INTERNATIONAL MONETARY FUND

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# REPUBLIC OF LATVIA

## SELECTED ISSUES

September 2025

This paper on the Republic of Latvia 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 July 31, 2025.

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**International Monetary Fund**
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INTERNATIONAL MONETARY FUND

# REPUBLIC OF LATVIA

## SELECTED ISSUES

July 31, 2025

Approved By
**European Department**

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**FIGURES**



**ANNEX**

# ENSURING ADEQUATE AND AFFORDABLE PENSIONS IN LATVIA[1]

*Latvia has a three-pillar pension system which combines an earnings-related public scheme, based on notional accounts, with a funded mandatory pillar and a private voluntary contributions pillar. Despite the well-designed model, Latvia's current pension system may be unable to provide some of its citizens with adequate retirement income and curb old-age poverty. Improving pension adequacy and meeting societal expectations require strengthening the second and third pension pillars and raising public spending on pensions in the future—which will add to medium- and long-term spending pressures. The government could improve pension adequacy and address future pressures on pension spending by raising revenue, reorienting and rationalizing spending, increasing the contribution rates and the returns to the mandatory defined contribution pension pillar, and strengthening incentives for higher voluntary savings for retirement. A comprehensive approach should also be adopted to help cushion the effects of population aging and improve pension adequacy, including by pursuing active labor market policies to increase labor force participation, incentivizing pensioners to work, and linking the retirement ages to future life expectancy gains.*

## A. Pension System Overview

**1. Latvia's pension system is made up of three-pillars—two mandatory and one voluntary pillar and it covers most employees and self-employed.[2]** Hence, contributory pensions in Latvia are based on notional and individual accounts.[3] The pillars are as follows:

- *The first pillar (pillar I) is a state compulsory and unfunded pension scheme.* It is a pay-as-you-go (PAYG), notional defined-contribution (NDC) system with nearly universal coverage.[4] Under pillar I, pension contributions are tracked with a notional account, similar to a mandatory funded defined contribution (DC) scheme, except that the account is not funded and the contributions are used instead to fund payouts to current retirees. At retirement, the notional account is turned into a lifelong pension (annuitized). Participation in the pillar I arrangements is mandatory for all

[1] Prepared by Keyra Primus. The author would like to thank Luis Brandao-Marques, Boele Bonthuis, Helge Berger, and the Latvian Authorities for their helpful comments; and Can Ugur for excellent research assistance.

[2] Self-employed persons with income lower than the minimum wage contribute 10 percent of their income (compared to the 20 percent rate for employees). The self-employed having income at least at the minimum wage or exceeds it, contribute for the old age pension the 20 percent from a freely chosen object, which is not smaller than the amount of the minimum wage, and 10 percent from the difference of the income and the freely chosen object (OECD, 2023).

[3] The pension value is the sum of notional capital at retirement (contributions uprated in line with the covered wage bill) divided by the 'G-value' (calculated annually using projected life expectancy at retirement age with a unisex life table).

[4] In pillar I, the social insurance contributions earmarked for old-age pensions are recorded in notional individual accounts, with a theoretical rate of return applied until retirement so that a (notional) pension capital is accumulated.

employed and self-employed people over the age of 15 and offers payouts to all participants who have reached the statutory minimum retirement and contributed for at least 20 years. [5,6] Pensions are indexed to inflation plus 50-80 percent of real wage growth, which puts downward pressure on the benefit ratio.[7]

- *The second pension pillar (pillar II) is a mandatory fully-funded defined contribution (FDC) pension scheme* that complements retirement income provided by the first pension pillar.[8] Persons born after July 1, 1971, and who are at least 15 years old are automatically registered for it. The growth or reduction of value of the pension capital in the second pillar depends directly on the performance of the selected pension plan as well as the investment strategy and structure of its financial instruments (e.g., deposits, bonds, equities). The investment objective is to ensure that pension capital would grow faster than inflation and the average salary in the country. Accumulated money along with the pension of the first pension pillar will give persons additional income in old age. The funded part of the mandatory system (second pension pillar) is state administered (by the same agency as the NDC); only the investment is privately managed, while keeping track of contributions, entitlements, and eventually benefit payments is handled public.
- *The third pension pillar (pillar III), which was launched in July 1998, is the voluntary private pension scheme.* Part of the person's income is invested in private pension funds by the individual personally or by his/her employer. The amount of money individuals and their employers regularly pay into the pension fund is invested in different financial instruments, including equity funds, government/ corporate bonds, and term deposits. The pension under the third pillar can be received from the age of 55 (i.e., before reaching retirement). This pillar gives the opportunity to create additional voluntary savings in addition to the state-guaranteed first pillar and the mandatory DC second pension pillar.

**2. The Latvian three-pillar pension system creates a more robust and flexible retirement.** Having a three-pillar system reduces dependency on a single source, making the system more resilient to economic shocks or demographic changes. The three-pillar system also spreads risks across different sources and reduces pressure on public budgets by combining PAYG public pensions with funded occupational and private schemes. The voluntary pillar allows workers to accumulate additional savings and improve their standard of living after retirement beyond the

[5] The minimum insurance period was increased to 20 years effective 1 January 2025. Minimum pensions are granted to people who fulfill the 20-year contribution condition for regular pensions. A person who has an insurance period below the minimum insurance record (or no insurance record) and has reached the statutory retirement age is granted the state social security benefit (Ministry of Welfare of Latvia, 2023).

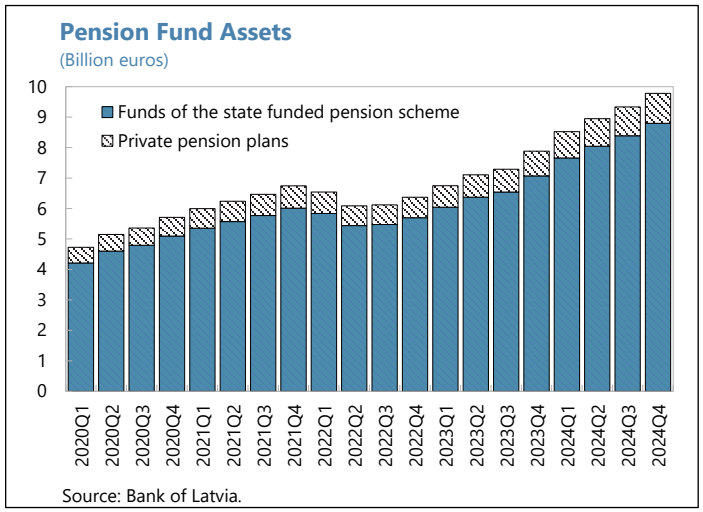
[6] In Latvia, service pensions are also granted to beneficiaries with a special status, such as state employees working in difficult conditions (aviation workers, artists), security and defense forces (military, police), and justice workers (judges, prosecutors). These workers have special privileges such as lower retirement age and reduced or more favorably counted minimum or full contributory period (Eckefeldt and Patarau, 2020).

[7] The benefit ratio is the average pension benefit divided by the average wage.

[8] In the 2025 budget, contributions equivalent to 1 percent of GDP from pillar II were diverted to the unfunded public system (pillar I). The diversion of contributions has helped to reduce the projected fiscal deficit in the near term but could worsen the long-term fiscal outlook.

basic public pension. This helps foster a culture of long-term financial planning and reduces moral hazard of relying solely on public pensions.

**3. Government spending on pensions has been relatively stable in recent years.** Over the last 5 years, pension spending as a share of GDP has been 7.9–8.7 percent for most years, except 2023 when it increased to 10 percent of GDP due to high inflation. The social insurance contribution rate for the state old-age pensions (i.e., NDC + FDC) is 20 percent of the gross wage.[9] The pension received at retirement age is directly related to the contributions made by individuals in each of the levels, with those who contribute more or delay retirement receiving a larger pension. Effective January 2025, the retirement age for both men and women is 65 years.[10]




**4. Latvia's pension fund assets have grown, despite low returns.** Latvia's second pillar pension assets currently amount to almost EUR 8.8 billion (21.9 percent of GDP or 51 percent of the total assets of the nonbank financial sector), while the assets in the third pillar amount to almost EUR 1 billion (2.5 percent of GDP or 5.7 percent of the total assets of the nonbank financial sector) (Bank of Latvia, 2025). Previously, there were constraints on the amount of assets permitted to be invested in equities. As a result of these constraints, most assets were invested in relatively low-yielding, short-term government bonds and term deposits with maturities of one to three years (Volskis, 2014). Over the last 10 years, the nominal average annual return on pension assets was around 2 percent, which was below wage growth, depressing expected income replacement rates in the long term. Staff's analysis shows that the low rate of return is a key factor behind the projected decline in replacement rates[11]. Ongoing reforms to pension enrollment that make a life cycle plan the default option could contribute to higher returns and improve pension adequacy in the future. Recent data show most assets of the second and third pension pillars are invested in investment certificates and similar securities (Figure 1). Recent efforts taken by the Bank of Latvia to reduce management fees charged by pension fund managers resulted in savings of 0.2 percent of GDP. The measure differentiates traditional from alternative investments and could provide some incentives for pension managers to increase allocations for longer-term investments capable of generating higher returns over time.

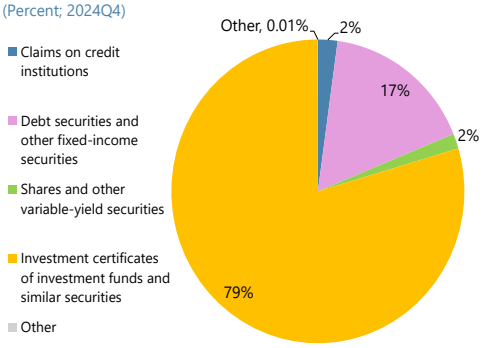
[9] Employees pay 7.5 percent of their salary for pensions and employers pay 12.5 percent. Of the 20 percent, 15 percent is allocated to the PAYG system (pillar I) and 5 percent to the funded mandatory system (pillar II).

[10] Since 1 January 2014 the retirement age has been increasing by three months every year and is 65 years effective 1 January 2025.

[11] The replacement rate is the ratio of the first pension of those who retire each year over an economy-wide average wage at retirement.

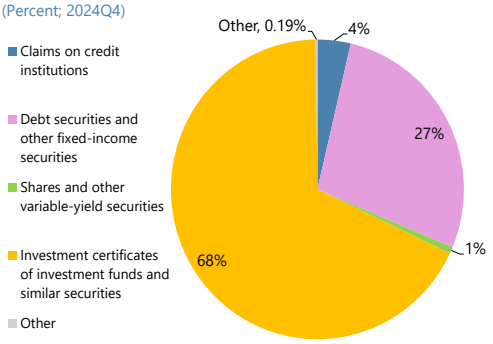
**Figure 1. Latvia: Asset Composition of Pension Plans**

**Asset Composition of the State Funded Pension Scheme**
(Percent; 2024Q4)




Source: Bank of Latvia.

**Asset Composition of Private Pension Plans**
(Percent; 2024Q4)



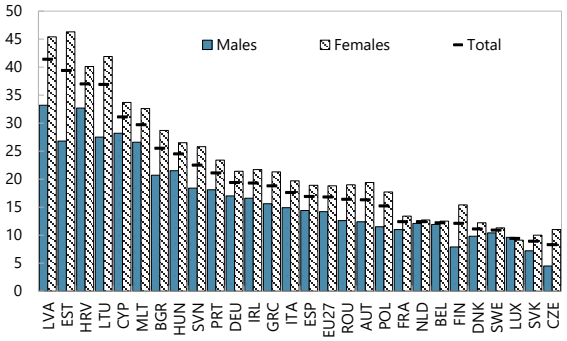

Source: Bank of Latvia.

## B. An Assessment of Pension Adequacy

**5. Latvia's pension system is facing the challenge of being able to provide citizens with an adequate income in retirement and reduce poverty.** For Latvia, the current low and declining benefit ratio could have an impact on pension adequacy, defined as the extent to which pension benefits suffice to ensure retirees a descent standard of living and protect them from poverty. There is the concern that retirement income of people at the lower end of the income distribution will be low, which would contribute to the continuation of a high level of old-age poverty. In Latvia, the relative old-age poverty rate is high and rising, especially among those older than 75 years and among women (OECD, 2018; EC, 2024c) (Figure 2). Latvia's 65+ at-risk-of-poverty rate is in line with Estonia, but it has been above Lithuania and the euro area average over the last decade. In 2024, Latvia had the highest 65+ at-risk-of-poverty rate in the EU (see Pape, 2023; Figure 2).

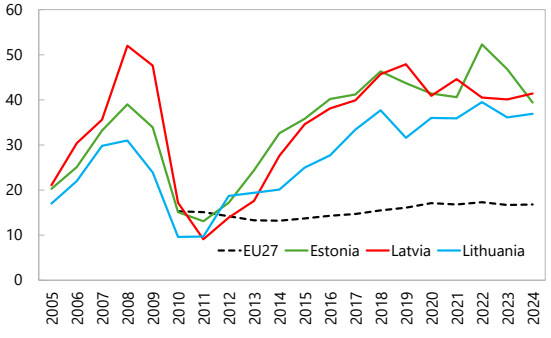
**Figure 2. Baltics: At-Risk-of-Poverty Rate of Population**

**At-Risk-of-Poverty Rate of Population Aged 65+, 2024**
(Percent)




Source: Eurostat, EU-SILC dataset.

**At-Risk-of-Poverty Rate of Population Aged 65+**
(Percent)

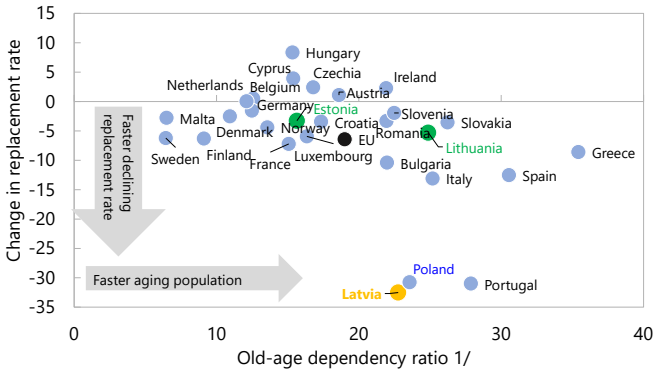



Source: Eurostat, EU-SILC dataset.

Note: Cut-off point is 60% of median equivalised income after social transfers.

