consistent with a large body of evidence. Hattie (2005) concludes a large meta-analysis pointing that reducing class-size has only a "tiny" positive effect and suggests that the main reason is that teachers of smaller classes adopt "the same teaching methods as they use in larger classes and thus [do] not optimiz[e] the opportunities presented by having fewer students."

Therefore, an increase in teaching time (possibly by reducing time spent on administrative and non-teaching tasks) could also be considered. Combined with proper incentives, this would allow dedicating more times to students in difficulty, fostering better educational achievements by reducing grade repetition and improving educational outcomes of socio-economically-disadvantaged students (see below).

18. Moreover, increased mobility and career prospects, strengthened job security, and a larger share of working time dedicated to teaching would increase the attractiveness of the profession, reducing staffing issues. Belgium experiences a comparatively high shares of teachers leaving prematurely the profession (in both the French and Flemish communities), high absenteeism rates, along with a declining share of students enrolling in initial teacher education. This has contributed to severe and rapidly increasing teacher shortages (Figure 14) that affect more students than in anywhere else in Europe.[16] Faced with teacher shortages and cumbersome hiring rules, schools tend to rely on replacement teachers, some of whom may not have adequate qualifications (Figure 14) and who have low job security. At the same time, new teachers often have to wait several

[16] Caution is needed in interpreting differences across countries as the indicator reflects principals' perceptions (which may be affected by cultural expectations) rather than an objective measurement.

years to be permanently appointed. This reduces the attractiveness of the profession and leads to "a growing proportion of not or not fully qualified teachers and occasional disruptions to school activities such as examinations" (EC, 2023).[17,18] To address these issues, communities have recently adopted several measures. For example, all communities have introduced changes to provide job security for new teachers and increase the number of permanent contracts (EC, 2023; OECD, 2024c and d). The Flemish Community has reduced the length of time before a teacher is made permanent. It has also eased the rules governing the recruitment as teachers of individuals working in the private sector, including by allowing them to retain part of their seniority, making teaching financially more attractive.

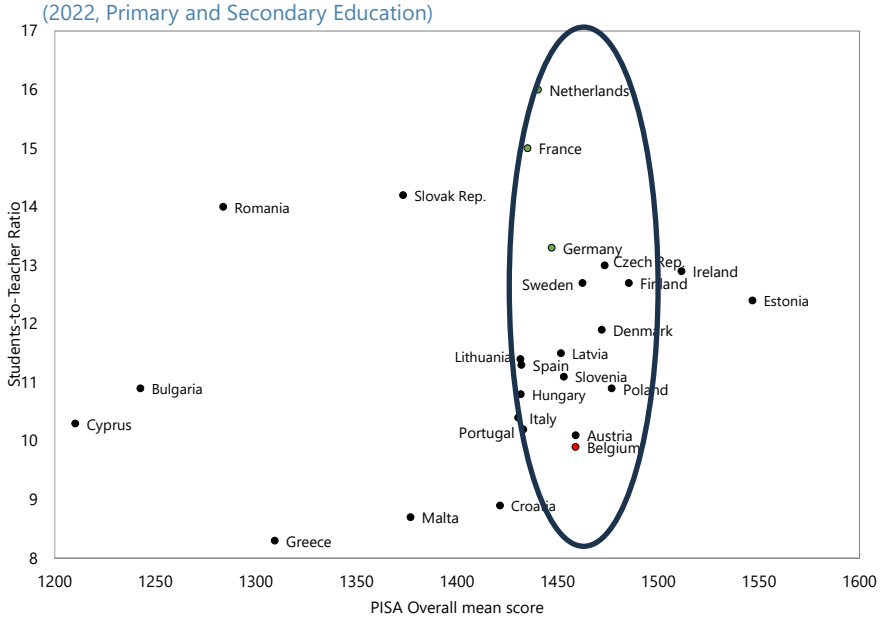
[17] In the French Community: 33.7 percent of teachers that started teaching in academic year 2017–18 had stopped doing so within five years (Fédération Wallonie-Bruxelles, 2024). Over 84 percent of teachers in Dutch-speaking schools of Brussels under 30 in academic 2014–15 were employed on a temporary basis. Five years later, 17.3 percent of these teachers had left the profession. The share reached 19.5 percent for those employed on a temporary basis and 5.0 percent for those employed on a fixed basis.

[18] Teacher shortage in secondary education "is a relatively new issue in […] the Flemish Community of Belgium, […] as they were not experiencing shortages in 2014/15" (OECD, 2024b). "Vacancies in Flemish secondary schools in 2022–23 were most common for teachers of mathematics, languages and technical subjects. In the French Community, bilingual 'immersion' schools are particularly impacted by the lack of qualified language instructors and only around half of VET teachers have received pedagogical training" (EC, 2023).

Figure 13. Class Size, Teaching Time, and Educational Outcome

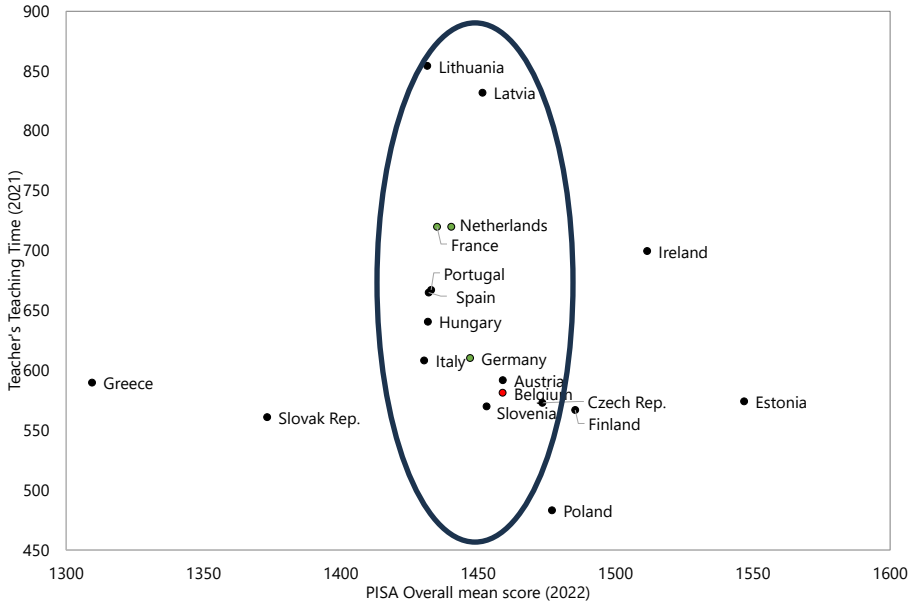
Smaller class-size is not associated with higher PISA score.

Student-to-Teacher Ratio and PISA Score
(2022, Primary and Secondary Education)



Nor is lower statutory teaching time.

Statutory Teaching Time and PISA Score
(Upper Secondary Education) 1/,2/

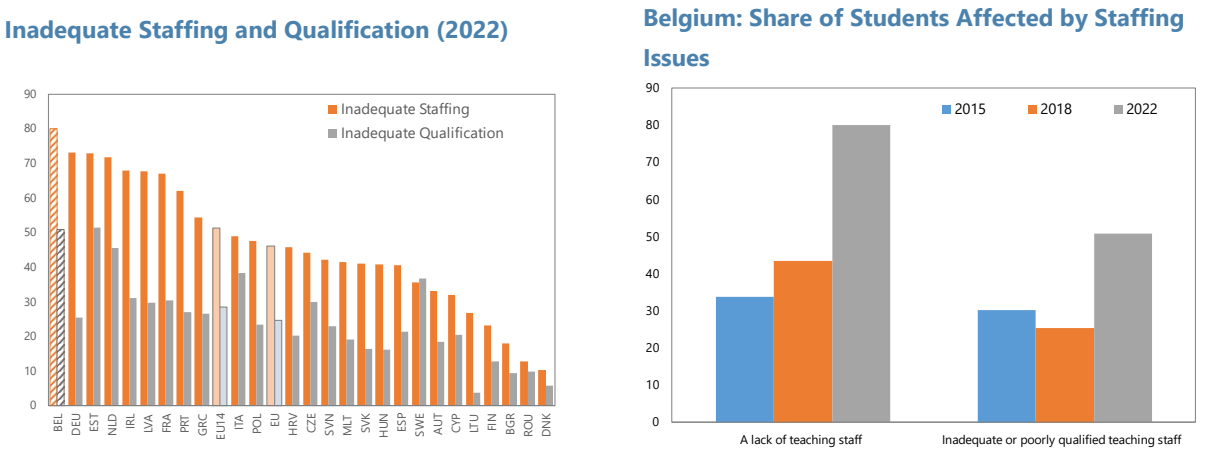


Sources: Eurostat, OECD and IMF staff calculation.

1/ For Belgium: simple average of statutory teaching time in the Flemish and French communities.

2/ Using lower secondary education provides the same picture.

Figure 14. Staffing Issues 1/
(Percent)



Source: OECD.

1/ Percentage of students in schools whose principal reported that the school's capacity to provide instruction is hindered to some or a large extent by staffing issues.

19. Finally, a better allocation of fiscal resources across levels of education may increase efficiency. There may be scope to reallocate some of the resources from secondary education to primary education, supporting the shift in policy focus in both the Flemish and the French communities.[19] This may require a greater nimbleness in teacher assignments, including the flexibility to increase teacher mobility, as well as tackling the fragmentation of the educational system (between various educational networks in each community) that leads, in some locations, to the duplication of small size schools.[20]

Outcome-Increasing Reforms

20. Increasing the efficiency of the education system should also aim at increasing educational achievement. The objective of reforms of the educational system should not be limited to reversing the decline in test scores, it should also be to increase equality of opportunities and better align skills acquired at school with firms' needs. The economic impact is potentially large as it would boost human capital and productivity, improve labor market functioning, and increase

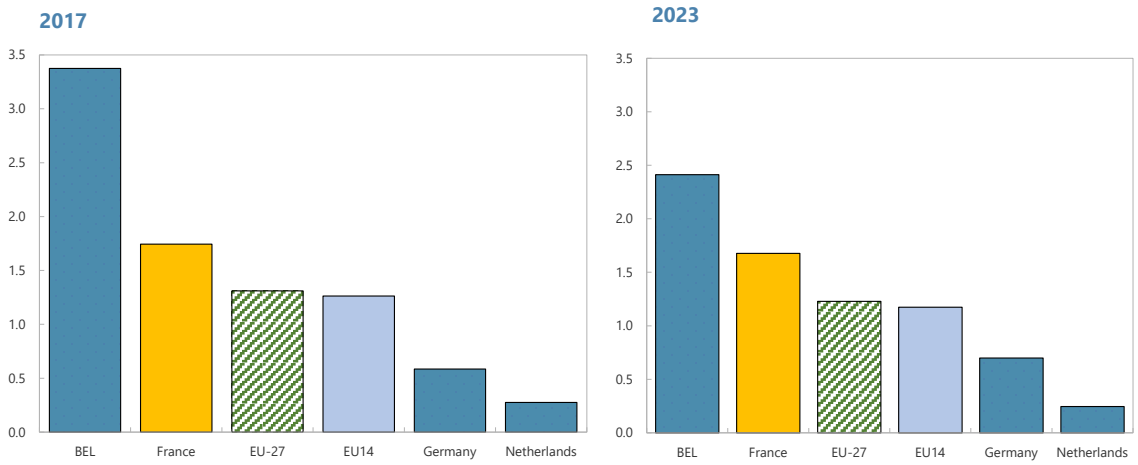
[19] The new Flemish government intends to put a stronger focus on acquisition of "basic skills" in part due to the recent PIRLS and TIMMS results (Figures 3 and 4) and to the increase in the share of students that do not speak Dutch at home. The French community intends to shift its focus from secondary education to primary education to avoid inequalities that are created at primary level and are difficult for the secondary education to offset.

[20] For a description of educational networks, see Eurydice.

competitiveness, and, ultimately, potential growth.[21]

21. In addition to declining educational achievement, education does not provide adequate skills. Though the skills mismatch has declined over time in Belgium, it remains the highest in the EU (Figure 15). Notably:

Figure 15. Skills Mismatch 1/



Sources: Eurostat and IMF staff calculation.

1/ Measured as the squared difference in proportions between population aged 15 to 64 and employed by level of education: 1) low skill (less than primary, primary and lower secondary education), 2) medium skills (upper secondary and post-secondary non-tertiary education), and 3) high skills (tertiary education).

- More than peers, Belgium suffers from a shortage of people with high skills (Table 5). As a result, high-skilled occupations account for a relatively high share of job vacancies in Belgium (OECD, 2024e).

- More than for peers, the share of the working-age population with low skills exceeds low-skill employment (Table 5). People with less than secondary education are overrepresented among jobseekers and low levels of education and low work-related skills are the two main barriers among people experiencing employment difficulties (OECD, 2024e). Moreover, at about 65 percent in 2023, the employment rate of people with only secondary education is significantly lower than in comparators and at the EU level. It has not increased since 2022 unlike in all comparators.

[21] "Belgium faces several [...] challenges related to labor shortages and skills mismatches, the integration of disadvantaged groups into the labor market, the performance and equity of the education system, the teaching profession and also challenges related to the business environment, the regulatory burden and complexity, as well as restrictions in the service sector. Addressing these challenges could help improve the skills of workers and educational outcomes of all students, resulting in increasing labor productivity, and bring employment closer to the national 2030 target of 80 percent" European Commission (2024b).

Table 5. Belgium: Skills Distribution 1/
(Percent)

		Belgium	EU27	France	Germany	Netherlands
Low skills	Share of population	22.5	24.7	21.1	23.1	23.5
	Share of employment	11.9	16.2	11.9	16.4	19.8
	Difference	*10.6*	*8.5*	*9.2*	*6.7*	*3.7*
Medium skills	Share of population	38.4	44.3	41.2	47.8	37.8
	Share of employment	37.7	45.8	41.2	50.5	38.4
	Difference	*0.7*	*-1.5*	*0.0*	*-2.7*	*-0.6*
High skills	Share of population	39.1	30.9	37.5	29.0	38.2
	Share of employment	50.4	37.9	46.6	33.2	41.4
	Difference	*-11.3*	*-7.0*	*-9.1*	*-4.2*	*-3.2*

Source: OECD.

1/ Skills are proxied by education achievement: Low skills are less than primary, primary and lower secondary education, medium skills by upper secondary and post-secondary non-tertiary education, high skills are tertiary achievement.

22. Enrollment in science, technology, engineering, and mathematics (STEM) is low. Despite favorable employment prospects, few students (notably female students) pursue a tertiary education in STEM.[22, 23] The share of graduates that study STEM is lower than in comparators, notably for information and communication technologies despite the growing demand in digital skills associated with the digital transformation (Figure 16). The share of younger working age population (20-29) with a tertiary degree in STEM was 16.4 percent in 2022, well below EU level of 23.0 percent, Germany (24.3 percent) or France (35.3 percent).

23. The skills mismatch has important economic consequences.

- *First, it limits the employment rate.* The skills mismatch contributes to one of the lowest employment rates in the EU. At 75½ percent in 2023, the employment rate in Belgium was also lower than in any of the three comparators. Reflecting the shortage of people with tertiary education, the employment rate of population aged 25 to 64 with a tertiary level of educational achievement was much higher at 88.2 percent, 12.7 percentage points higher than the overall employment rate. Among EU27 members, only Italy, Romania, and Croatia have a larger gap. Again, there is noticeable heterogeneity among Belgian regions (Figure 17).

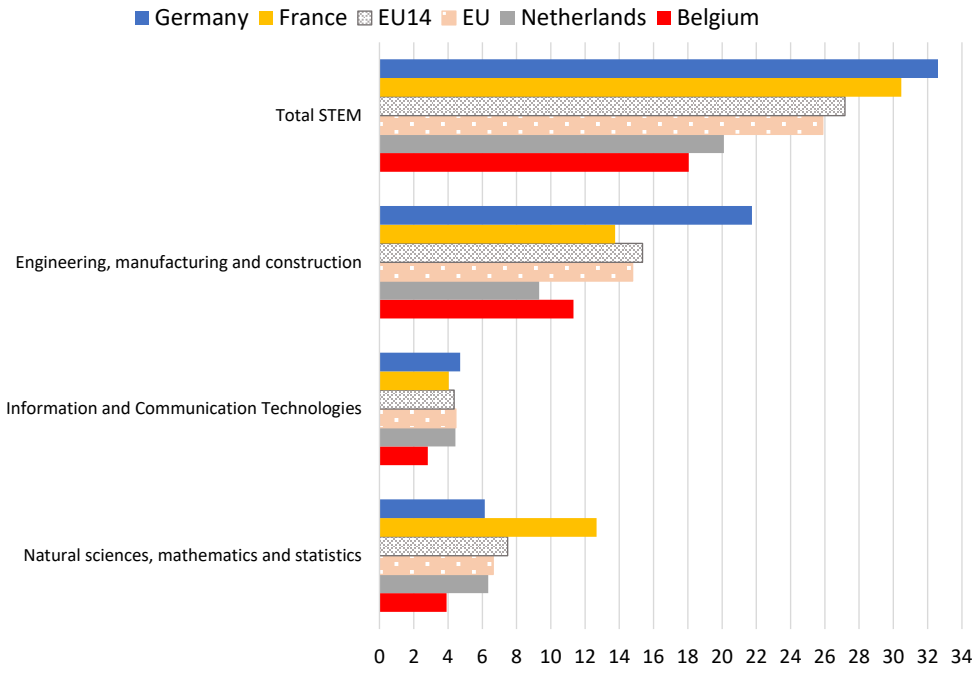
- *Second, the skills mismatch weighs on firms costs, productivity, and competitiveness.* "Skill mismatch plays a major role in firms' recruitment difficulties" and "skills shortages create competition between firms to attract talent and reinforces incentives to upskill their pool of employees. However, smaller firms are often penalized in this race because of challenges in

[22] "In 2021, employment rates in Belgium were highest among tertiary-educated individuals who studied engineering, manufacturing and construction or information and communication technologies with 90 percent and lowest among those who studied arts and humanities, social sciences, journalism and information at 84 percent" (OECD, 2022).

[23] See Breda and others (2023) and Jaravel (2023) for successful initiatives to increase female enrollment in STEM.

competing on salary and benefits. Small firms also face more difficulties than larger firms in investing into training" (OECD, 2024e). Indeed, in part to offset the skill inadequacy, Belgian firms resort more to training than in most other EU countries (Figure 18).

Figure 16. Share of Graduates in STEM 1/
(2022, in percent)



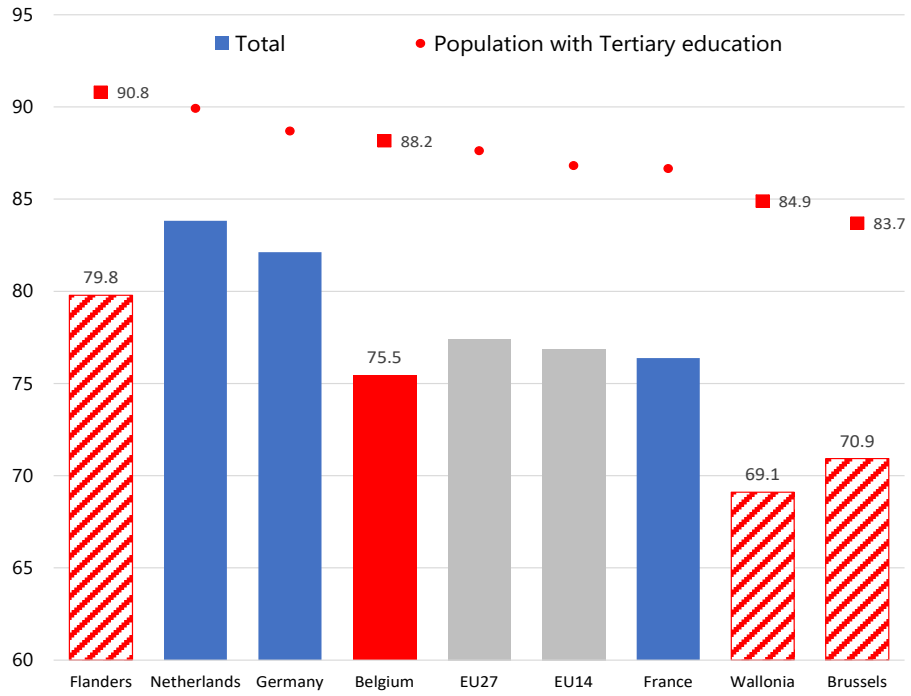
Sources: Eurostat and IMF staff calculation.