**6. Given the low replacement rates, recent reforms to the pension system aimed at addressing poverty have not been able to provide adequate support to pensioners.** Reforms to address poverty have been directed to pensioners who receive low old-age pensions, survivor pensions and to persons with disabilities and recipients of low disability pensions, as well as social insurance benefit receivers (Ministry of Welfare of Latvia, 2023; EC, 2024a). Since July 2023, the amount of social security benefits and bases for minimum pensions amount were linked to the income median and revised each year.[12] While recent pension reforms have tended to improve or maintain pensions' role in protecting against poverty, most reforms will result in lower replacement rates in the future, and in turn a general decline in pension entitlements from public pension schemes. Based on the EC's 2024 Ageing Report, Latvia's replacement rate (pillar I) is projected to decline from 56 percent to 24 percent during 2022-2050, the largest decline among EU states (Figure 3).[13]

**Population Aging and Falling Pension Replacement Rates**
(Percentage points, projected change during 2022-50)

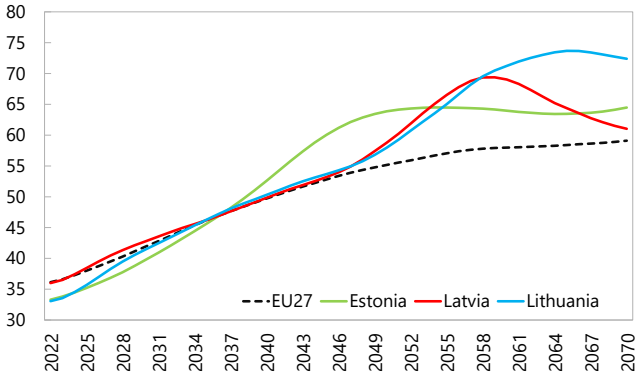



Source: EC 2024 Ageing Report.
1/ Defined as the ratio of persons aged 65 and older to persons aged 20-64.

## C. Pension Projections

**7. Over the next few decades, Latvia's population is projected to age rapidly.** The population is projected to continue shrinking by a third between 2022 and 2070, one of the fastest population decreases in the EU. Unlike in many countries in Western Europe, where population aging is happening because of increases in life expectancy,[14] population aging in Latvia is happening because of low fertility and high emigration of young people. The projected demographic changes are

**Old-Age Dependency Ratio 1/**
(Percent)




Source: EC 2024 Ageing Report.
1/ Defined as the ratio of persons aged 65 and older to persons aged 20-64.

[12] The minimum income thresholds, set as a percentage of the median income, are different for different social groups, are subject to different coefficients, and vary according to the specific disability group for the person and whether a disabled person is employed. Previously, the minimum income threshold was set in euros.

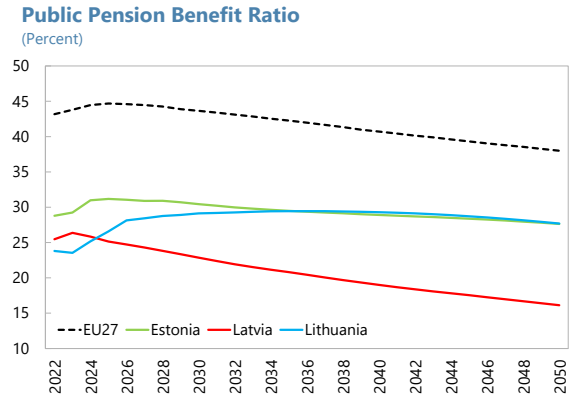
[13] From the poverty alleviation perspective, the absolute adequacy requires a replacement rate set at a level that avoids at least extreme poverty (while at the same time is not too high to undermine incentives to contribute to earnings-related public pension systems (IMF, 2022)).

[14] Life expectancy in Latvia is low (second lowest in Europe after Lithuania). Cumulative net migration in 2019-2070 is also projected to be negative for Latvia (EC, 2021).

expected to result in fewer people in all age groups except the oldest ones, thus leading to a rapid increase in the old-age dependency ratio in the long run from 36 to 61 percent over 2022-2070. In addition to a direct effect on government spending with pillar I pensions, the increase in the dependency ratio over time will also put upward pressure on public health care costs. Moreover, as the population ages further, the ability of the pension system to deliver adequate retirement income will become increasingly important for the median voter.

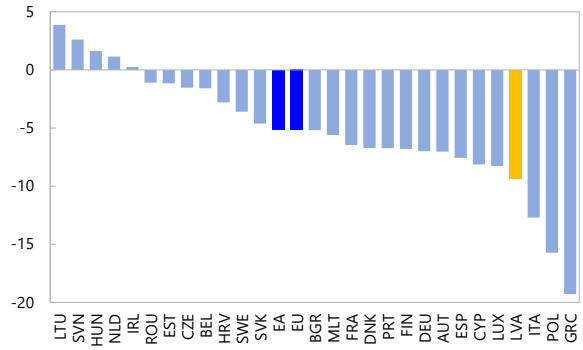
**Figure 3. Latvia: Benefit Ratio and Replacement Rate**

*Latvia's benefit ratio is projected to decline more than the other Baltics and EU average...*



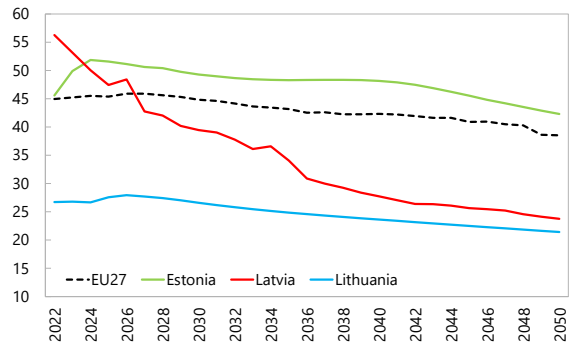

Source: EC 2024 Ageing Report.

*...so the change in the benefit ratio is one of the highest in EU countries.*



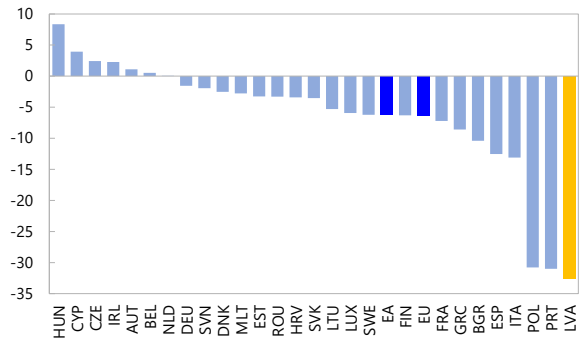

Source: EC 2024 Ageing Report.

*The gross replacement rate is projected to decline rapidly...*




Sources: EC 2024 Ageing Report.

*...and has the largest overall decline among EU countries.*

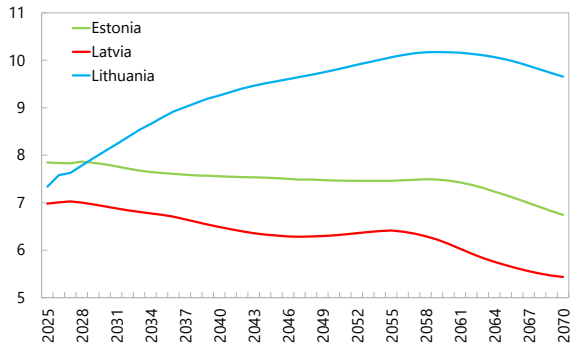



Source: EC 2024 Ageing Report.

**8. Efforts to ensure fiscal sustainability through reduced pension spending often conflict with social sustainability by undermining the financial well-being of retirees.** Despite worsening demographics, pension spending is projected to decline due to the declining benefit ratio. In the NDC system, the negative impact of demographic change on pension expenditure is primarily offset by the decline in pension benefits. Thus, the EC's 2024 Ageing Report projects a decline in the gross public pension expenditure-to-GDP ratio in Latvia from 7 percent of GDP in

2025 to 5.4 percent of GDP in 2070, more than the other Baltics. The decline in the benefit ratio and replacement rate of Latvia's public (PAYG) pillar is due to switching part of the public old-age scheme into privately funded schemes, so public provision decreases while the private mandatory part increases (Ministry of Welfare of Latvia, 2023; Figure 3). This decline in pension spending may not be sustainable given possible concerns about the adequacy of pension income for people relying on public pension. The drop in public pension expenditure in the future would also worsen the adequacy of overall income protection for older people. These developments, in turn, will increase social pressure on the state pension system.

**Pension Spending in the Baltics**
(Percent of GDP)

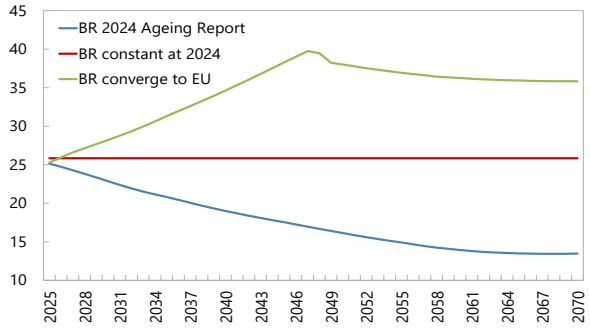



Source: EC 2024 Ageing Report.

## Figure 4. Latvia: Implied Pension Expenditures, Fiscal Balance, and Public Debt Under Different Benefit Ratio (BR) Scenarios

*The benefit ratio in EC's 2024 Ageing Report is projected to decline for Latvia in the coming decades…*

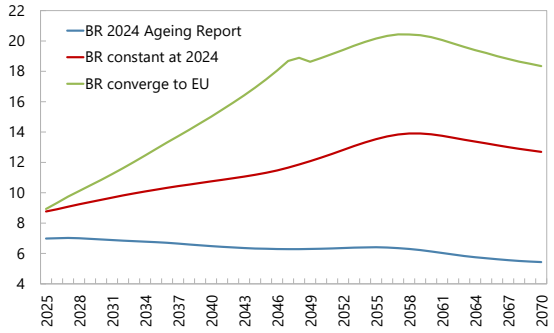
**Benefit Ratio Scenarios**
(Percent)




Sources: EC 2024 Ageing Report; and IMF staff calculations.

*…causing a decline in pension spending.*

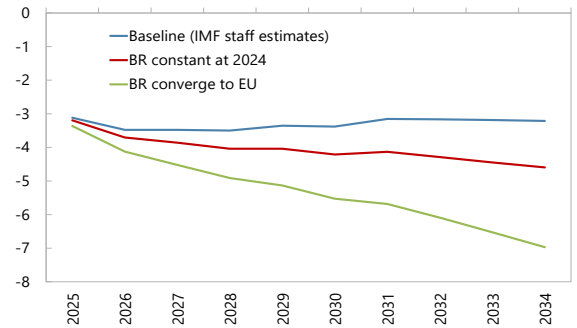
**Implied Pension Spending**
(Percent of GDP)




Sources: EC 2024 Ageing Report; and IMF staff calculations.

*A constant/ higher benefit ratio will cause the fiscal deficit to breach the 3 percent of GDP target in the medium term.*

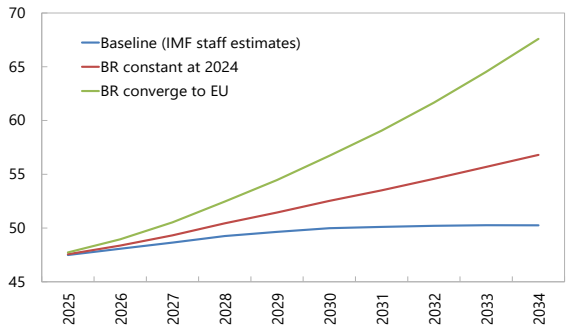
**ESA Fiscal Balance**
(Percent of GDP)




Sources: EC 2024 Ageing Report; and IMF staff calculations.

*Public debt will exceed the 60 percent of GDP target if the benefit ratio converges to the average EU benefit ratio.*

**Public Debt**
(Percent of GDP)



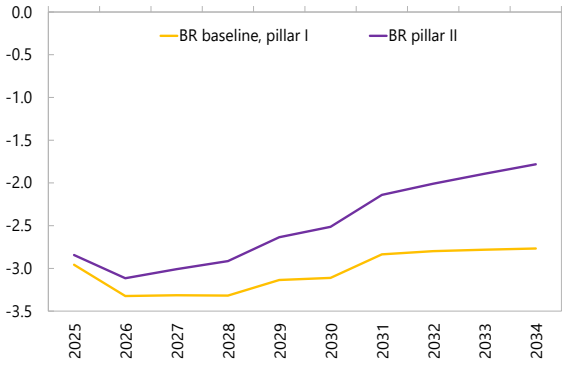

Sources: EC 2024 Ageing Report; and IMF staff calculations.

**9. In various illustrative scenarios that consider only pillar I, government spending on pensions as a share of GDP is projected to increase substantially.** Staff's estimates show that if the benefit ratio is projected to remain at the 2024 level, the fiscal deficit is projected to increase from 3.7 percent of GDP in 2026 to 4.6 percent of GDP in 2034, while public debt will increase from 48.4 percent to 56.8 percent of GDP over the same period (Figure 4). In the scenario where Latvia's benefit ratio converges to the average EU benefit ratio, the fiscal deficit will increase from 4.1 percent to 7 percent of GDP over 2026-2034. Public debt will increase from 49 percent to 67.6 percent of GDP over 2026-2034. Overall, using a more realistic benefit ratio will put pressure on the fiscal deficit and debt.

**10. If pillar II is considered, higher pension expenditures will still worsen key fiscal targets, though to a lesser extent than under pillar I only.** To better assess the impact on the fiscal balance and public debt of aiming at a cost benefit ratio, the previous analysis is expanded with an illustrative scenario that includes pillar II benefit ratio.[15] The analysis shows that if pillar II benefit ratio is considered, pension income is higher in the medium term than under pillar I benefit ratio only, which reduces the burden on the latter. In this case, the fiscal deficit (public debt) is about 0.4 percent (0.9 percent) of GDP lower on average in the medium term (Figure 5). The difference between pillar I and pillar II is an estimate of how much the government could save in pension spending, given that pillar II is expected to address the adequacy gap. Still, although pillar II will help individuals to accumulate additional funds for retirement and reduce the adequacy gap, it is not sufficient to substantially lower medium- and long-term pressures on pension spending in the face of Latvia's aging population. Therefore, it is essential to further strengthen pillar II by increasing contributions and returns.

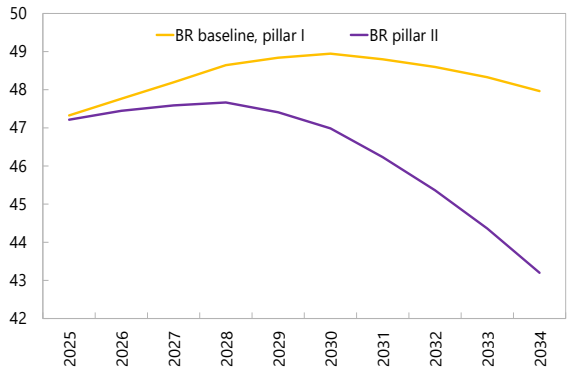
**Figure 5. Latvia: Fiscal Balance and Public Debt Under Pillar I vs Pillar II**

*If pillar II is considered, the deficit is lower than the scenario with pillar I.*




Sources: EC 2024 Ageing Report; and IMF staff calculations.

*Public debt is also lower in the scenario with pillar II.*




Sources: EC 2024 Ageing Report; and IMF staff calculations.

[15] In this scenario, the projected benefit ratio in EC's 2024 Ageing Report is used for pillar I.