1/ Post-secondary non-tertiary education - vocational and tertiary education.

24. Various policies would help better aligning skills with firms' needs. Policy makers should strengthen incentives and guidance to ensure that the curriculum provides graduates from the secondary education with skills that would increase their low employment rate. Reforming and promoting vocational training (to address stigma associated with it among the two largest communities) should also be considered.[24] Addressing the shortage in high-skilled individuals, policies should aim at promoting STEM studies, notably among women.

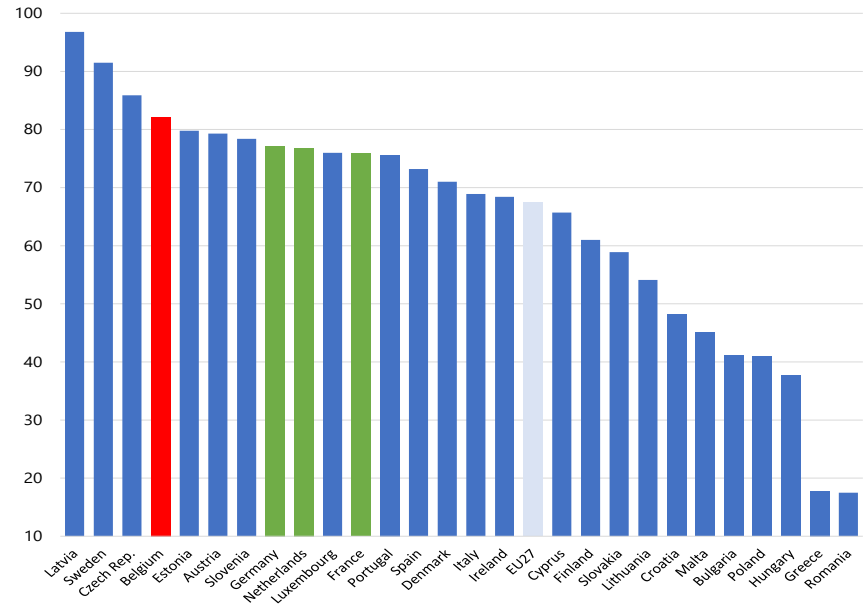
[24] Less than half of the recent graduates participated in work-based learning during their vocational education and training compared to over 60 percent in the EU. Moreover, there is a need to (i) promote vocational education and training to firms dual learning that is little known resulting in insufficient available place, and (ii) address the stigma attached to vocational education which contributes to high drop-out rate (EC, 2023).

Figure 17. Employment Rate
(2023, percent, population aged 25 to 64)



Sources: Eurostat and IMF staff calculation.

Figure 18. Enterprises Providing Continuing Vocational Training Courses
(2020, percent of all firms)



Source: Eurostat.

25. Reducing inequalities in education would also help increase educational outcomes, while promoting social mobility. Students' background determines more their educational achievement in Belgium than in peers.

- **Childhood education is crucial to child development and has a long-lasting impact on education achievements, including helping reducing grade repetition.** It is particularly important for socio-economically disadvantaged children as it can mitigate the impact of poverty on brain development and language acquisition, which are crucial for future educational and job successes (Hallaert and others, 2023). While enrollment in early childhood education is almost universal for children three and older in Belgium, the enrollment of younger children is more limited notably among disadvantaged students: 33 percent of children from the poorest income tertile are enrolled compared to 72 percent of children of the richer income tertile. This 39-points difference is more than twice the OECD average of 19 percentage points (OECD, 2024d).

- **In all tested domains, the socio-economic status of students explains more the variance in PISA performance in Belgium than in any peers.** This is increasingly so and markedly more the case in the French community than in the Flemish one (and even more than in the German-speaking community) (Figure 19). Moreover, more than in most peers (except France), disadvantaged children tend to be much more low performers than advantaged students. Advantaged students are also more likely than in peers to be top performers than disadvantaged children (notably in mathematics though less so in science).

- **Belgium has a higher share of students with immigrant background than most EU countries.** As in most countries, the PISA score of students with immigrant background is lower than for students with non-immigrant background. However, the 57-point gap in both mathematics and reading is among the largest in the EU. The gap is wider in the Flemish community than in other communities. Most of the lower performance in the PISA test is explained by the fact that the share of disadvantaged students among students with immigrant background is larger than for non-immigrant students (Figure 20).

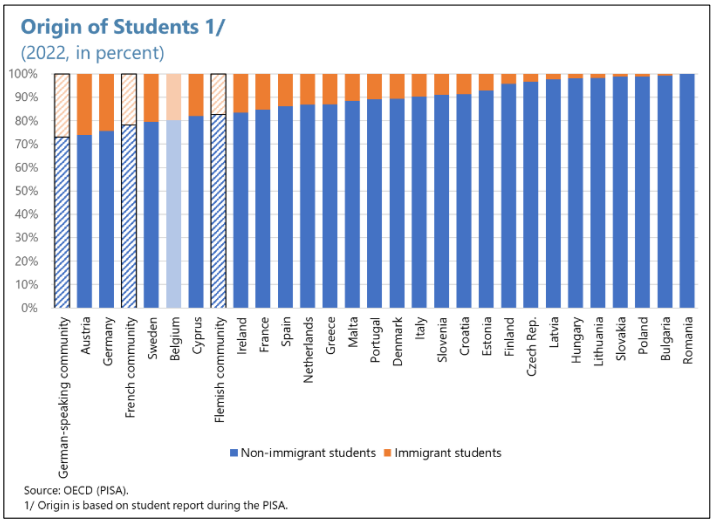
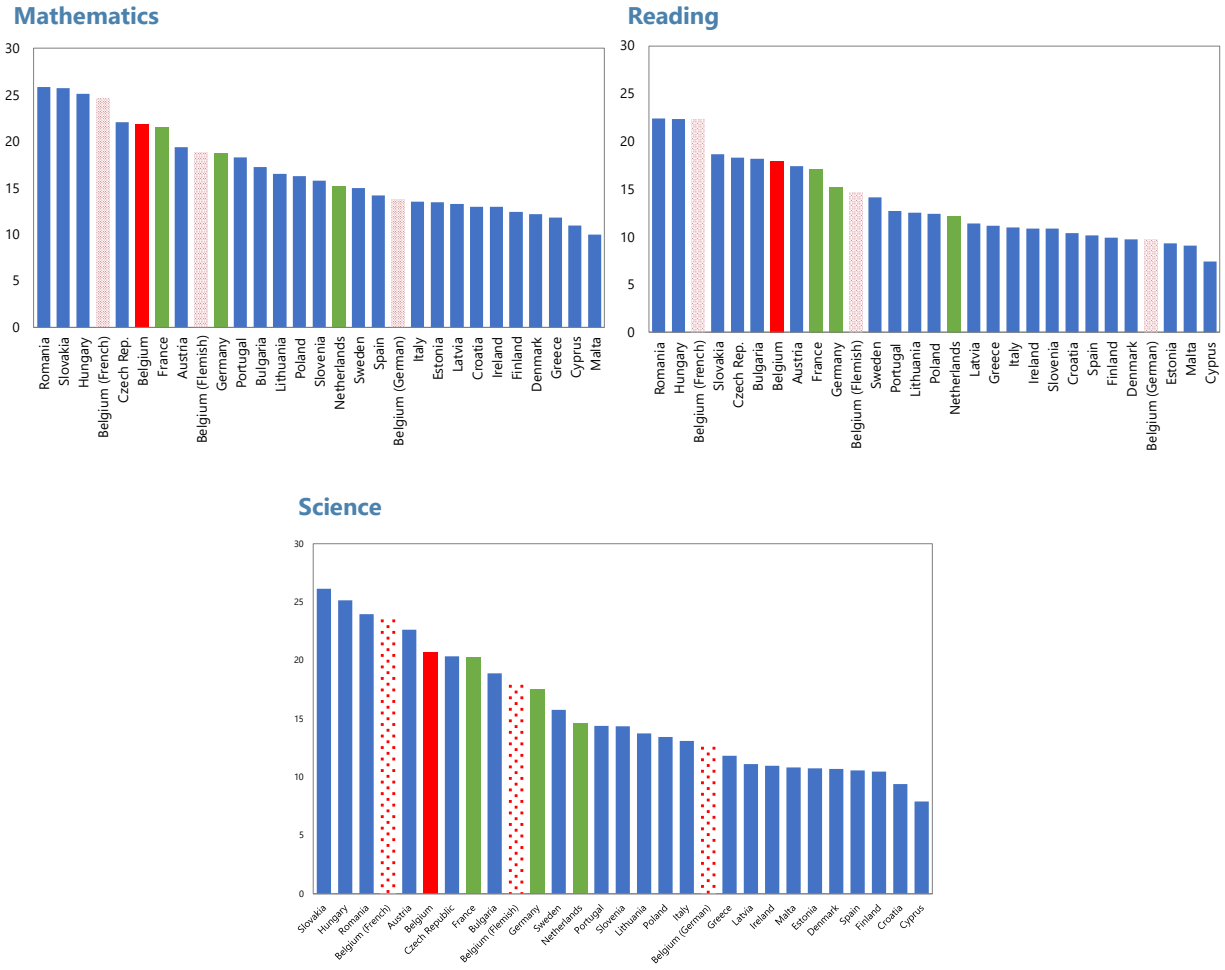


Figure 19. Percentage of Variance in PISA Performance Explained by ESCS (2022) 1/



Source: OECD.
1/ ESCS refers to the PISA index of economic, social and cultural status.

26. Reducing the impact of the disadvantaged socio-economic and migrant backgrounds would have important economic and social positive implications. It would increase the skills of disadvantaged students and thus help raise their employment rate and thus potential growth. It would also increase their income prospects and, as a result, foster social mobility. Economic literature has provided evidence that, in advanced economies, equal access to education lifts pre-redistribution incomes for those at the bottom of the income distribution contributing to reducing income inequality, which is strongly associated with intergenerational social mobility (Blanchard and Rodrik 2021, Bruroni and others 2013, Chancel 2021, Corak 2013, Rodrik and Stantcheva 2021). As a result of lower market income inequality, less fiscal redistribution would be needed to achieve the same, and comparatively low, disposable income inequality that underpins the Belgian social model (IMF, 2023). Finally, it would also increase the pool of individuals able to innovate or to absorb technological innovation. Literature has shown the "children's chances of becoming inventors vary

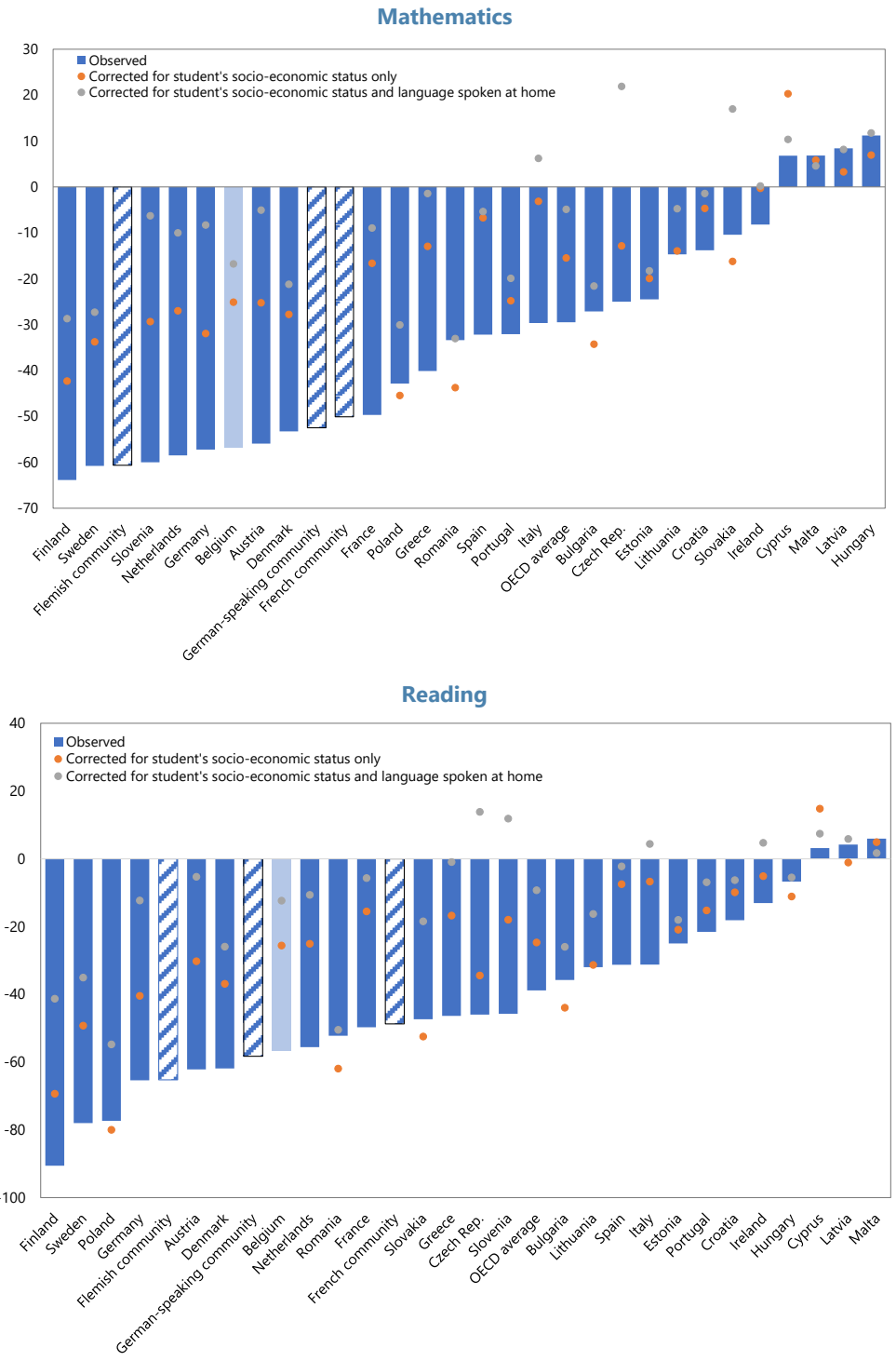
sharply with characteristics at birth, such as their race, gender, and parents' socioeconomic class" (Bell and others, 2019).[25]

27. This would, again, require organizational reforms. Promoting the enrollment of disadvantaged students in early childhood (through lower cost, increased availability, or simplified enrollment procedures) would increase their educational achievements and has been associated with higher labor force participation of their mothers (Hallaert and others, 2023).[26] Allowing and incentivizing teachers to provide support to students who face difficulties would foster their skills acquisition and help reduce grade repetition that is more frequent for disadvantaged students and students with immigrant background.

[25] For a review of literature on the link between education and innovation, see Biasi and others (2021) and Jaravel (2023).

[26] Childcare costs erode more low earners parents' work incentives in Belgium than on average in the EU, notably for single parents (OECD, 2020). For some household types (e.g. single parent with two children earning average wage, couples with two children earning minimum wage), the cost of childcare after tax and benefits represents a higher share of the household income than on average in the EU (OECD Net Childcare Cost).

Figure 20. Difference in PISA Score Associated with Immigrant Background
(2022, in points)



Source: OECD.

E. Conclusion

28. A higher spending on education than in peers does not result in better educational outcomes, suggesting large scope for increasing spending efficiency. This paper estimates that Belgium could achieve the same educational outcome at a fiscal cost lower by up to 1.4 percent of GDP. Alternatively, Belgium could achieve better educational outcomes at unchanged current spending, reversing the recent decline in test scores and provide students with skills that are more aligned with labor market demands.

29. The magnitude of potential efficiency gains suggests that reforms could lead to both an increase in educational outcomes *and* a lower fiscal cost. Increasing spending efficiency would free fiscal resources than can be used to both support fiscal consolidation and to improve educational achievements. These benefits would be achieved in the medium term, as they require structural reforms that would take time to design, implement, and bear fruit.

30. Changes in the organization of the educational system are needed to increase spending efficiency. The main reason for the larger spending in Belgium than in European peers is a high wage bill due to higher level of employment combined by relatively shorter teaching time and lower students-to-teacher ratio. Yet, Belgium experiences teacher shortages and the highest share of grade repetition in the EU (a source of inefficiency and fiscal cost). Therefore, reform should focus on a reorganization of the educational system to better allocate teachers and better leverage their time, while streamlining the schemes allowing for reduced working time or early retirement with reduced salary.

31. Reforms should also aim at providing skills better aligned with firms' needs and at increasing educational achievement of disadvantaged students. This would help increase the employment rate (notably of the population with only secondary education), reduce the need for firms to provide training to offset inadequate skills (which increases labor cost and weighs on firms' competitiveness), boost productivity, and increase the diffusion and creation of innovation. This would reduce the need for fiscal spending including the need for fiscal redistribution. The reforms would imply to ensure that the curriculum better align education with firms' needs and a reorganization of the educational system to allow teachers to spend more time supporting students who face difficulties.

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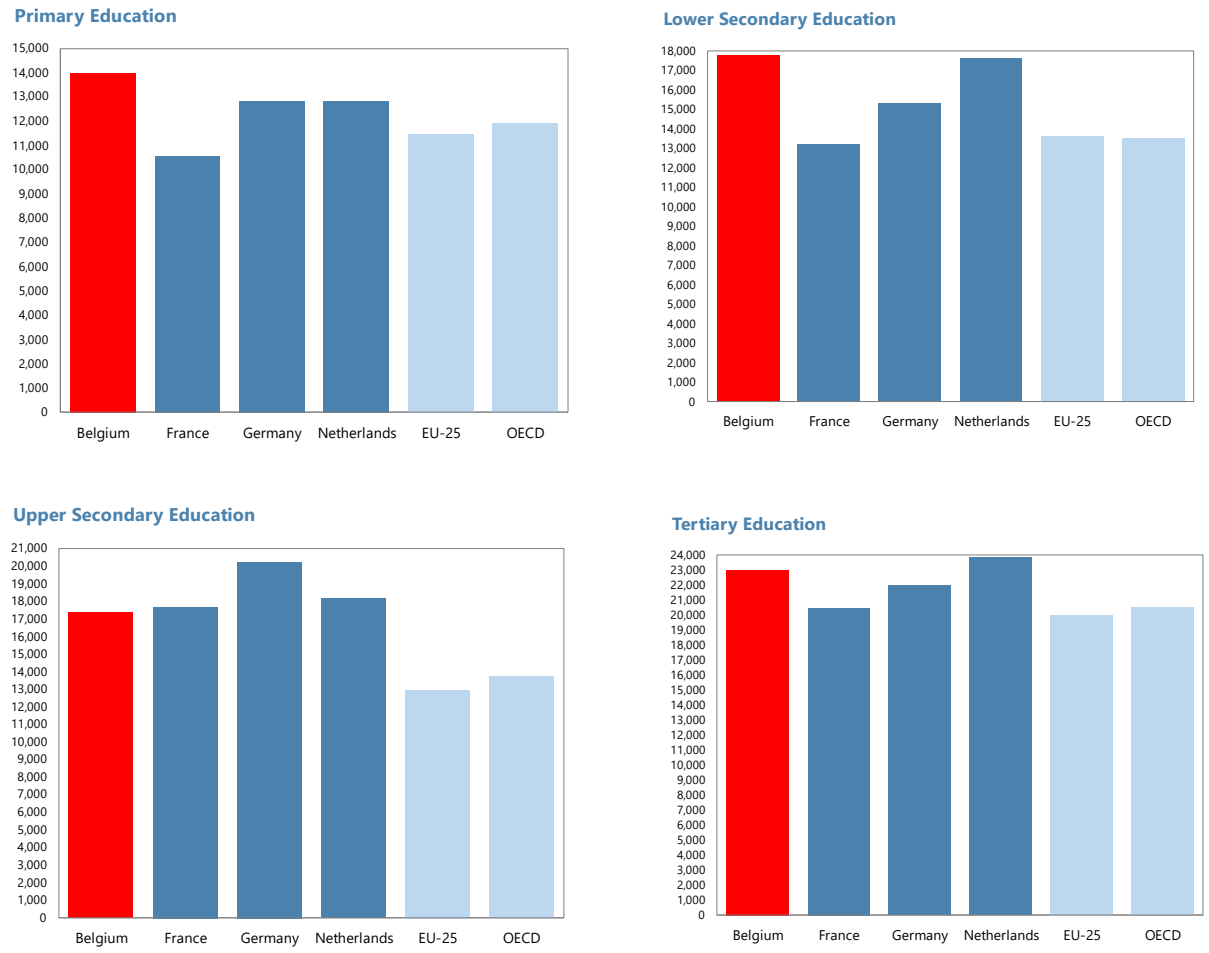
Appendix I. Total Expenditure on Educational Institutions