## D. Conclusions and Recommendations

**11. The Latvian multi-pillar pension system is a well-designed model that should be kept.** Multi-pillar designs provide more flexibility than mono-pillars and are therefore typically better able to address the needs of the main target groups in the population and provide more security against the economic, demographic, and political risks faced by pension systems (The World Bank, 2005). Having privately funded pensions helps to build up private pension income to enhance the adequacy of pensions, particularly where public pension schemes offer low replacement rates (Fouejieu and others 2021). However, Latvia's demographic situation poses significant challenges to the future sustainability of the system.

**12. The authorities should strengthen the second and third pillars of the pension system to improve pension adequacy.** The mandatory and voluntary defined-contribution pillars of Latvia's pension system need to be strengthened to guarantee adequate pensions and reduce the financial burden on the public pension system in the future by:

- *Increasing the contribution rates to mandatory defined contribution pension pillar.* Increasing payments to the mandatory defined contribution pension pillar could raise allocations to pension capital and prevent an excessive reduction of pensions compared to salaries without raising fiscal pressures.
- *Increasing the returns to pillars II and III.* The asset composition of retirement savings should be changed to include more equity and other long-term investments. A prudent increase in the share of equities and alternative investments in the asset composition of retirement savings would increase returns.
- *Strengthening incentives for higher voluntary savings for retirement through a more flexible and accessible system design.* The third pillar will need to play a key role in covering a large part of the gap in adequacy and hence maintaining the future adequacy of pensions. In Latvia, the voluntary pension pillar is mainly used by middle-to-high income households. The government could promote enrollment in the third pillar by providing tax incentives to businesses that offer pillar III to their employees. Another option is to auto-enroll people into the voluntary pension schemes, with the possibility to opt out.

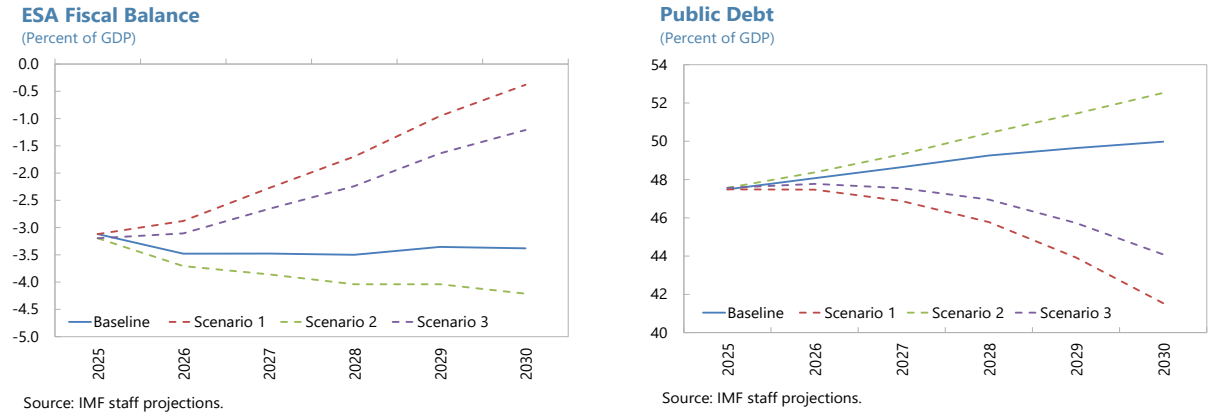
**13. The government should also build buffers to support medium- and long-term pressures arising from higher pension spending with pillar I.** Staff's estimates show that revenue and spending measures could deliver 3 percent of GDP over 2026-2030. Proceeds from these measures could help to relieve both current and medium- and long-term spending pressures and ensure fiscal sustainability (Figure 6).

- ***Raising revenue -*** One possible source of financing is revenue, given Latvia's low total tax receipts to GDP ratio (22 percent of GDP vs an average of 26 percent of GDP for the EU in 2023) and gaps in revenue administration. These measures include:
  - *Continuing to improve VAT collection efficiency through further narrowing of the compliance gap:* VAT revenue serves as one of the core revenue sources for Latvia. In 2024, the VAT

revenue-to-GDP ratio amounted to 9.7 percent of GDP, which makes VAT essential for financing the provision of public goods and services. Although Latvia decreased its VAT compliance gap by almost 20 percentage points between 2013 and 2022, preliminary estimates showed that the gap increased in 2023 and remained high at 8.9 percent (EC, 2024b). There is scope to increase revenue by continuing to improve VAT collection efficiency in Latvia, which could be due to tax compliance and concessions granted through exemptions.

- *Broadening the bases of corporate and personal income taxes by reducing the shadow economy:* Although Latvia's informal sector reduced, it still remains large (21.4 percent of GDP in 2024[16]), which presents a barrier to longer-term government objectives and is seen by the business community as distorting the competitive environment. Measures should be adopted to reduce the shadow economy, including identifying and registering businesses and individuals operating outside the tax system, reducing tax evasion, and controlling abuses in employment related taxes.
- *Reducing tax exemptions and fossil fuel subsidies*: Tax exemptions are high in Latvia (7.7 percent of GDP) compared to Estonia (0.9 percent of GDP), and Lithuania (4.2 percent of GDP). There is therefore scope to reduce exemptions to raise revenue.
- *Increasing property tax revenue*: Latvia collects less than the euro area average in property tax revenue (about 0.6 percent vs 1.1 percent of GDP). Therefore, the government could increase revenue by updating cadaster values with market prices, reducing property tax exemptions, and raising the property tax rate. Policies to increase the property tax rate should be matched with options to support low-income households.

**Figure 6. Latvia: Fiscal Balance and Public Debt Scenarios**




Source: IMF staff projections.

Source: IMF staff projections.

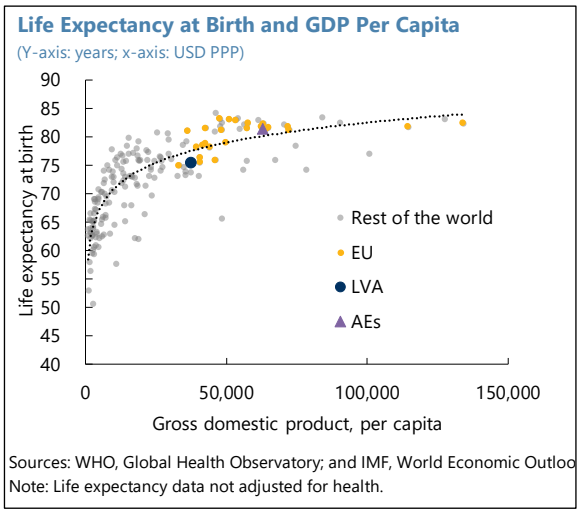
Note: The baseline includes an increase in defense spending from 4 percent of GDP in 2025 to 5 percent of GDP in 2026. Scenario 1 incorporates revenue and expenditure measures of 0.6 percent of GDP per year (2026-2030). Scenario 2 includes higher public spending due to pensions (assuming a constant benefit ratio). Scenario 3 combines scenarios 1 and 2 (higher spending on pensions with revenue and expenditure measures).

n[16] See Sauka and Putniņš, 2024.

- ***Reorienting and rationalizing spending -*** Public spending could be reoriented by reallocating funds away from lower priority spending on goods and services. The government should also consider improving the efficiency of public spending by further improving procurement, eradicating rent-seeking activities, simplifying regulation, reducing bureaucracy, and increasing the efficiency of public administration.

**14. The authorities should also consider other structural measures to increase payments to the pension system and reduce outlays that explicitly cushion the effects of population aging.** The following measures that increase the size of the workforce could improve pension adequacy, while ensuring the pension system's financial sustainability.

- ***Pursuing active labor market policies to increase labor force participation:*** Policies should be adopted to counteract the expected decline in the labor force, including raising human capital by investing in education, promoting access to childcare to support an increase in female labor force participation (Amaglobeli and others 2019), and attracting qualified individuals to work in Latvia.
- ***Incentivizing more pensioners to work:*** Although Latvia has a high number of pensioners in the workforce, policies could be developed to encourage more pensioners to work after retirement (e.g., by enhancing education for older persons) to improve pension adequacy and help to compensate the potential hardships imposed on low-income individuals. Health life expectancy in Latvia is quite low compared to the EU average. Therefore, more investment in the health sector would be required to ensure that older people remain healthy and capable of working at later ages. Healthier aging could help to boost labor supply by extending working lives and enhancing workers productivity (IMF, 2025). Implementing measures to extend health life expectancy are important to make retirement reforms that encourage delayed retirement both sustainable and humane (Centre for Economic Policy Research, 2024).




- ***Linking the retirement ages to future life expectancy gains:*** Linking the statutory pension age to life expectancy is an effective strategy for balancing the sustainability and adequacy of pension systems in the context of aging populations.[17] This policy would also help to slow the inflow of new retirees which could help to attenuate long-term fiscal vulnerabilities (Amaglobeli and others 2020). By making it clear that longer life expectancy requires longer working lives to support the pension system, this approach creates strong incentives to delay retirement in line with increased

[17] Linking the retirement age to the increase in life expectancy would increase the number of contributors, decrease the number of pensioners, and result in a larger accumulated pension capital and higher average pension (Ministry of Welfare of Latvia, 2023).

longevity. Additional reforms could include linking the official and early retirement ages to future life expectancy gains to encourage longer work lives once the retirement age reaches 65.

**15. To enhance adequacy and reduce pension spending, reforms should foster higher productivity growth.** The government should also increase productivity growth and the efficiency with which resources are allocated economy wide to help reduce pension spending. Higher productivity leads to greater economic growth, which in turn increases government revenues from taxes, providing more funds to support public pension systems without needing to raise contribution rates or cut benefits. Latvia can boost productivity growth by enhancing allocative efficiency and firm dynamics (see SIP on "Allocative Efficiency, Firm Dynamics, and Productivity in Latvia").

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# ALLOCATIVE EFFICIENCY, FIRM DYNAMICS, AND PRODUCTIVITY IN LATVIA[1]

*Latvia's economy has faced remarkable challenges to its competitiveness in recent years, with labor productivity growth decelerating during the past two decades. This paper decomposes aggregate labor productivity growth in Latvia and the rest of the Baltic region into contributions by allocative efficiency, firm entry, firm exit and the average productivity growth among continuing firms. The results suggest that the contribution by allocative efficiency declined over time and that by firm entry (net of exit) was limited.*

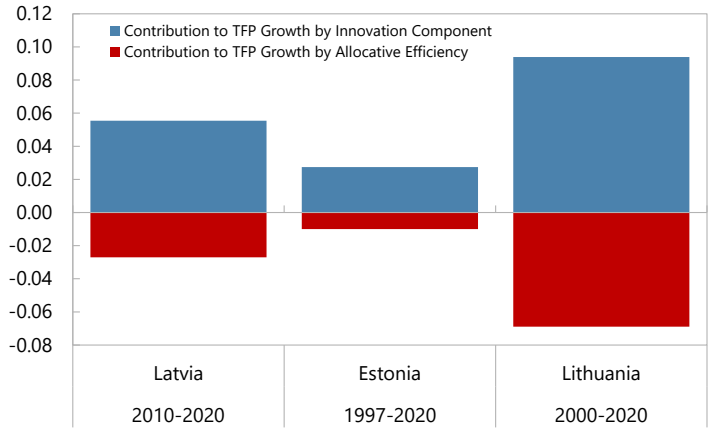
## A. Latvia's Productivity Challenge

**1. Latvia's economy has faced remarkable challenges in recent years.** Russia's war in Ukraine led to supply disruptions and a sharp increase in input costs for firms. Despite some moderation in inflation after the initial shock, the level of input costs has remained high for Latvia and the Baltic region and, in conjunction with slow productivity growth, has led to erosion of competitiveness (Armendariz and others 2024). The income convergence relative to the average of euro area slowed down in Latvia during the past five years and lags that in the other Baltic economies (see Text Figure 1 in 2025 IMF Latvia Staff Report). At the same time, aging and defense are increasing public spending needs that must be financed with greater fiscal revenue, which must come to a certain extent from higher economic growth. Therefore, improving productivity growth is critical to restoring competitiveness and maintaining fiscal space.

**2. In Latvia, labor productivity growth has decelerated during the past two decades.** It lags that of the other Baltic economies (see Text Figure 1 in 2025 IMF Latvia Staff Report). One possible reason why Latvia, like most EU member states, lack fast-growing, high-productivity firms is that capital and labor may not be allocated in an optimal manner. With frictions in capital, labor, and product markets, resources may be misallocated, resulting in a large dispersion of productivity across firms (Hsieh and Klenow 2009, IMF 2024). Previous studies have investigated the role of allocative efficiency using firm-level data (Armendariz and others 2024) and found that resource misallocation dragged down productivity growth in the last two decades (Figure 1). In addition, there is evidence of rising dispersion in the marginal revenue product of capital, especially for Estonia and Lithuania, indicating capital misallocation (Figure 2).

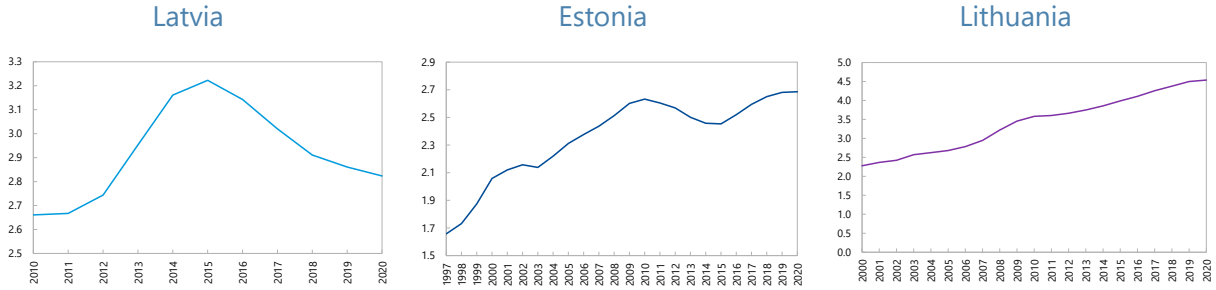
[1] Prepared by Bingjie Hu and Can Ugur. The authors would like to thank Helge Berger, Luis Brandao-Marques, Romain Duval, Vincenzo Guzzo, Kazuko Shirono, and the Latvian Authorities for their helpful comments. They would also like to thank Maryam Vaziri for sharing the sample codes.

**Figure 1. Baltics: TFP Growth Decomposition**
(Change in natural log of TFP, annual average)




Sources: Orbis; Statistics Lithuania; EUKLEMS; AMECO database; and IMF staff calculations.

**Figure 2. Baltics: Variance of Marginal Revenue Product of Capital (MRPK)**
(Natural log, 3-year moving average)




Sources: Orbis; Statistics Lithuania; EUKLEMS; and IMF staff calculations.

**3. Allocative efficiency and business dynamism are important for productivity growth.** For example, as less productive firms exit the market, capital and labor is reallocated towards more productive firms, which helps boost aggregate productivity growth. Reducing resource misallocation and equalizing marginal products of capital and labor across firms could dramatically boost productivity (Hsieh and Klenow 2009). One way to enhance productivity is through within-firm efficiency enhancement such as innovation and management improvements. Another way is the reallocation of resources towards more productive firms (Olley and Pakes 1996). A complementary way of improving allocative efficiency is through the exit and entry of firms, which can also contribute significantly to productivity growth (Box 1).

**4. Government policies can play an important role in resource allocation during recessions.** Crises can have asymmetric effects across sectors. For example, during the Covid crisis, declining sectors such as hospitality and retail faced severe contractions due to lockdowns and reduced

demand, while healthcare and remote-work infrastructure companies experienced expansion. On the other hand, after Russia's invasion of Ukraine in 2022, energy-intensive industries like chemicals and glass manufacturing suffered much more than services. Targeted support for displaced workers can mitigate the social costs of *creative destruction*, but it is important to avoid subsidies to nonviable firms, which may delay the necessary reallocation and lead to productivity stagnation.

### Box 1. Latvia: Firm Dynamism and Productivity Growth

Aggregate productivity growth depends on technological advancements, allocative efficiency (i.e., the movement of resources toward their most productive uses), and business dynamism (entry and exit of firms). The entry of firms into a market improves productivity because new firms increase market competition (Jaimovich and Floetotto, 2008) and because they become more efficient as they grow, compared to incumbents, including through higher productivity gains from R&D and innovation, especially in high-tech sectors (Masso and Tiwari 2021).

Firm-level data on labor productivity show that worsening allocative efficiency accounted for much of the decline in aggregate productivity growth observed in the United States between the late 1990s and the mid-2000s (Decker and others 2017). Market share reallocation among surviving firms plays an important role in driving aggregate productivity growth. For example, in the United States, declining entrepreneurship and reduced labor market reallocation may have slowed down the creation and expansion of high-growth young firms since 2000 (Decker and others 2017). Moreover, firm entry and exit contribute to about 30 to 40 percent of productivity growth in the case of Slovenian manufacturing firms during 1995-2000 (Melitz and Polanec 2015).

Business dynamism has declined in the USA since the 1980s, which is reflected in the decline in firm entry and exit rates, slower job reallocation, and a declining role of young firms in job creation (Decker and others 2017). The pace of job reallocation also declined in the United States in recent decades (Decker and others 2020).

**5. Specific policies aiming to protect vulnerable businesses and households from the impact of the crisis may delay resource reallocation and hamper productivity growth (IMF, 2020).** For instance, within-sector labor reallocation towards more productive firms was unresponsive to productivity shocks in the COVID-19 crisis in the case of Estonia (Merikull and Paulus 2024), due to a generous job retention scheme implemented by the government. The government program had negative effects on aggregate productivity growth which offsets the positive employment effect, as the net gains from the program were limited. However, Pelosi and others (2021) find that zombie firms in Italy had a lower take-up of support measures during the pandemic and higher exit rates than other firms.

**6. In this paper, we present evidence on the contribution of allocative efficiency, and firm entry and exit to labor productivity growth during the past two decades using firm-level data from the Baltic economies.** We find that the contribution of allocative efficiency to labor productivity growth declined over time. The contribution by firm entry is negative as entrants on average have lower labor productivity levels than incumbent firms. The contribution by firm exit is positive, but the contribution by net firm entry has been limited.

## B. The Labor Productivity Growth Decomposition Exercise

**7. Following Decker and others (2017), we decompose labor productivity growth into four components:** 1) sector-level average productivity growth for all continuing firms; 2) an allocative efficiency term, represented by the covariance of firm-level labor productivity and the share of industry employment accounted by the firm; 3) the contribution by firm entry, represented by the product of the employment share of entrants and the difference between the productivity of entrants and that of continuing firms in a given year; 4) the contribution by firm exit, represented by the product of employment share of exiting firms and the difference between the productivity of continuing and that of exiting firms. The change in industry aggregate labor productivity is thus given by:

$$\Delta P_i = \Delta \bar{p}_{i,c} + \Delta cov_c(\theta_f, p_f) + \theta_{E2}(P_{E2} - P_{C2}) + \theta_{X1}(P_{C1} - P_{X1})$$

- $P_i$ is industry aggregate labor productivity, $\bar{p}_i$ is the unweighted average of the log of firm-level labor productivity for firms in industry $i$, $\theta_f$ is the share of industry employment for firm $f$, $p_f$ is the log of labor productivity for firm $f$. The covariance term can be interpreted as a measure of allocative efficiency, or the degree to which higher-productivity firms have access to more resources (Decker and others 2017). Δ indicates year-over-year log differences, $C$ denotes continuing firms which have employment over two years, $E2$ denotes entrants in the second year of the calculation, $X1$ denotes firms that exit after the first year. $C1$ and $C2$ denote continuers in the first and second years, respectively.
- The first term in the expression represents within-firm average productivity growth for continuing firms; the second term represents the change in allocative efficiency among continuing firms; the remaining terms represent the aggregate contribution of net entry. We calculate the decomposition for each industry each year and aggregate the annual components at the country level using sector-level employment shares in the initial year. Then, we present results on the evolution of the contribution of average productivity growth, allocative efficiency, and the contribution of firm entry and exit to labor productivity growth over time.

***Results for Latvian Firms***

**8. Our analysis using the Latvian firm-level administrative data shows that the contribution of allocative efficiency declined and turned negative during 2016-21 (Figure 3).** This is represented by the covariance between employment share and labor productivity level across the firms within industries. The results suggest that firms which are expanding their employment to a greater extent tend to be lower-productivity firms. The labor reallocation towards higher-productivity firms was stagnant during the sample period.

**9. The contribution by firm entry to labor productivity growth is consistently negative throughout the sample periods.** The results suggest that entrant firms tend to have lower labor productivity levels than incumbent firms on average. One explanation is that entrant firms tend to have less capital than incumbent firms and there feature lower value added per unit of labor input (Melitz and Polanec 2015). Firm exit makes a positive contribution to labor productivity growth,

which outweighs the negative contribution by firm entry during 2016-19 in the case of Latvia. However, the productivity growth contribution by net firm entry is very limited.

**Figure 3. Latvia: Decomposition of Labor Productivity Growth for Latvian Firms**


Sources: CSB Latvia; and IMF staff calculations.

Note: Firms with only one employee are dropped from the sample.

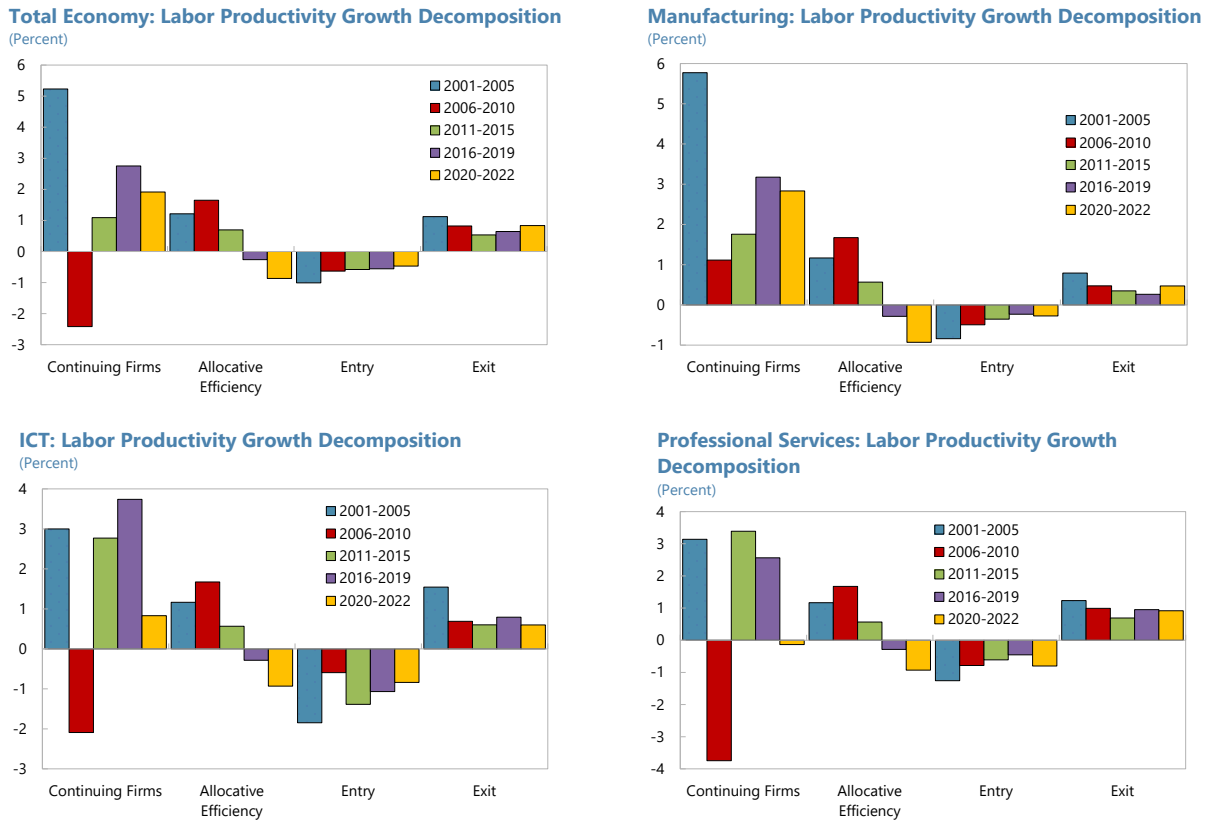
**10. The results obtained using administrative data for the industry level are consistent with the aggregate ones.**[2] For instance, the contribution by allocative efficiency to labor productivity growth is negative for industries such as agriculture, manufacturing, construction, wholesale, and retail trade. The contribution by firm entry is negative throughout the sample period, and that by firm exit is positive and more than compensates for the negative contribution by firm entry during 2016-19 (See Figure 3 for example).

[2] There are some differences between results using administrative data and Orbis data for Latvia. This is not surprising, because the Orbis data for Latvia covers a limited sample of firms. For instance, for most of the industries, we find a positive but declining contribution by allocative efficiency to labor productivity growth over 2012-19. It turned negative in 2020. The negative contribution by firm entry narrows while the positive contribution by firm exit increased throughout most of the sample period. For most industries, the industry-level results using Orbis data are broadly consistent with those for the aggregate economy.

### *How do Latvian Firms Compare to Estonian and Lithuanian Firms?*

**11. The analysis of Estonian and Lithuanian firms using microeconomic data shows that the contribution of allocative efficiency to labor productivity growth also declined over time (Figures 4 and 5).**[3] For Estonia, firms with higher productivity have been growing in terms of employment during 2001-2015. However, allocative efficiency worsened over time after 2010 and the contribution to labor productivity growth turned negative after 2016. For Lithuanian firms, the contribution by allocative efficiency to labor productivity growth declined and turned negative after 2011.

**Figure 4. Estonia: Decomposition of Labor Productivity Growth for Estonian Firms**




Sources: Statistics Estonia; and IMF staff calculations

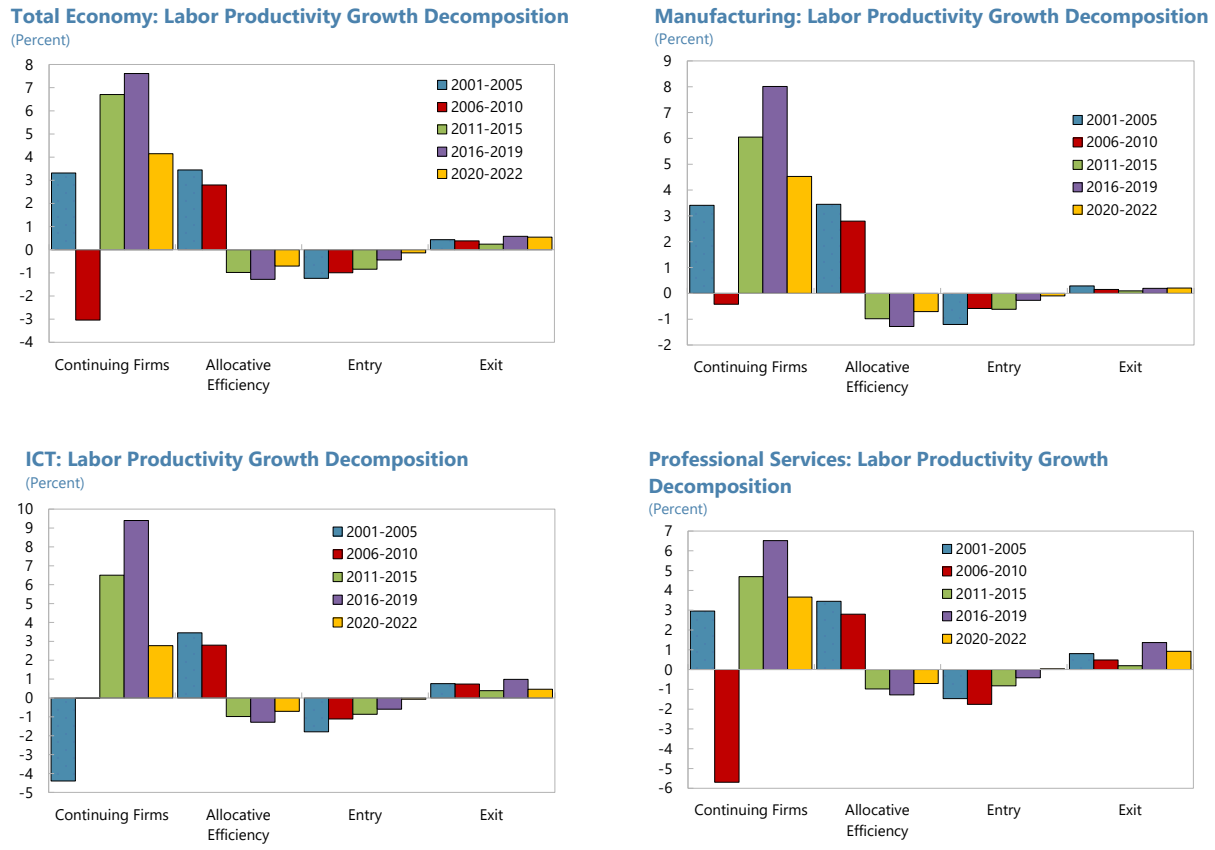
Note: Firms with only one employee are dropped from the sample.

**12. The contribution of firm entry is negative too in both Estonia and Lithuania.** The contribution by firm exit to labor productivity growth is positive throughout the sample period, and

[3] Given limited data availability through Estonia's statistical register data, value added per employee was proxied by firms' turnover per employee. The same exercise was repeated using Orbis data on Estonian firms and results show a similar pattern: the contribution of allocative efficiency declines over most of the sample period and turns negative in recent years; the contribution by firm entry to labor productivity growth is negative and is offset by a positive contribution by firm exit. The findings using Orbis data for Estonia at the industry level are also broadly consistent with those based on statistical register data.

increasingly after 2015. For Lithuanian firms, the contribution by firm exit failed to compensate for the negative contribution by firm entry during 2001-15.

**Figure 5. Lithuania: Decomposition of Labor Productivity Growth for Lithuanian Firms**




Sources: Statistics Lithuania; and IMF staff calculations.

Note: Firms with only one employee are dropped from the sample.