Figure I.1. Total Expenditure on Educational Institutions per Full-time Equivalent Student by Level of Education

(2021, US dollars per student, PPP)



Source: OECD.

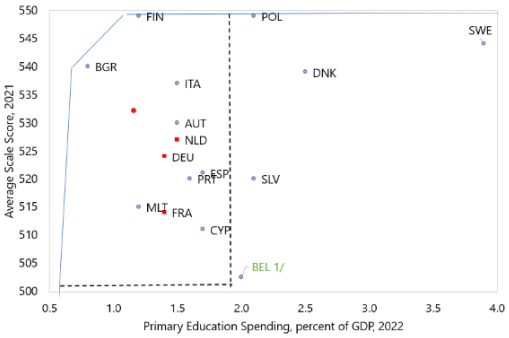
Note: Private and public financing.

Appendix II. Alternative Measures of Efficiency Gains

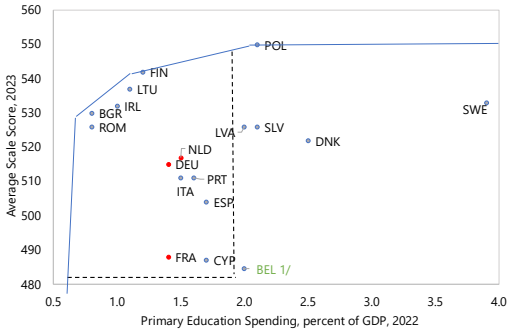
Figure II.1. Alternative Measures of Efficiency Gains at Primary and Secondary Level of Education

Test Scores at Primary Level (4th Graders)

PIRLS Score and Primary Education Spending

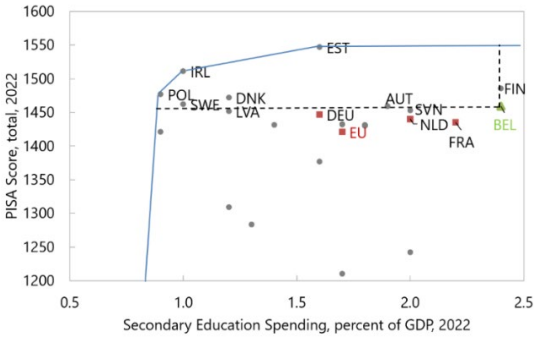


TIMSS Score on Science and Primary Education 2/

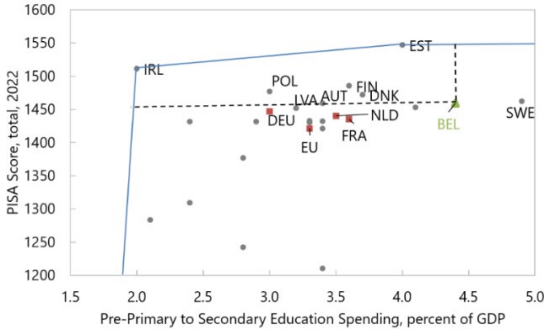


Test Scores at Secondary Level (15-Year Olds)

PISA Score and Secondary Education Spending

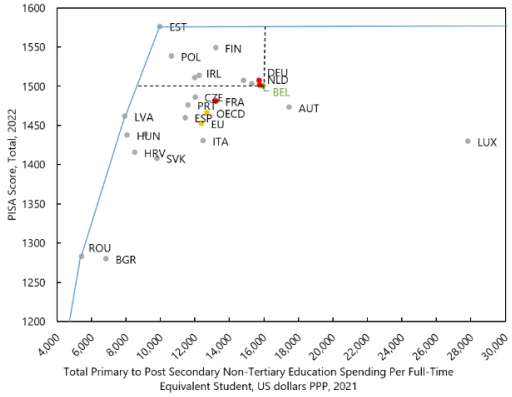


PISA Score and Pre-Primary, Primary, and Secondary Education Spending

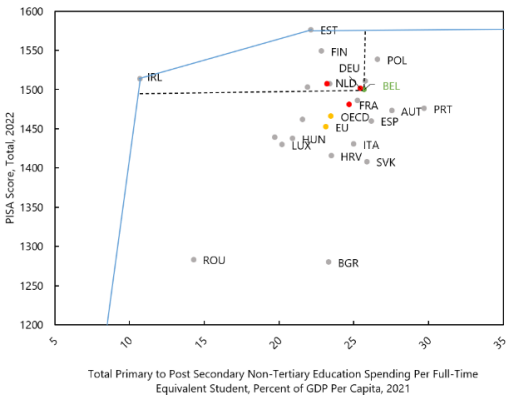


PISA Score and Total Primary to Secondary Spending per Student

(US dollars, PPP)



(Percent of GDP Per Capita)



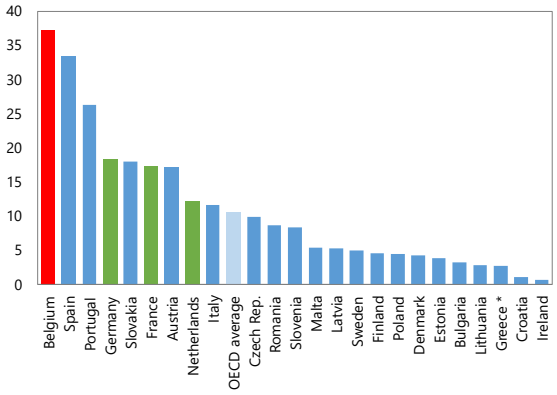
Sources: Eurostat, OECD, PIRLS, and TIMSS.
1/ Average of the Flemish and French communities scores.
2/ The picture is broadly similar if mathematics scores are used.

Appendix III. Grade Repetition

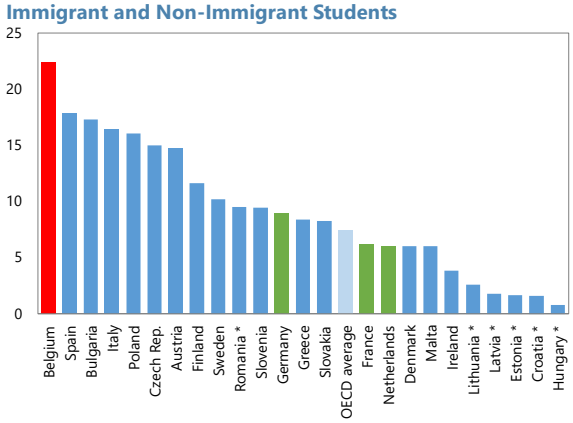
Figure III.1. Grade Repetition in the EU

(2022, percentage points)

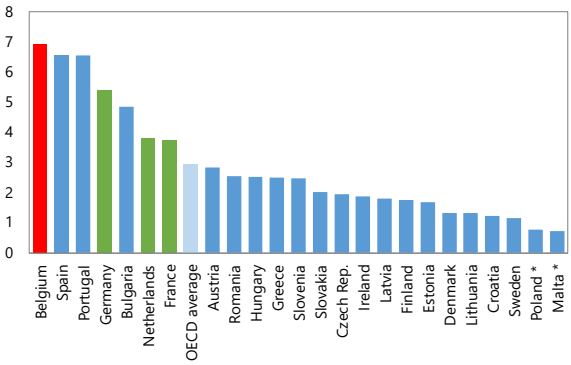
Difference in the Percentage of Grade Repeaters Between Disadvantaged and Advantaged Students



Difference in the Percentage of Grade Repeaters Between Immigrant and Non-Immigrant Students



Difference in the Percentage of Grade Repeaters Between Boys and Girls



Sources: OECD.

* Difference is not significant.

FIRM DYNAMICS AND FIRM-LEVEL TOTAL FACTOR PRODUCTIVITY IN BELGIUM[1]

Belgium's total factor productivity (TFP) growth slowdown since the late 1990s has been worse than peers' despite significant spending on innovation. This productivity gap is largely explained by subdued business dynamics, insufficient firm access to financing, labor and capital misallocation, and the predominance of small firms. Further product-market reforms to reduce barriers to entry and improve the insolvency regime to lower exit costs are needed to raise TFP. Reforming the wage-setting mechanism to better align wage and productivity developments would improve the efficiency of labor allocation. Deepening the European single market and advancing the capital market union would also contribute to fostering higher productivity of Belgium firms and facilitate firm scale up.