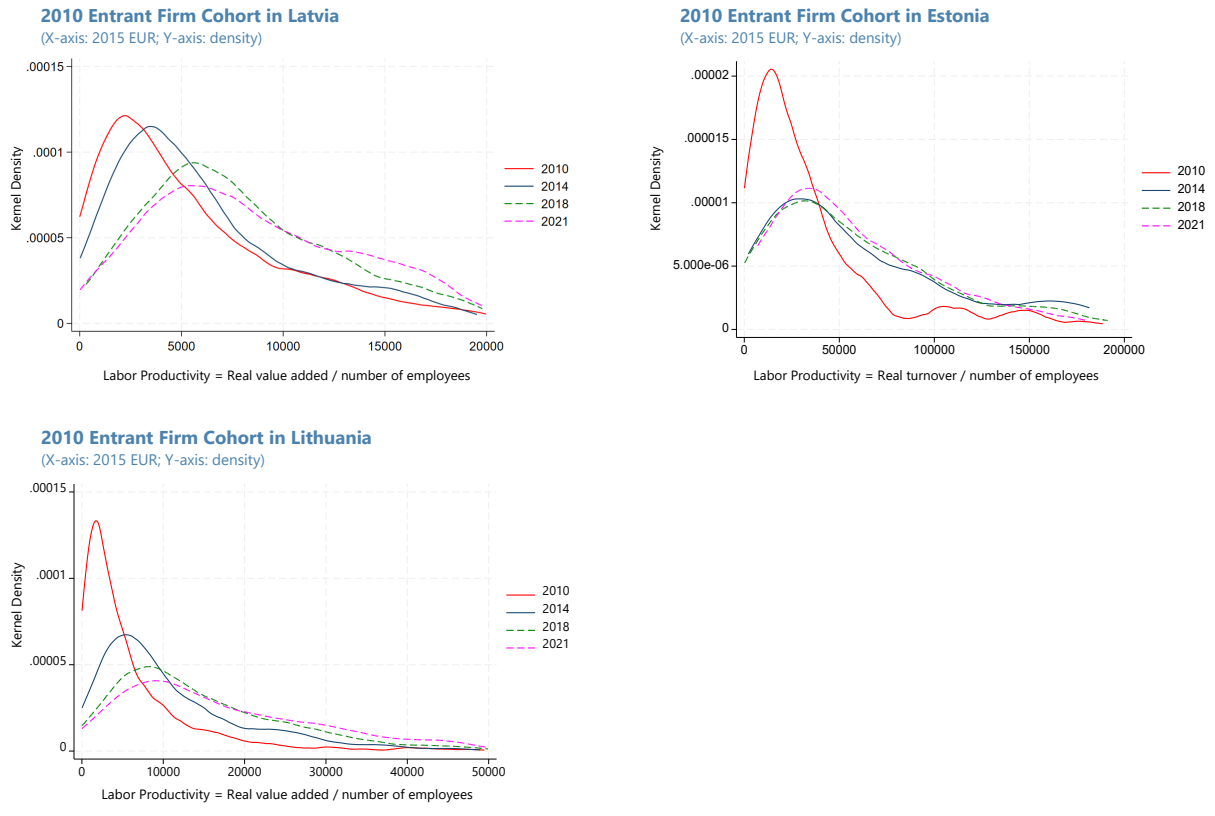
## C. Discussion of the Results

**13. The productivity growth contribution by net firm entry is limited in Latvia, as it is for the other two Baltic economies.** The negative (positive) contribution by firm entry (exit) to labor productivity growth suggests that entering (exiting) firms have lower labor productivity on average than continuing firms. One possible explanation is that entrant firms tend to have less capital than incumbent firms and thus lower labor productivity (Melitz and Polanec, 2015). Another possible explanation for this stylized fact is that incumbent firms have market power that allows them to invest in productivity-enhancing technologies. For instance, De Ridder (2024) shows that incumbent firms with high intangible investment enjoy competitive advantages because their marginal costs of production are lower and fixed costs are higher, which serve as a barrier to entry. Moreover, unlike potential entrant firms, incumbents tend to invest in incremental R&D to increase productivity and profits using existing technologies and processes, while young firms more often invest in radical R&D to replace incumbents, and may have a smaller immediate effect on productivity (Acemoglu

and Cao, 2015). In fact, in Latvia, entrant firms are usually less productive than incumbents possibly because they are smaller, tend to have less capital and experience, and lack the resources and established networks of incumbents. Some of these shortcomings may come from limited access to finance (e.g., because of lack of collateral) or from lack of access to skilled labor.

**14. However, the productivity level of entrant firms improves over time.** Figure 6 illustrates the distribution of labor productivity over time and across all firms that entered the market in year 2010 in Latvia and the other two Baltic economies, respectively. The distribution is skewed toward the low end at the time of entry but gradually shifts towards the center over time, suggesting positive labor productivity growth across the distribution of all firms which entered in 2010. Within ten years, the average labor productivity increased significantly, and productivity levels became more evenly distributed.

**Figure 6. Baltics: Labor Productivity Distribution of Entrant Firms**

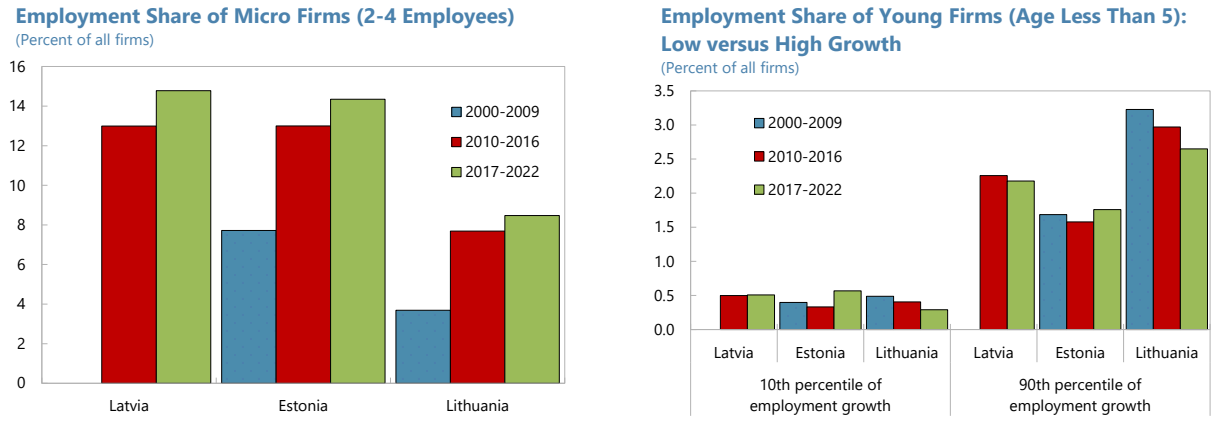



Source: Statistics Estonia; CSB Latvia; Statistics Lithuania; and IMF staff calculations.
Note: Firms with only one employee are dropped from the sample.

**15. The employment share of micro firms also increased over time in Latvia and the other two Baltic economies over the past few decades (Figure 7).** Labor productivity growth slowed down during the same period. If labor is trapped in stagnant micro firms, aggregate growth will be slow. Our results suggest that the fast-growing young firms take up a bigger share of employment (2-3 percent in the case of Latvia) than slow-growing young firms, however, their footprint in the

aggregate economy remains small as compared to more advanced economies such as the United States, where the corresponding employment share is about 6 percent.

**Figure 7. Baltics: Employment Share of Micro Firms and That of Young Firms**




Sources: Orbis; Statistics Lithuania; and IMF staff calculations.

Note: Firms with only one employee are dropped from the sample.

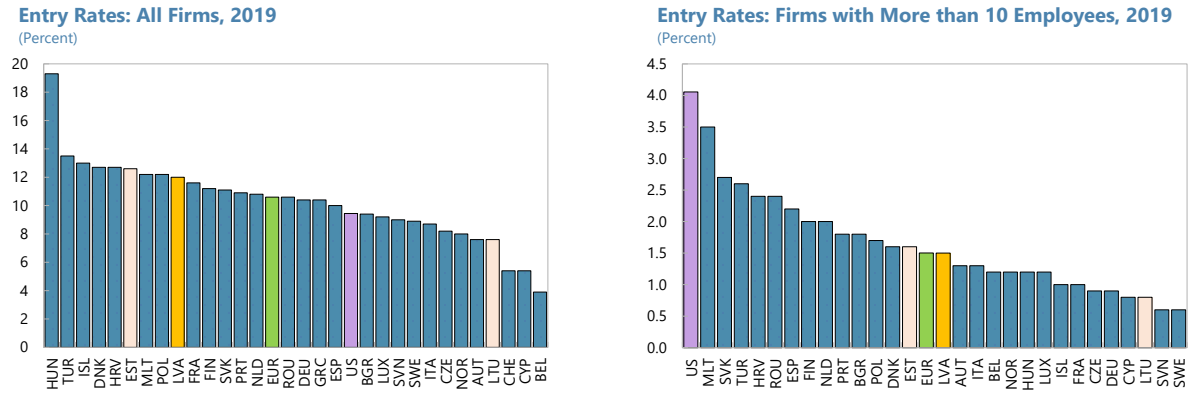
## D. Policy Implications

**16. As the labor productivity growth contribution by net firm entry is small in the Baltic economies, policy makers need to address the constraints faced by young firms to promote productivity growth.** Firm-level data on productivity may help distinguish temporary low productivity of startups from persistent low productivity of nonviable firms. Government programs should target innovative young firms that support long-term economic growth, instead of helping the unproductive small firms survive.

### *Supporting High-Quality Entry*

**17. Firm entry rates in Latvia are higher than the EU average and other advanced economies such as the United States, even though entry rates for firms with more than 10 employees are lower (Figure 8).** This suggests that barriers to entry are not a major obstacle to productivity growth. However, responding to the persistently low productivity growth of young firms, policy makers may implement targeted policies supporting high-quality entry. For instance, targeted subsidies funding R&D intensive startups with high growth potential may help foster productive new firms. High-potential new firms may benefit from policies that help them accelerate learning processes. This may include support for skilled workforce training, and programs facilitating the adoption of new technologies.

**Figure 8. EU: Firm Entry Rates**

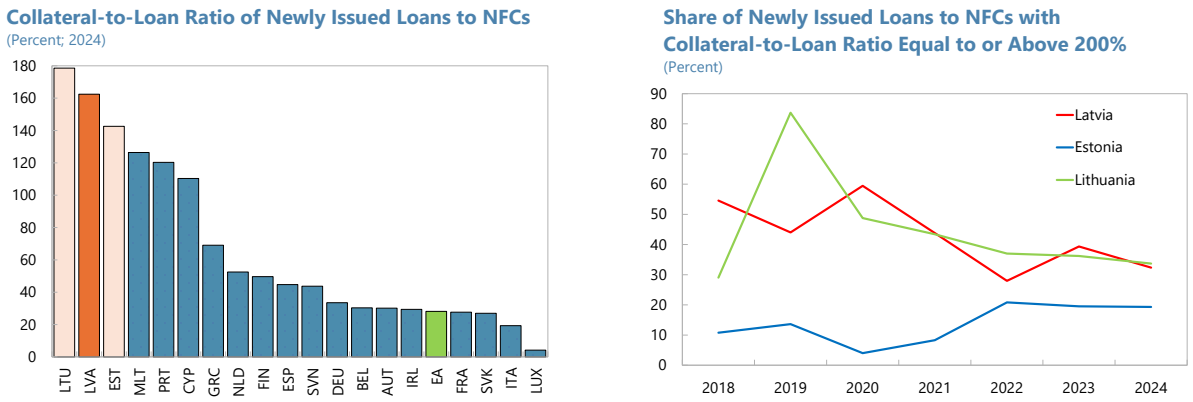



Sources: OECD DynEmp; Business Dynamics Statistics; IMF staff calculations (2024 October Europe Regional Economic Outlook).

### *Facilitating Efficient Exit*

**18. Despite a remarkable decline by 10 percentage points during the past decade, the share of negative-equity firms is still very high in Latvia (about 30 percent as of 2022).** The prevalence of small firms and significant share of those with liabilities that exceed assets may reflect the lack of access to the formal insolvency system in Latvia. The authorities have implemented reforms to the insolvency framework since 2016 to improve the efficiency and access to the insolvency process. In the past few years, asset recovery rate and duration of insolvency process have improved. Such recent progress should help promote the efficiency of resource allocation. Policy makers should continue to improve access to the formal insolvency process for micro and small firms (e.g., by making it cheaper) and establish an early warning mechanism such that the firms in financial distress could take actions to restructure debt at an early stage.

**Figure 9. Euro Area and the Baltics: Collateral-to-Loan Ratios**




Source: Bank of Latvia.

**19. Despite considerable progress made in recent years, asset recovery rates during insolvency processes are relatively low for Latvia and the rest of the Baltic region, as**

**compared to other OECD economies.** Although recovery rates have risen to 67 percent in recent years (a high value compared to other advanced economies), this happens in the context of very high collateralization of loans (160 percent as of 2024). Moreover, because of the high collateral requirements (Figure 9), access to finance by small and medium-sized enterprises (SMEs) and startups is limited. Authorities could take measures to further improve asset recovery to address issues related to overcollateralization.

***Encouraging Firm Dynamism by Reducing the Regulatory Burden***

**20. Although Latvia features more flexibility than the OECD average in economy-wide product market regulation indicators, there are some areas for improvement.**[4] On the one hand, its overall quality of product market regulation reflects a relatively competition-friendly regulatory framework. On the other hand, despite being less burdensome than the OECD average, licensing processes in Latvia could be further streamlined by adopting "silent consent" principles, for example. The authorities could also enhance market competition by reducing the use of retail price controls in certain sectors (e.g., pharmaceuticals) or lower barriers to entry in sectors like legal and notary services (thereby encouraging more net entry of firms).

***Improving Allocative Efficiency of Capital and Labor***

**21. There is both anecdotal and empirical evidence that firms in the Baltic region are constrained by lack of access to finance and skilled labor and that the easing such constraints may help boost productivity growth (e.g., see Foda and others 2024).** For example, a significant percentage of firms in Latvia cite finance availability as a major obstacle, one of the highest rates in the EU.[5] Policymakers could provide targeted grants or subsidies to innovative firms expected to become more productive than incumbent firms, or for activities that enhance productivity, such as investment in R&D.

**22. Improving allocative efficiency and enhancing firm dynamism could support productivity growth in Latvia.** Policies should aim at facilitating access to finance and skilled talent for high-productivity firms. Innovative firms lacking tangible assets that can be used as collateral could benefit from a more developed domestic capital market and a potential savings and investment union in Europe. Migration and active labor market policies may be enhanced to allow faster integration of high-skilled migrant workers. Education policies could also be adopted to improve the availability of STEM programs and provide more incentives for local talents to stay in the domestic economy. Product market regulation could be made even more flexible to allow more competition and provide more incentives for firms to innovate.

[4] See OECD country reports on product market regulations at https://www.oecd.org/en/topics/sub-issues/product-market-regulation.html

[5] A recent survey by Turiba Business School and SKDS reveals that 63 percent of Latvian entrepreneurs rated the business environment as poor in 2024, while 29 percent found it favorable, local media reported. The survey, conducted between November 2024 and January 2025, involved 750 business owners. The most significant concerns include limited financial access, labor shortages, and administrative burdens. Additionally, factors such as government influence on business, legislative stability, tax burden, and municipal policies remain problematic.

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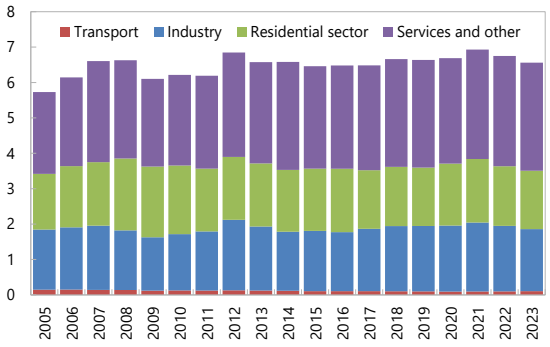
# MODERNIZING LATVIA'S ELECTRICITY SECTOR THROUGH CLOSER EU INTEGRATION[1]

*The desynchronization from Russia's electricity grid provides an opportunity to modernize Latvia's electricity infrastructure. Achieving a greener, more secure, and efficient electricity supply is a key policy goal of Latvia's Energy Strategy 2050. However, pursuing this objective through a push for higher self-sufficiency and autarky would be costly, inefficient, and ultimately socially undesirable. A more effective approach involves enhancing security and stability through greater integration with neighboring and EU electricity grids, alongside increased risk sharing. This would lead to cheaper, less volatile electricity prices for households and businesses. To fully realize the benefits of a unified electricity market, Latvia must strengthen collaboration at both the regional and EU levels, fostering a more resilient and interconnected electricity infrastructure.*

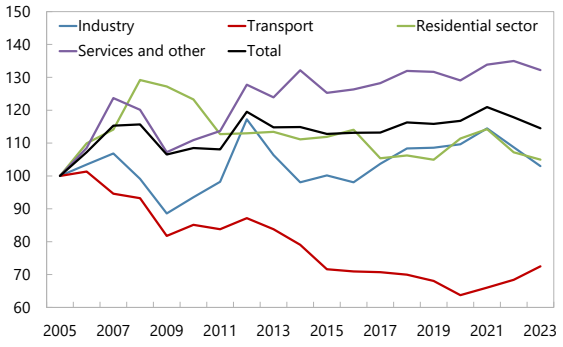
## A. Background: Electricity Demand, Supply, and Prices

**1. Most of Latvia's electricity is used in industry and services.** Latvia's electricity consumption has increased only modestly since 2005, driven by two main factors: income growth, which has positively impacted demand, and improvements in energy efficiency, which have been a drag for electricity consumption. The services sector has emerged as a key driver of this growth, reflecting its expanding role in the economy and the corresponding rise in its electricity needs (Figure 1). Conversely, the transport sector has seen a decline in electricity usage, albeit from an already low base. Despite these trends, Latvia's per capita electricity consumption remains low, at 3.7 MWh annually, compared with an EU average of 5.7 MWh. This suggests significant potential for growth in electricity consumption going forward, as the economy continues to catch up with more advanced European peers, and efforts to green the economy and enhance electrification progress.

**Figure 1. Latvia: Electricity Consumption**




Sources: IEA; and IMF staff calculations.



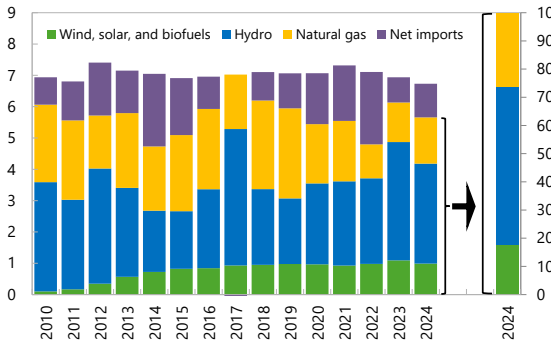

Sources: IEA; and IMF staff calculations.

[1] Prepared by Gianluigi Ferrucci and Can Ugur. The authors would like to thank Helge Berger, Luis Brandao-Marques, and the Latvian Authorities for their helpful comments.

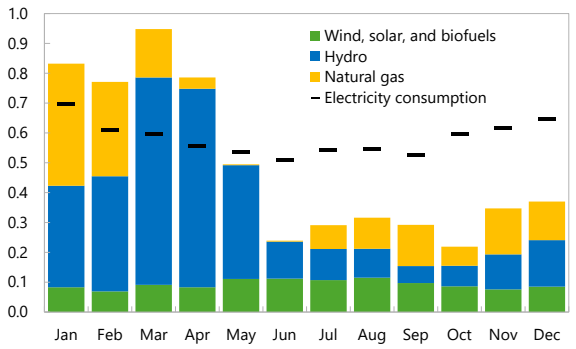
**2. Latvia's electricity consumption is mainly covered by local generation, with a high share of renewables in the energy mix.** Hydroelectric power plays a leading role, accounting for about 56 percent of electricity generation in 2024 (Figure 2). This is supplemented by a growing contribution from other renewables—wind, solar, and biomass—whose share in electricity production has increased significantly since 2010. Natural gas accounted for about a quarter of electricity production in 2024 and serves as a balancing source. Despite the high share of local generation capacity, Latvia still experiences a production shortfall of approximately 1 TWh annually, covered through imports from neighboring countries.

**3. Latvia's electricity mix affects energy security and system balance.** The country's green energy mix bolsters energy security by easing dependence on imported fossil fuels and supports the green transition by lowering greenhouse gas emissions. However, high reliance on renewables requires balancing mechanisms to manage the fluctuations in power supply from these sources. Notably, Latvia's hydro generation is primarily of the run-of-river type (i.e., the river flow produces electricity without large reservoirs for water storage), which results in high seasonal variability. Electricity generation peaks during the spring months but falls well below monthly consumption levels for the rest of the year (Figure 2). The volatility of hydro generation is also high over the years, depending on the variability of annual precipitations and snow melting. While other renewable sources provide relatively stable output over time, their contribution is insufficient to fill the gap with demand, leaving natural gas co-generation and electricity imports as key balancing sources to ensure stable power supply.

**Figure 2. Latvia: Electricity Generation**




Sources: IEA; and IMF staff calculations.

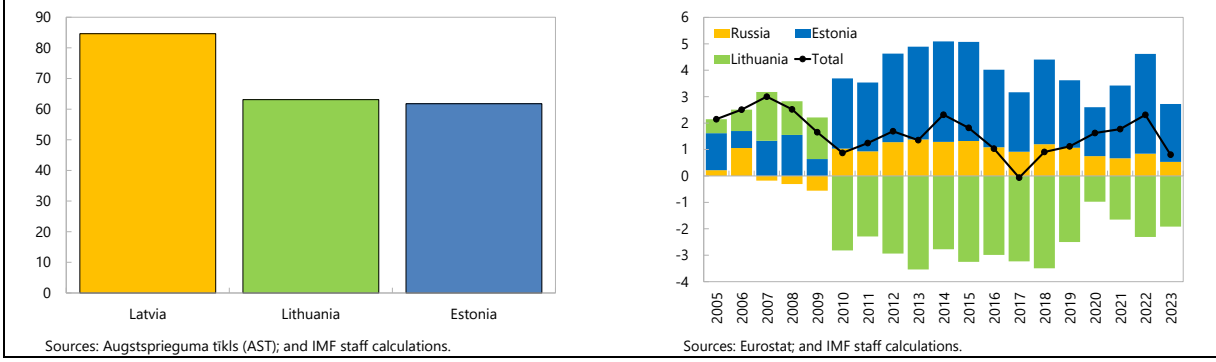



Sources: Eurostat; and Haver Analytics.

**4. Integrating the Baltic 'electricity island' with the EU is key to reap the full benefits of a further expansion of renewable energy sources (RES) capacity.** Latvia is a modest net importer of electricity, producing about 85 percent of its electricity needs domestically, relative to 60 percent in Lithuania and Estonia (Figure 3). Despite the high share of domestic production, the scale of bilateral net electricity flows highlights the critical role of electricity trade with neighboring countries as a stabilizing mechanism within the system. In the coming years, Latvia aims to further expand RES capacity, particularly through the development of inshore wind farms, where it holds a competitive

advantage. Reaping the full benefits of further RES expansion requires significant grid upgrades and further integration of its electricity market into the EU.

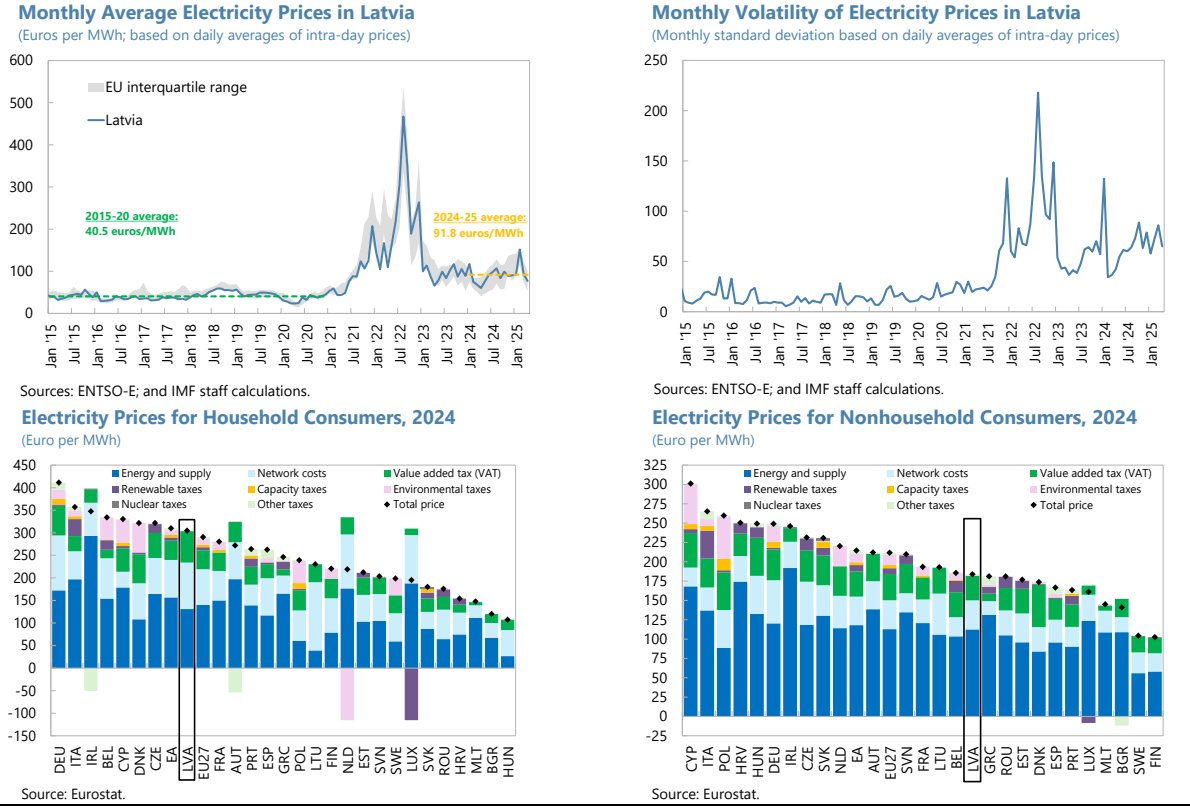
**Figure 3. Latvia: Electricity Consumption Covered by Local Generation and Net Imports**




Sources: Augstsprieguma tīkls (AST); and IMF staff calculations.

Sources: Eurostat; and IMF staff calculations.

**Figure 4. Latvia: Electricity Prices and Volatility**




Sources: ENTSO-E; and IMF staff calculations.

Sources: ENTSO-E; and IMF staff calculations.

Source: Eurostat.

Source: Eurostat.

**5. Electricity prices and price volatility in Latvia remain above pre-pandemic levels.** In 2022, electricity prices surged to as much as ten times the pre-shock average (Figure 4). Although they have since receded, they remain well above pre-pandemic levels. Additionally, price volatility over time and dispersion across countries have risen sharply and have not yet returned to pre-crisis level. Currently, Latvia's electricity prices are close to the EU average. The final electricity bill for household

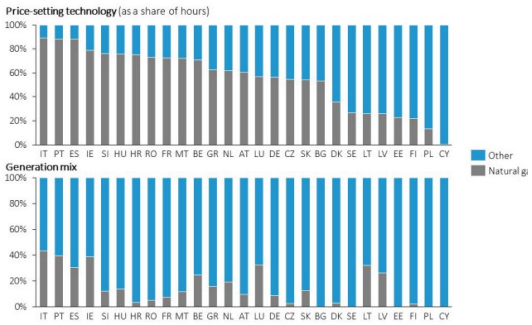
and non-household customers consists of three main components: the basic energy cost (approximately 50-60 percent of total); transmission costs (20-30 percent); and taxes (20 percent).

**6. Marginal gas prices have a significant impact on electricity prices in Latvia and the EU.** This is because EU electricity prices are largely based on the marginal spot pricing mechanism, with natural gas prices driving electricity prices for a larger share of time than their share in the power mix. For instance, natural gas was the price-setting technology 63 percent of the time in 2022 in the EU, despite accounting for only 20 percent of the electricity mix (Figure 5). The strong correlation implies that when gas prices are low, electricity prices tend to be equally low, but when gas prices rise sharply, as occurred during the 2022-23 shock, electricity prices follow suit. Gas price volatility has now largely subsided—but not for electricity prices, which have remained high and volatile, pointing to lingering effects from market fragmentation.

**Figure 5. EU27: Electricity Price-Setting Technology**

**Price-Setting Technology per Member State and Their Generation Mix, 2022**

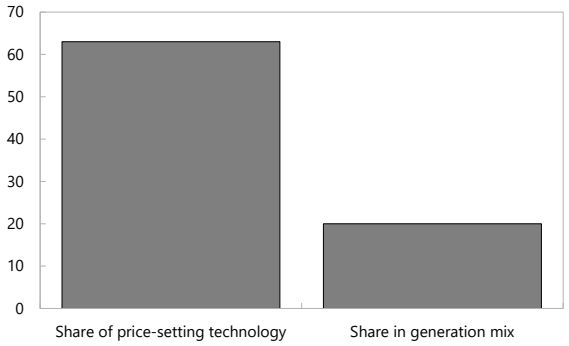
(Percent)




Sources: European Commission, 2024; European Commission, JRC, 2023.