A. Context: Declining Productivity Growth, and Subdued Firm Dynamics

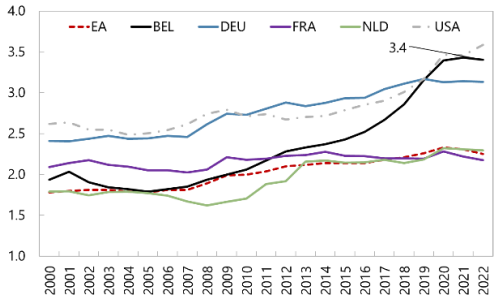
1. Despite significant spending on innovation, Belgium's long-term productivity slowdown is worse than peers'.[2] Belgium ranks among the most innovative countries in Europe. Innovation-income deductions introduced in 2017, which allow firms to deduct up to 85 percent of their net income from innovation from the taxable base—reducing effective corporate taxation to as low as 3.75 percent, appear to have boosted R&D spending (in percent of GDP) to 3.4 percent of GDP in 2022, well above neighbors. However, TFP growth lags peers, suggesting stalling technical diffusion and room to improve the transmission of innovation to productivity gains. This, despite the lower shares of accommodation and food service activities (sectors typically with lower productivity) in both employment and value added in Belgium than on average in the European Union (EU) (4.9 percent and 7 percent for Belgium and the EU, respectively, for employment, and 1.7 percent and 2.7 percent, respectively, for value added). Belgium's TFP growth fell from 1 percent on average over 1990-94 to -0.1 percent in 2015-19. It was lower on average over 1999–2022 than the euro area's (EA) (Figure 1). For example, Germany's productivity slowdown was less pronounced, due in part to its a strong manufacturing base with a focus on high-value, export-oriented products, which allows for greater economies of scale and efficiency.

[1] Prepared by Karen Coulibaly (EUR).

[2] Peers are France, Germany, the Netherlands—Belgium's three main trading partners—, and other EU and EA countries.

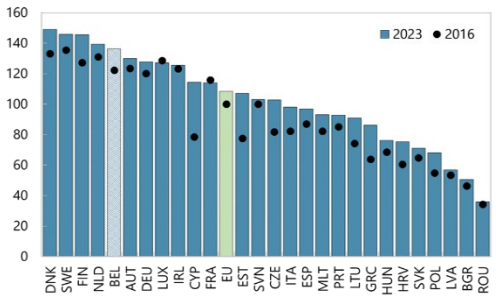
Figure 1. R&D Spending, Innovation and TFP

R&D Spending
(Percent of GDP)



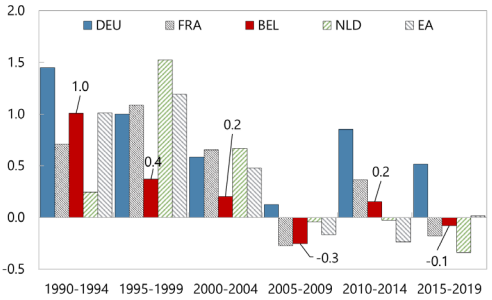
Source: Eurostat.

Innovation Index
(Index, EU in 2016 = 100)



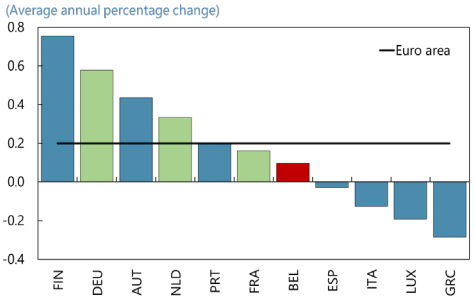
Source: European Commission.

Total Factor Productivity
(Average 5-year period annual percentage change)



Sources: OECD and IMF staff calculations.

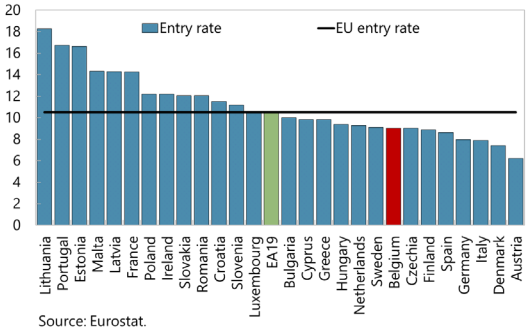
Total Factor Productivity Growth, 1999-2022
(Average annual percentage change)



Sources: OECD and IMF staff calculations.
Note: Euro area indicates the average annual growth of the unweighted average of the total factor productivities of the countries shown on the x-axis.

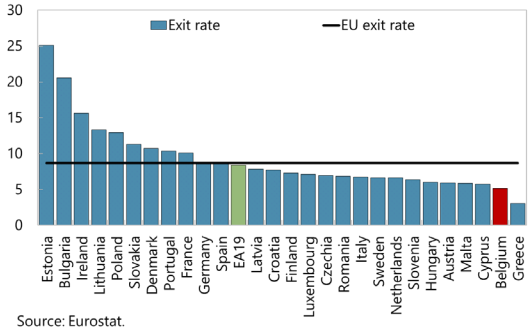
Figure 2. Firm Dynamics

Entry Rate, 2022
(Percent of active firms)



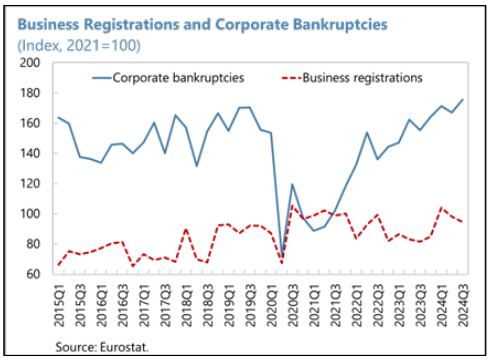
Source: Eurostat.
Note: Excludes firm entry following restructuring, merger or break-up.

Exit Rate, 2022
(Percent of active firms)



Source: Eurostat.
Note: Excludes firms exits following restructuring, merger, or break-up.

2. Lagging TFP partly reflects unfavorable firm dynamics, with low and, on the whole, stagnant entry and exit rates.[3] Belgium has some of the EU's lowest firm entry and exit rates. The country's firm entry rate of 9 percent is lower than the EU and euro area average (both at 10.5 percent), and stagnant. The exit rate is particularly low at 5.2 percent compared to an 8.7 percent EU average (Figure 2), despite the recent increase in bankruptcies that brought them back to pre-pandemic level (Text Chart).



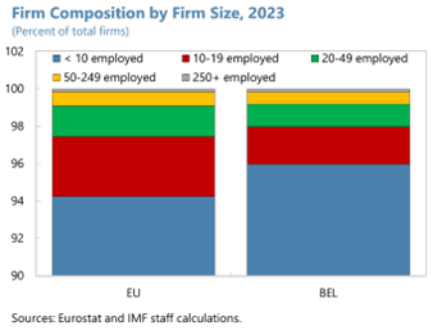
B. Firm Characteristics

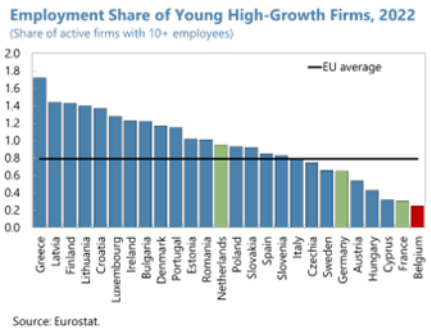
3. Belgian firms are as small as European firms on average. In Belgium, 96 percent of firms employ fewer than ten employees compared to 94 percent in the EU. Belgian micro firms (with ten employees or fewer) make up 32 percent of total employment, compared to 30 percent on average in Europe, nearly thrice as much as in the United States. Firms with fewer than 50 employees employ 45 percent of Belgian employees, compared to 49 percent in the EU.

4. Belgian young, high-growth firms have a smaller footprint in the economy than their European counterparts.[4] They employ 0.25 percent of those employed in firms with 10+ employees against a euro average of 0.8 percent. Young Belgian high-growth firms also have an average of 48 employees, 10 employees fewer than the EU average (Figure 3).

5. Too few young firms scale up. In Belgium as in Europe, an average mature firm (above 25 years old) typically has about 12 employees. This is just thrice as many workers as the typical firm below the age of three, versus over ten times in the United States. Furthermore, while the employment growth rate of Belgian startups is on par with the EU average, it is much lower for above-average TFP startups in Belgium.

Figure 3. Firm Characteristics

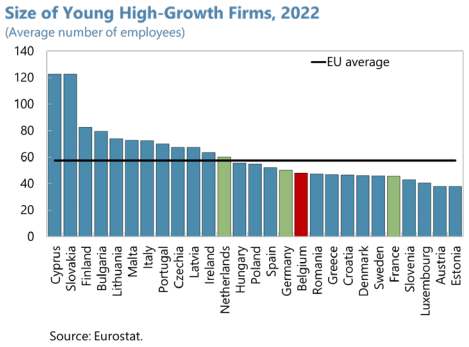


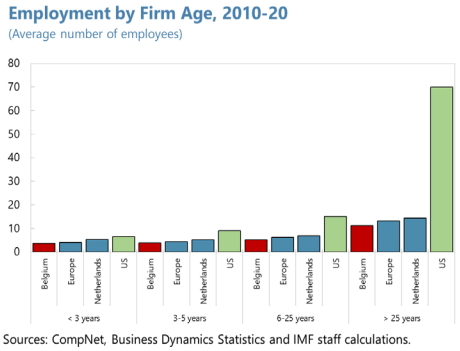


[3] See (Barseghyan and DiCecio, 2011) for a discussion of the causal links between high entry costs, business dynamics, and TFP.

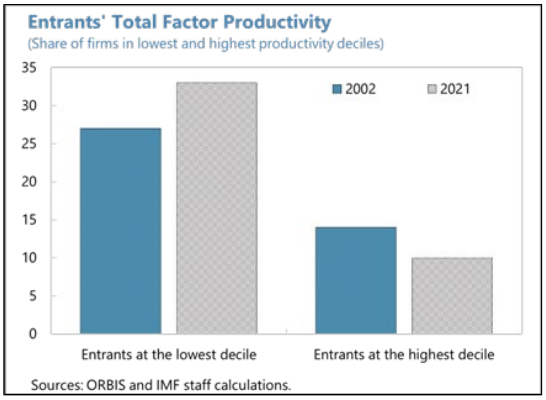
[4] Young high-growth firms are three- to four-year old firms with an average annualized turnover growth of more than 20 percent per year for three years.