**Natural Gas as Price-Setting Technology**

(Percent; average of EU27 countries)

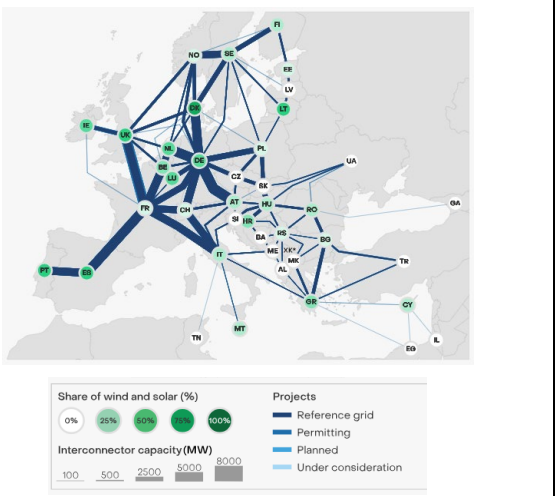



Sources: European Commission, 2024; European Commission, JRC, 2023.

## B. Benefits of a More Integrated Electricity Market

**7. Substantial interconnection capacity has been built across Western Europe, but significant gaps remain within the system.** Despite the EU's efforts to develop several regional electricity trading markets and interconnectors during the recent crisis, the overall system remains fragmented amid still limited network integration. The effects of this fragmentation become particularly acute when the system experiences an unexpected shock. The inability to efficiently share risks across interconnected markets can exacerbate the impact of idiosyncratic shocks, highlighting the need for further integration and development of a more interconnected electricity network.

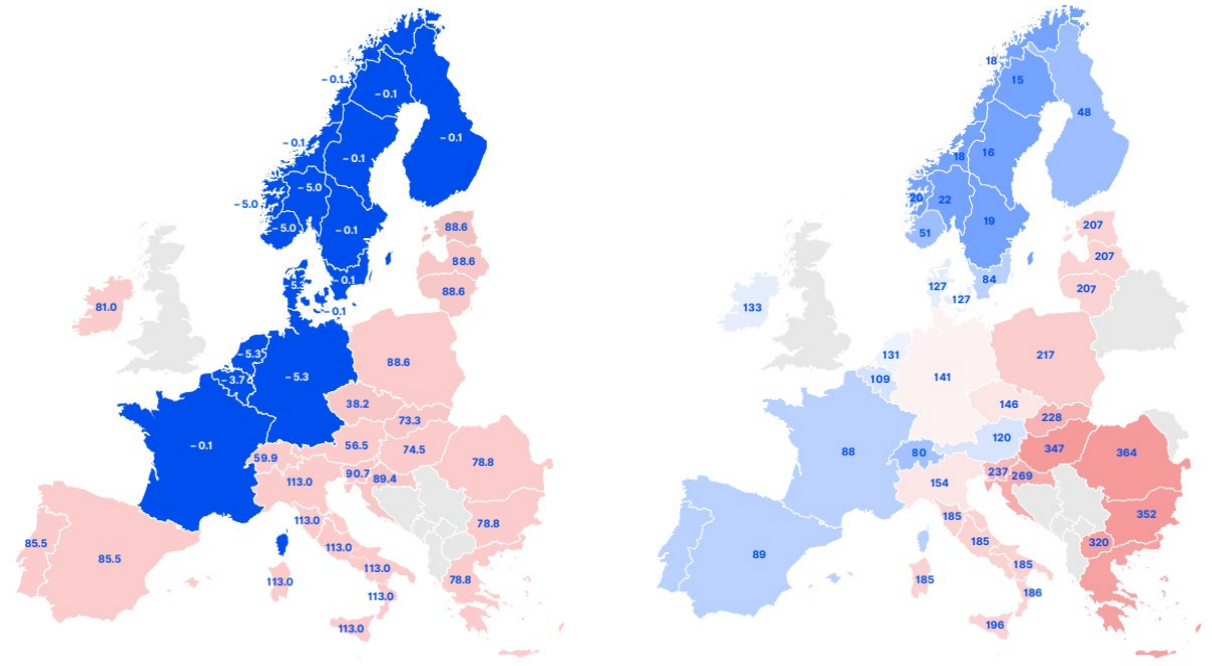
**Interconnection Capacity in Europe**




Source: Ember based on ENTSO-E data.

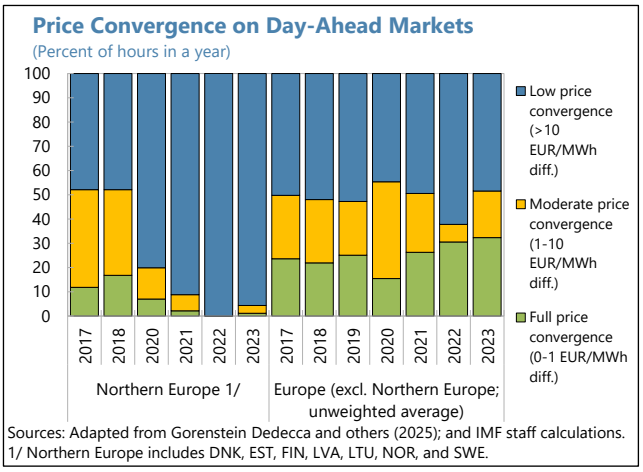
**8. The lack of market integration can result in significant price differences across neighboring countries.** For instance, in September 2023, starkly contrasting pricing was observed in adjacent bidding zones, with negative prices occurring in one area and positive prices in another due to bottlenecks that prevented exports (Figure 6). Similarly, in the summer of 2024, large price gaps emerged between Eastern and Western Europe, driven by a surge in demand from Ukraine. These examples illustrate how insufficient market connectivity leads to inefficiencies and divergence in electricity pricing and highlight the need for more integration within the EU electricity market.

**Figure 6. Europe: Fragmentation in the Electricity Market**



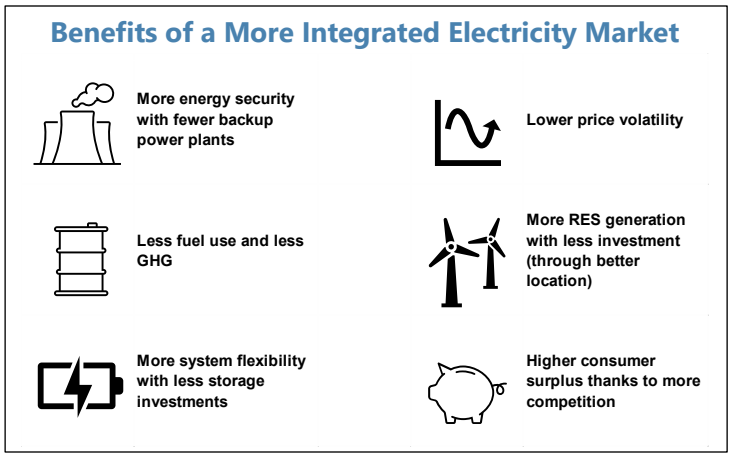

Source: ACER calculations based on ENTSO-E Transparency Platform data.

**9. Market fragmentation can arise not only during crisis periods but also from local variations in electricity prices.** Price differences exist due to cross-zonal congestion, both within certain regions and especially across regions. For instance, in the Northern Europe pricing zone, which includes Latvia, instances of low-price convergence—defined as a price difference of more than 10 EUR/MWh between two adjacent zones within a bidding region—have escalated from approximately 50 percent of the time in 2017 to about 95 percent of the time in 2023. This trend underscores the need for closer market integration, which would enhance price correlation across bidding zones by enabling




Sources: Adapted from Gorenstein Dedecca and others (2025); and IMF staff calculations.
1/ Northern Europe includes DNK, EST, FIN, LVA, LTU, NOR, and SWE.

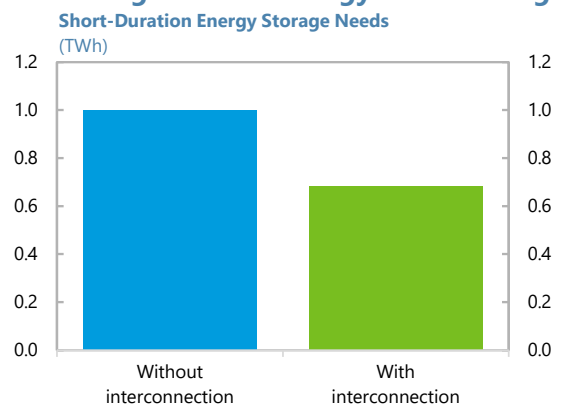
arbitrage opportunities between markets. Such integration could help alleviate the inefficiencies associated with fragmented pricing structures and promote a more cohesive energy market.



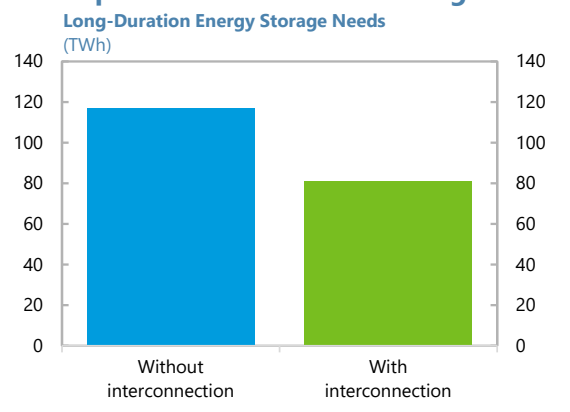

**10. Lowering electricity prices, enhancing energy security, and decarbonizing the economy can be more effectively and efficiently achieved through closer integration of Latvia's electricity grid with the EU.** An IMF (2025) study reviews the key benefits of greater integration of EU electricity markets. Drawing from the literature, it discusses how significant benefits can be secured from optimizing the design and operation of several national electricity systems jointly, rather than individually. Benefits stem mainly from risk sharing when demand and supply are not aligned across regions. They become larger the more countries move toward electrification and renewable-based power. Benefits include reduced need for expensive back-up capacity, less price volatility, less fossil-fuel burn, more RES generation with less investment through harnessing regional renewable advantages, more system flexibility with less storage investment, and higher consumer surplus.

**11. The direct benefits of a more integrated electricity market in Latvia and the EU could be substantial.** For instance, studies show that greater integration even within subsets of countries could reduce the needed dispatchable generation capacity to meet peak demand by nearly 20 percent and storage capacity by 30 percent (Figure 7), compared to a baseline scenario in which integration remains unchanged (Zachmann and others 2024; Roth and Schill, 2023). Additionally, Dolphin and others (2024) show that a significant increase in cross-border electricity trade could lead to a notable boost in annual EU GDP (by around 0.1 percent in 2030).

**Figure 7. EU: Energy Market Integration and Required Investments in Storage**




Source: Bruegel 2024 based on Roth and Schill 2023.

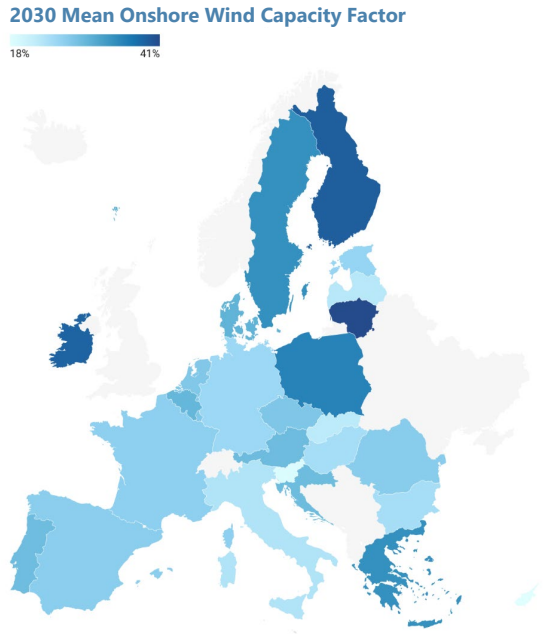



Source: Bruegel 2024 based on Roth and Schill 2023.

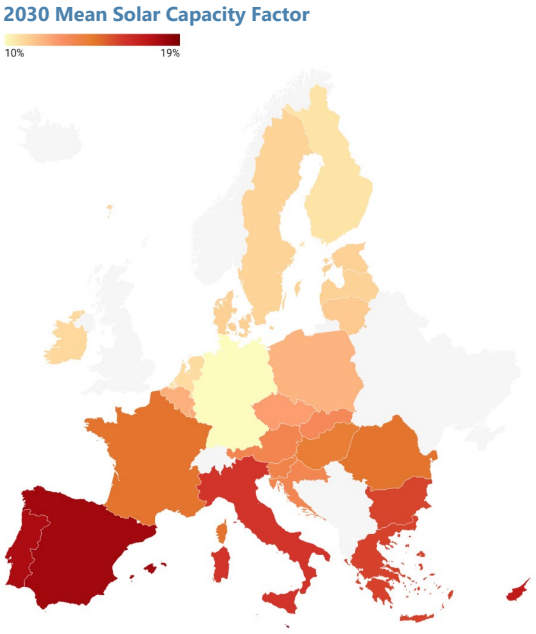
**12. The transition to a predominantly renewable and low-carbon energy system, along with a more fully integrated EU energy market, would significantly lower electricity costs and price volatility, while electricity trade would support resilience to shocks.** Lower energy costs and greater stability of the integrated system are also likely to foster investor confidence in the EU and make investments in innovative technologies more attractive. This should stimulate corporate investment not only in energy intensive industries, but also in key innovative sectors such as artificial intelligence, quantum computing, and digital service industries. All these technologies are underpinned by data centers with significant electricity demand that makes the availability of low-cost electricity a key consideration of investment decisions. In this way, a more integrated electricity grid with lower, less volatile electricity prices would contribute to firm dynamism, strengthening productivity growth.[2]

**13. A more integrated energy market will deliver benefits in terms of the average level and volatility of energy prices**, as renewable energy sources gain further weight in power generation (see Figure 8 for differences in renewable potential across the EU) and the electrification of end uses (e.g., electric vehicles and heating) continues to make progress.

**Figure 8. EU: Renewable Capacity Factors**



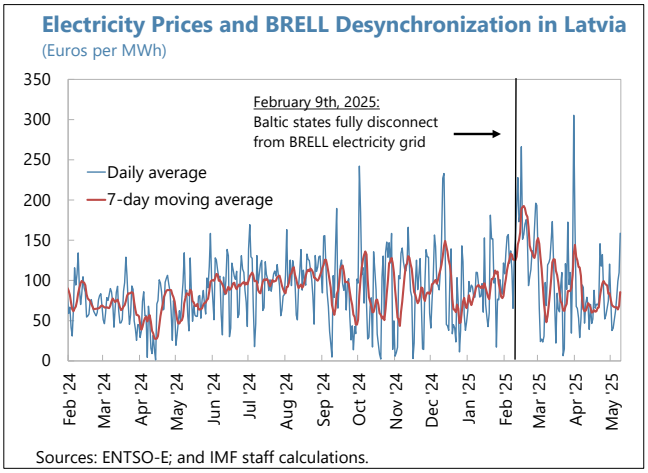

Source: Zachmann et al. (Bruegel, 2024).
Note: "Capacity factor refers to electricity produced at realistic wind or solar conditions, relative to the amount produced if the plants would in each hour have operated at their peak capacity. The figures are based on the assumptions for installed renewable capacities in 2030 reports to ENTSO-E.




Source: Zachmann et al. (Bruegel, 2024).
Note: "Capacity factor refers to electricity produced at realistic wind or solar conditions, relative to the amount produced if the plants would in each hour have operated at their peak capacity. The figures are based on the assumptions for installed renewable capacities in 2030 reports to ENTSO-E.