Figure 3. Firm Characteristics (concluded)





6. Start-up quality is falling. The share of one- to four-year-old firms in the highest productivity decile declined from 14 percent in 2002 to 10 percent in 2021 while the share of startups in the lowest TFP decile increased over time from 27 percent in 2002 to 33 percent in 2021 (Text Chart). This may in part reflect the increase in federal and regional government-funded loan guarantees and additional angel investor and seed funding to startups during the pandemic.[5]



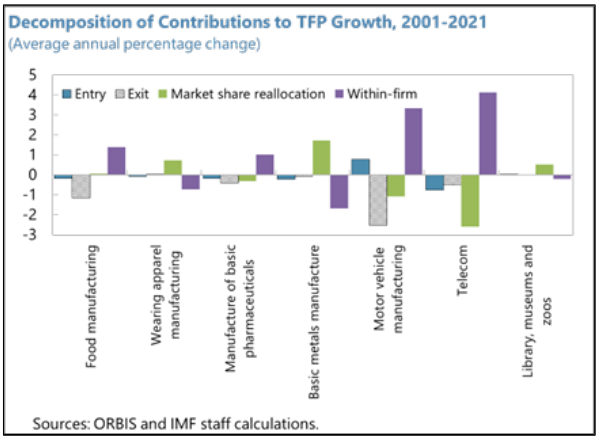
7. Firms benefit from relationships with high-growth exporting firms and multinationals. Forming relationships with multinationals or "superstar firms" that are very large, high-growth, and export heavily can boost a firm's TFP by 8 percent in three years (NBB, 2023).

8. However, below-average TFP startups increased their share in output and employment faster than others, possibly gaining from their relationships with state-owned enterprises and political connections. Firms with lower profitability and productivity that purchase inputs from state-owned suppliers have higher leverage and employment, more so if politicians are on their boards (NBB, 2024). This may discourage efficiency and innovation.

[5] (Alperovych and others, 2015) showed that firms with access to government-funded venture capital are less productive that those that rely on private capital.

C. Firm Dynamics' Contributions to Sectoral Productivity Growth[6]

9. Overall, within-firm TFP growth contributes the most to aggregate sectoral productivity growth; the impact of entries and exits is unclear. The contribution of within firm productivity growth is highest in sectors with higher investment intensity, such as pharmaceuticals. The impact of within-industry market-share reallocation varies depending on the impact of competition and gains from economies of scale on sectoral productivity. Its contribution to productivity growth is strongly negative for the telecom sector. Entry contributes positively to productivity in some sectors (e.g., motor vehicle manufacturing). However, the negative contributions from exits suggest they are not from the lowest productivity (or below average productivity) firms (Text Chart).



D. Firm Access to Finance

10. Belgium firms consider that they are under-financed. Firms consistently report in European Commission surveys financing needs that exceed available funding, particularly from bank loans and credit lines. Early-stage startups have access to a more diverse range of funding options than other European firms, including private venture and angel investor capital, but funding remains scarce at later stages of growth.

Debt Financing

11. Belgian startups are particularly under-leveraged.[7] In the United States and many other European countries, startups are significantly more leveraged than larger firms (Adilbish and others, 2024). This supports their investment in new technologies and helps them scale-up quickly. However, Belgian young firms are not benefiting from higher leverage. Indeed, they cite the challenges they face in accessing capital to scale as a major constraint to their growth in surveys on access to finance.

12. Startups typically face higher interest rates than more mature firms, reflecting their higher failure rate. The cost of financing remains a major obstacle to access to funding for

[6] The analysis of firm dynamics' contributions to sectoral productivity growth follows Melitz and Polanec, 2015, to estimate contributions from entry, exit, within-industry reallocation among incumbents, and within-firm productivity growth during 2002–21.

[7] Leverage is defined as the sum of loans and long-term debt as percent of total assets. Outliers including the largest 5 percent observations and those with negative values are excluded.

corporates in Belgium (as in Europe), more so for startups, particularly those with higher intangible investments, who face higher borrowing costs.[8]

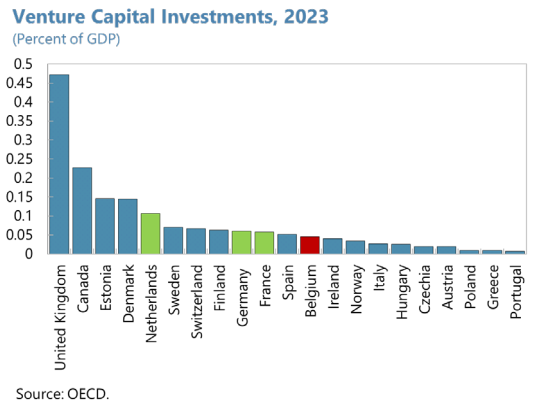
13. Belgium's (and Europe's) bank-based financial system is ill-fitted for startup funding. Banks' risk models and debt-service and loan-maturity requirements do not allow funding of fast growing but initially unprofitable firms. Regulatory and supervisory guidelines also do not favor risky exposures. Loan approval processes are typically lengthy. Bank funding is more abundant for established than emerging industries, and bank financial product offers remain standardized and limited.

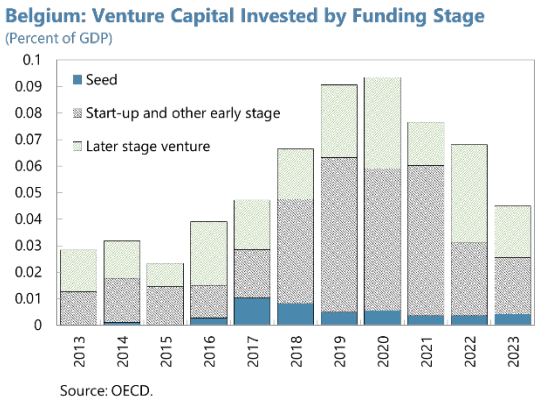
Private Equity Financing

14. Venture capital (VC) (and equity financing) remains limited in Belgium, keeping firm growth and productivity lower. At 0.04 percent of GDP, VC investment in Belgium was twice as low as in Netherlands and ten times lower than in the United Kingdom (as a share of GDP) in 2023 (Figure 5). Firms with significant funding from VC grow faster, create more jobs, and contribute more to aggregate TFP and growth. Access to VC can also improve resource allocation, through better entry-exit dynamics, supporting innovation and productivity (Arnold and others, 2024). In Belgium as in the rest of the EU, home bias in asset allocations as well as regulatory, legal, and tax issues limit cross-border activity and consolidation, reduce private risk sharing, and impede the formation of the deeper pools of capital and more liquid markets at EU level needed to support VC (Arnold and others, 2024).

15. Most of the deals are in early stage, which partly explains the relatively small size of Belgian startups. The share of funding for later-stage VC has also increased in recent years. In 2023, 57 percent of funding went to seed or early-stage deals, up from 45 percent in 2013 but down from a peak of 71 percent in 2018 (Figure 4). On average over 2007–23, 40 percent of VC investment in Belgium were at late stage compared to 45 percent in Germany and 60 percent in France.

Figure 4. VC Funding



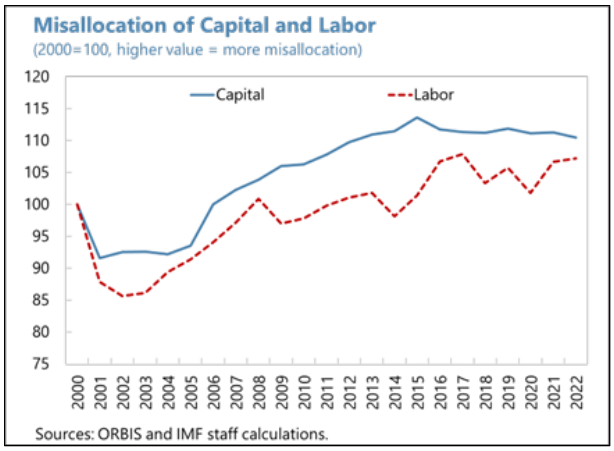


[8] See (Adilbish and others, 2024) for further discussion of firm funding at the European level.

16. The notional interest deduction (NID) that was introduced in 2006 helped reduce the corporate debt finance bias, leveling the debt-equity playing field, but was abolished in 2023. The NID allowed firms to reduce their taxable income based on their amount of equity capital. It helped increase equity ratios of Belgian firms by approximately three percentage points above the pre-NID mean equity-to-asset ratio of 39 percent (Meki, 2023). The NID was nonetheless considered too fiscally costly and too beneficial to multinationals that shifted profits and displaced capital across countries. It was abolished in 2023, as part of a broader effort to simplify and increase the transparency of corporate taxation. Similar allowances for corporate equity introduced in Austria, Croatia and Italy were also subsequently eliminated, mostly due to their large fiscal cost. Denmark, Germany, and Sweden's allowances remain in force. New Zealand also exempts capital gains for certain equity holdings.

E. Labor and Capital Misallocation[9]

17. Labor and capital allocation are deteriorating. They have suffered in recent years from the growing share of lower quality startups with abundant government support, including loan guarantees targeted to higher-risk borrowers, that crowded more productive firms out of labor and capital markets. The misallocation of capital, as measured by the standard deviations of the marginal revenue product of capital, has increased in Belgium over the past two decades. It has remained more pronounced among younger firms in recent years. The misallocation of labor also increased over the past two decades, and was typically more pronounced in larger firms, suggesting labor hoarding (Figure 5).

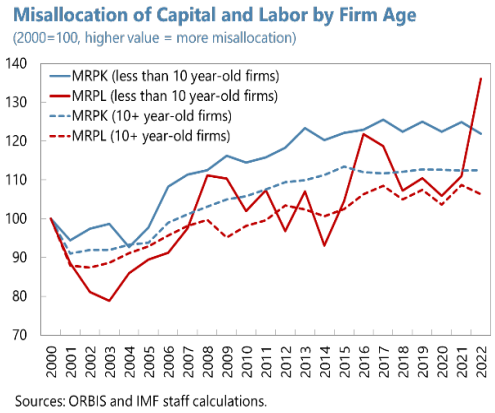


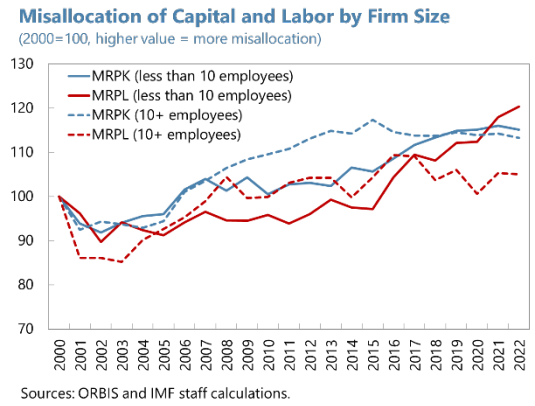
18. Reforming the wage-setting mechanism would help increase labor market efficiency. Belgium's wage-setting process is governed by automatic indexation, which establishes the lower limit of wage increases based on projected inflation in Belgium, and a 1996 wage law that restricts salary increases for the coming two years within an upper limit based on hourly wage growth in France, Germany, and the Netherlands with no reference to productivity differentials.[10] Wages are indexed to actual inflation excluding alcohol, tobacco, and petrol prices, and indexation applies nearly universally, ensuring a quick pass-through of inflation (including its most volatile components). This "wage corridor" prevents productivity-based real wage differentiation across industries and firms or adjustment of wages to local labor market conditions, thus likely contributing to labor misallocation.

[9] The analysis of labor and capital misallocation follows Hsieh and Klenow, 2009.

[10] 2023 SIP: "Wage Indexation and International Competitiveness in Belgium: An Uneasy Coexistence".

Figure 5. Labor and Capital Misallocation by Firm Age and Size





F. Product Markets and Insolvency Frameworks

19. Belgium's product market regulation is more restrictive than those of other European advanced economies, constraining TFP growth.[11] Belgium's economy-wide product-market regulations are only marginally less restrictive than the three most-constraining regulations in European advanced economies, except on administrative burdens on firms. More competition-friendly product-market regulation could spur firm entry, particularly in professional services and retail, in which restrictions are the highest, except for civil engineers (Figure 6). Closing half the gap with the top three European advanced economies could potentially boost TFP by about 3½ percent in the long run, offsetting losses since the global financial crisis.[12]

20. In particular, progress reducing state-imposed retail price controls and regulatory capture is needed. Price controls are more widespread in Belgium than in the average European advanced economy. Nearly half of services prices are either regulated by the government or indexed to inflation. Interactions between public officials and interest groups are not sufficiently regulated. The registration of lobbyists in the dedicated public registry remains voluntary. Public officials are also not required to disclose interest groups consulted during regulatory processes, nor do they not have to observe a cooling-off period after leaving their positions.

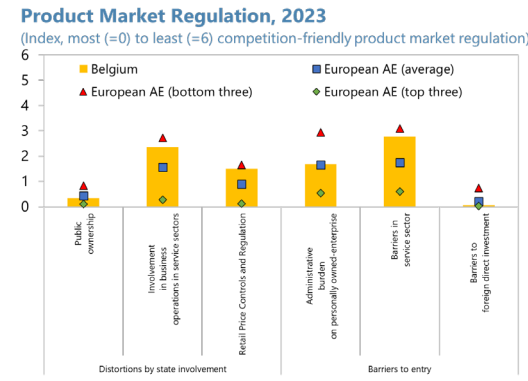
21. Belgium's insolvency regime has improved since 2010 but barriers to a more efficient system remain. Personal costs to owners of failed companies are lower. Prevention and streamlining of insolvency have improved (notably with revamped early warning, pre-insolvency, and small and medium enterprise-specific procedures). However, barriers to restructuring remain

[11] See (Barseghyan and DiCecio, 2011) for a discussion of the causal links between high entry costs, business dynamics and TFP.

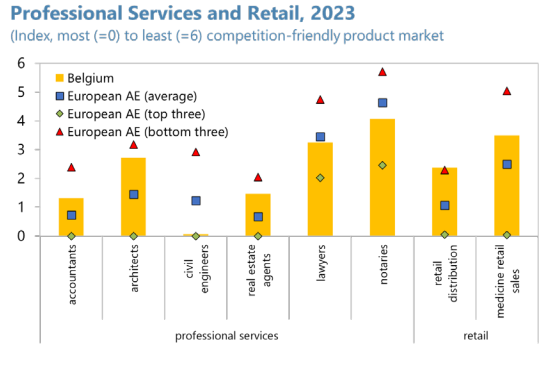
[12] 2023 Article IV report, Annex VII.

strong. Creditors still cannot initiate restructuring (only liquidation), delays remain lengthy, and courts are still too often involved.

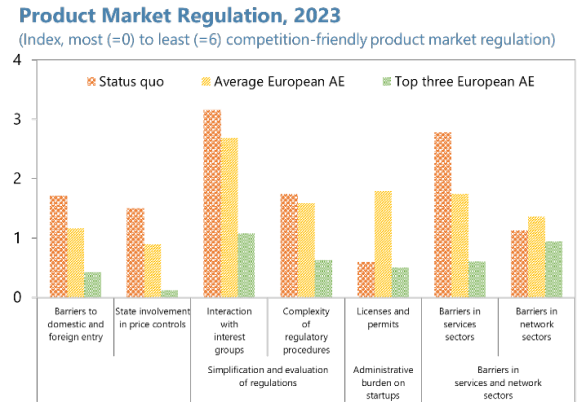
Figure 6. Product Market and Insolvency Framework Reform



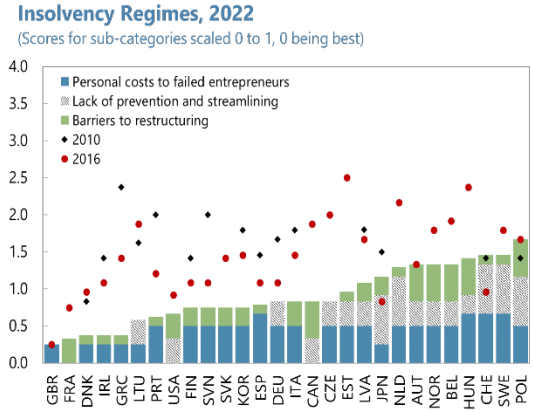
Sources: OECD and IMF staff calculations.



Sources: OECD and IMF staff calculations.



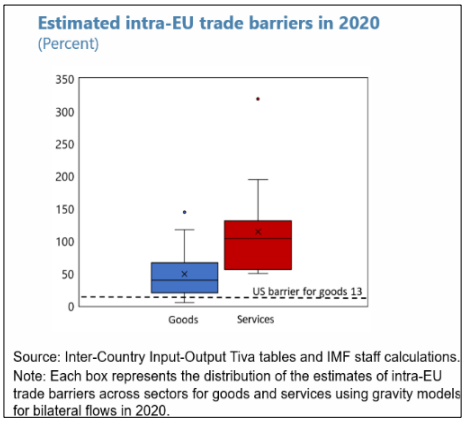
Sources: OECD and and IMF staff calculations.



Source: OECD.

G. Intra-EU Trade Barriers and Firm Productivity

22. Despite great strides towards the single market, significant barriers to intra-EU trade remain. Non-tariff barriers such as different treatment of foreign suppliers, and licensing, registration, classification, labeling, and packaging import requirements are still substantial. Barriers to foreign direct investment are also still significant. Overall, remaining barriers are as high as a tariff equivalent of about 44 percent on average for goods trade—three times higher than trade barriers between US states. For services, barriers are even steeper, equivalent to a 110 percent tariff (Adilbish and others, 2024).



Source: Inter-Country Input-Output Tiva tables and IMF staff calculations.
Note: Each box represents the distribution of the estimates of intra-EU trade barriers across sectors for goods and services using gravity models for bilateral flows in 2020.

23. Belgum's trade integration within the single market is among the highest in the EU, positioning the country well to benefit from further intergration, particularly of service trade. Belgium's strategic location (with the port of Antwerp as key entry point of goods in the EU), high-quality infrastructure and well-developed logistics network, and strong ties with neighboring countries like the Netherlands and Germany have made it a major player in intra-EU trade. The professional services sector where national competition is limited, entry requirements are rigid, and conduct rules strict stands to benefit more from EU level harmonization and expanded firm reach than the trade of goods.

24. In collaboration with its EU partners, Belgium can work toward reducing barriers to intra-EU trade. This requires investing in cross-border infrastructure, liberalizing protected sectors, pursuing meaningful intra-EU trade liberalization, and harmonizing regulations across member states. Investing in cross-border infrastructure can improve connectivity. Opening up protected sectors would foster increased competition and innovation. Harmonizing regulations across member states would allow firms to exploit economies of scale and network effects to improve efficiency and productivity (Adilbish, and others., 2024).

H. Conclusions and Options for Reform

25. Further product market reforms to reduce regulatory and administrative barriers to entry and improve the insolvency regime to lower exit costs are needed to raise TFP. State-imposed price controls, the complexity of regulatory procedures and regulatory capture, and strict occupational restrictions offer opportunities for improvement.

26. Deepening the European single market and advancing the capital market union would also contribute to fostering higher productivity of Belgium firms. More integrated markets can allow firms to scale up and attract financing at a larger scale. Removing remaining barriers to trade within the EU and harmonizing regulations and bankruptcy frameworks, would give Belgian firms access to a much larger customer base, improve competition, and vitalize firm dynamics. Increasing the availability of long-term risk capital and developing venture capital within an EU-wide push toward capital market union could help it play a more prominent role in firm financing.

27. New policies to reduce the tax debt-bias should also be explored. The authorities could consider reinstating the NID or introducing a similar measure to foster more equity financing, while limiting interest deductions on debt.

28. Wage-setting mechanism reforms should aim to foster a better alignment of wage growth with productivity and improve labor allocation. As a first step, they could include excluding items with volatile prices from the basis for indexation, widening the group of country comparators, using unit-labor costs instead of wage growth as basis for comparison, and leaving room for firms at risk to index wages only partially.

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