[2] See the SIP on "Allocative Efficiency, Firm Dynamics, and Productivity in Latvia" in this bundle.

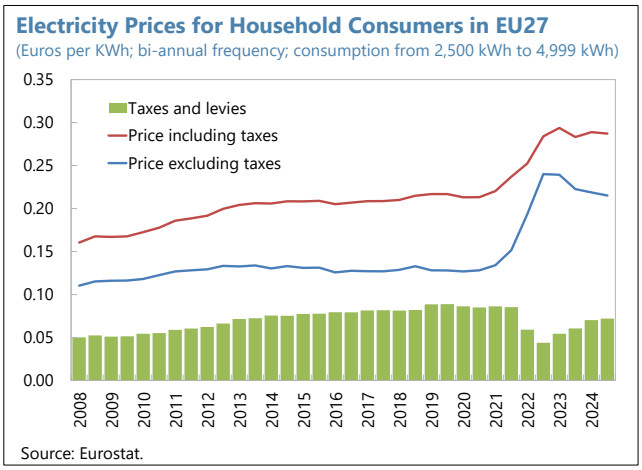
**14. The recent synchronization with the Continental Europe Synchronous Area (CESA) electricity grid is an opportunity to modernize Latvia's electricity infrastructure.** On February 8, 2025, the three Baltic countries disconnected their power grids from the Russia, Belarus, Estonia, Latvia, and Lithuania grid (BRELL). The transition has resulted in higher electricity prices in the short term. Closer integration with the region and the EU would support higher risk sharing, leading to higher energy security, lower volatility, and lower prices in the long run.




## C. Macroeconomic Costs of High Electricity Prices

**15. High and volatile electricity prices have macroeconomic costs:**

- **Competitiveness:** high electricity price disparity puts energy-intensive industries at a disadvantage in export markets.
- **Investment:** high electricity price volatility hurts investment.
- **Consumption:** high energy costs and high price volatility reduce household consumption.
- **Taxes:** high electricity prices are associated with lower excise tax revenue.




**16. High electricity prices may affect manufacturing employment in Latvia.** This hypothesis can be tested with a simple econometric exercise, which relies on estimating an equation relating firm-level employment to firm size, as captured by fixed assets, a set of firm-level controls, and the electricity price level (or volatility):

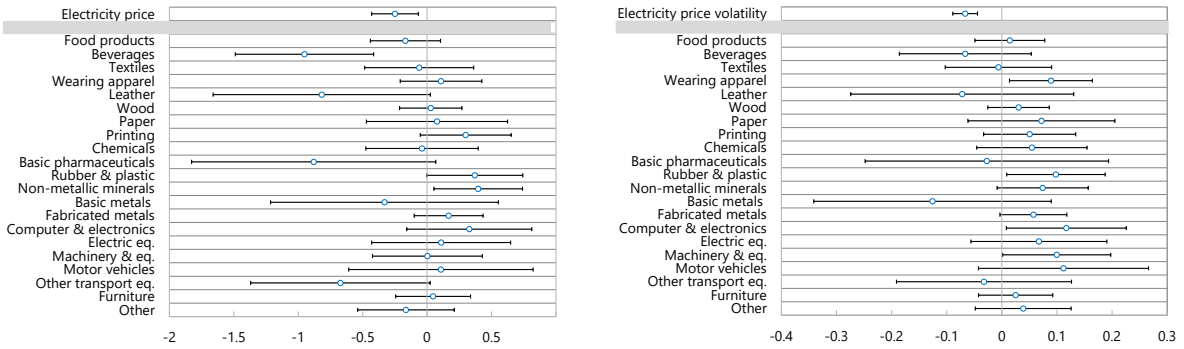
$$emp_{it} = \alpha_i + \mu_1 Y_{it} + \mu_2 fixed\_assets_{it} + \xi X_{it} + \varepsilon_{it},$$

where $Y_{it}$ is the electricity price level (*price*$_{it}$) or its volatility (*p_vol*$_{it}$) depending on the model specification, *fixed_assets*$_{it}$ denotes the firm's tangible assets, used as a proxy for firm size, and $X_{it}$ a set of firm-specific controls. The regression specification is standard and includes sector (2-digit NACE codes), year, and year*sector fixed effects. The analysis focuses on Latvian manufacturing firms, excluding small firms (with less than two employees) and uses Orbis data for 2010-2022. The sample includes 49,561 observations. Electricity prices (from Eurostat) exclude taxes and pertain to

the category "Consumption from 500 MWh to 1999 MWh – band IC". Electricity price volatility is determined using intraday prices (from ENTSO-E) recorded every 15 minutes (96 data points per day) to compute daily averages. From these daily averages, the annual standard deviation is determined over approximately 365 data points.

**17. The results show that higher electricity price levels and volatility reduce firm-level employment.** For electricity price levels, we find an aggregate elasticity of -0.25: a 10 percent increase in electricity prices reduces employment in manufacturing by 2.5 percent (Figure 9). The impact is higher in specific industries: beverages, leather, pharmaceutical, transport equipment. For price volatility, we find an aggregate elasticity of -0.066: a 10 percent increase in electricity price volatility reduces employment in manufacturing by 0.66 percent. Also in this case, the impact is heterogeneous across industries. An important caveat is that job losses in manufacturing may be offset by job creation in less electricity-intensive sectors, such as services. However, the effects can become long-lasting in the presence of labor market frictions.

**Figure 9. Latvia: Firm-Level Data Estimation for Electricity Price Level and Volatility**




Sources: Orbis; Eurostat; and IMF staff calculations.

Sources: Orbis; ENTSO-E; and IMF staff calculations.

## D. Conclusions

**18. Latvia should improve interconnections to other European power grids.** To unlock the full benefits of a unified energy market, Latvia must implement a coordinated strategy to strengthen collaboration at the EU and regional levels and make progress at the national level. A closer integration of Europe's electricity markets could significantly increase economic activity: estimates range from 0.5 to 3.5 percent level increase in GDP, with the average EU country experiencing a 1.5 percent increase in GDP (Arnold and others 2025). Key actions include:

- **closer integration into Europe's power grid:** coordinate policies and investments at the EU and national levels to fully integrate Latvia into Europe's power grid;
- **resource pooling:** the authorities should consider pooling resources with neighboring countries to develop grid infrastructures that provide shared benefits across borders; and
- **streamline domestic permitting processes** to reduce the time and costs associated with building interconnections and more renewables.

# Annex I. Regression Tables

## Table 1. Latvia: Electricity Price Level Effect on Employment (Aggregate)

| VARIABLES | (1) Model 1 | (2) Model 2 | (3) Model 3 | (4) Model 4 |
|---|---|---|---|---|
| Electricity price level | -0.249*** | -0.249*** | -0.0808 | -0.724*** |
| | (0.0925) | (0.0925) | (0.104) | (0.0959) |
| Fixed tangible assets | 0.313*** | 0.313*** | 0.313*** | 0.313*** |
| | (0.00157) | (0.00157) | (0.00157) | (0.00157) |
| Constant | -1.439*** | -1.439*** | -1.065*** | -2.493*** |
| | (0.178) | (0.178) | (0.235) | (0.186) |
| Observations | 49,551 | 49,551 | 49,551 | 49,551 |
| R-squared | 0.477 | 0.477 | 0.477 | 0.477 |
| Year FE | YES | YES | NO | NO |
| Sector FE | YES | NO | YES | NO |
| Year-Sector FE | YES | YES | YES | YES |

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

## Table 2. Latvia: Electricity Price Volatility Effect on Employment (Aggregate)

| VARIABLES | (1) Model 1 | (2) Model 2 | (3) Model 3 | (4) Model 4 |
|---|---|---|---|---|
| Electricity price volatility | -0.0665*** | -0.0665*** | -0.0810*** | -0.185*** |
| | (0.0223) | (0.0223) | (0.0235) | (0.0231) |
| Fixed tangible assets | 0.314*** | 0.314*** | 0.314*** | 0.314*** |
| | (0.00186) | (0.00186) | (0.00186) | (0.00186) |
| Constant | -0.732*** | -0.732*** | -0.699*** | -0.465*** |
| | (0.0853) | (0.0853) | (0.0688) | (0.0869) |
| Observations | 35,073 | 35,073 | 35,073 | 35,073 |
| R-squared | 0.475 | 0.475 | 0.475 | 0.475 |
| Year FE | YES | YES | NO | NO |
| Sector FE | YES | NO | YES | NO |
| Year-Sector FE | YES | YES | YES | YES |

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

## Table 3. Latvia: Electricity Price Level Effect on Employment (Sectoral)

| VARIABLES | (1) Model 1 | (2) Model 2 | (3) Model 3 | (4) Model 4 |
|---|---|---|---|---|
| Electricity price level | | | | |
| Food products | -0.168 | -0.192*** | -0.249*** | -0.249*** |
| | (0.139) | (0.0386) | (0.0925) | (0.0925) |
| Beverages | -0.952*** | 0.209*** | -1.033*** | 0.153 |
| | (0.274) | (0.0635) | (0.253) | (0.126) |
| Textiles | -0.0614 | -0.148** | -0.142 | -0.205* |
| | (0.216) | (0.0598) | (0.190) | (0.124) |
| Wearing apparel | 0.108 | -0.526*** | 0.0273 | -0.582*** |
| | (0.162) | (0.0472) | (0.124) | (0.119) |
| Leather | -0.818* | -0.0497 | -0.899** | -0.106 |
| | (0.430) | (0.126) | (0.418) | (0.166) |
| Wood | 0.0283 | -0.0863** | -0.0525 | -0.143 |
| | (0.124) | (0.0341) | (0.0671) | (0.114) |
| Paper | 0.0767 | -0.110 | -0.00407 | -0.167 |
| | (0.279) | (0.0818) | (0.259) | (0.136) |
| Printing | 0.300* | 0.00598 | 0.219 | -0.0506 |
| | (0.180) | (0.0531) | (0.147) | (0.121) |
| Chemicals | -0.0395 | -0.0362 | -0.120 | -0.0928 |
| | (0.222) | (0.0614) | (0.196) | (0.125) |
| Basic pharmaceuticals | -0.880* | -0.0235 | -0.961** | -0.0801 |
| | (0.484) | (0.132) | (0.473) | (0.171) |
| Rubber & plastic | 0.370* | -0.132** | 0.290* | -0.189 |
| | (0.190) | (0.0547) | (0.159) | (0.122) |
| Non-metallic minerals | 0.397** | -0.0556 | 0.316** | -0.112 |
| | (0.175) | (0.0505) | (0.141) | (0.120) |
| Basic metals | -0.331 | -0.0802 | -0.411 | -0.137 |
| | (0.451) | (0.126) | (0.439) | (0.166) |
| Fabricated metals | 0.167 | -0.0854** | 0.0862 | -0.142 |
| | (0.136) | (0.0367) | (0.0884) | (0.115) |
| Computer & electronics | 0.327 | -0.166** | 0.247 | -0.222* |
| | (0.248) | (0.0671) | (0.225) | (0.128) |
| Electric eq. | 0.109 | -0.255*** | 0.0284 | -0.311** |
| | (0.275) | (0.0741) | (0.255) | (0.132) |
| Machinery & eq. | 0.00253 | -0.122** | -0.0783 | -0.178 |
| | (0.218) | (0.0590) | (0.191) | (0.124) |
| Motor vehicles | 0.108 | -0.112 | 0.0268 | -0.169 |
| | (0.365) | (0.0968) | (0.350) | (0.146) |
| Other transport eq. | -0.673* | -0.0674 | -0.754** | -0.124 |
| | (0.355) | (0.0882) | (0.340) | (0.140) |
| Furniture | 0.0469 | -0.0413 | -0.0339 | -0.0979 |
| | (0.148) | (0.0407) | (0.106) | (0.116) |
| Other | -0.164 | 0.00292 | -0.245 | -0.0537 |
| | (0.191) | (0.0505) | (0.161) | (0.120) |
| Fixed tangible assets | 0.313*** | 0.313*** | 0.313*** | 0.313*** |
| | (0.00157) | (0.00157) | (0.00157) | (0.00157) |
| Constant | -1.260*** | -1.313*** | -1.439*** | -1.439*** |
| | (0.291) | (0.0967) | (0.178) | (0.178) |
| Observations | 49,551 | 49,551 | 49,551 | 49,551 |
| R-squared | 0.477 | 0.477 | 0.477 | 0.477 |
| Year FE | YES | YES | NO | NO |
| Sector FE | YES | NO | YES | NO |
| Year-Sector FE | YES | YES | YES | YES |

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

## Table 4. Latvia: Electricity Price Volatility Effect on Employment (Sectoral)

| VARIABLES | (1) Model 1 | (2) Model 2 | (3) Model 3 | (4) Model 4 |
|---|---|---|---|---|
| Electricity price volatility | | | | |
| Food products | 0.0146 | 0.0627*** | -0.0665*** | -0.0665*** |
| | (0.0324) | (0.0125) | (0.0223) | (0.0223) |
| Beverages | -0.0663 | -0.0686*** | -0.147*** | -0.198*** |
| | (0.0610) | (0.0206) | (0.0564) | (0.0252) |
| Textiles | -0.00626 | 0.0483** | -0.0873** | -0.0808*** |
| | (0.0493) | (0.0194) | (0.0433) | (0.0242) |
| Wearing apparel | 0.0891** | 0.172*** | 0.00809 | 0.0426** |
| | (0.0384) | (0.0153) | (0.0304) | (0.0211) |
| Leather | -0.0719 | 0.0164 | -0.153 | -0.113*** |
| | (0.103) | (0.0408) | (0.101) | (0.0433) |
| Wood | 0.0303 | 0.0280** | -0.0507*** | -0.101*** |
| | (0.0284) | (0.0111) | (0.0161) | (0.0183) |
| Paper | 0.0719 | 0.0357 | -0.00910 | -0.0934*** |
| | (0.0680) | (0.0265) | (0.0638) | (0.0302) |
| Printing | 0.0505 | -0.00201 | -0.0305 | -0.131*** |
| | (0.0426) | (0.0172) | (0.0356) | (0.0225) |
| Chemicals | 0.0545 | 0.0116 | -0.0265 | -0.118*** |
| | (0.0510) | (0.0199) | (0.0453) | (0.0247) |
| Basic pharmaceuticals | -0.0272 | 0.00736 | -0.108 | -0.122*** |
| | (0.113) | (0.0429) | (0.110) | (0.0453) |
| Rubber & plastic | 0.0981** | 0.0429** | 0.0171 | -0.0863*** |
| | (0.0455) | (0.0177) | (0.0389) | (0.0229) |
| Non-metallic minerals | 0.0740* | 0.0181 | -0.00706 | -0.111*** |
| | (0.0422) | (0.0164) | (0.0351) | (0.0219) |
| Basic metals | -0.126 | 0.0259 | -0.207* | -0.103** |
| | (0.110) | (0.0408) | (0.107) | (0.0433) |
| Fabricated metals | 0.0574* | 0.0278** | -0.0237 | -0.101*** |
| | (0.0309) | (0.0119) | (0.0202) | (0.0188) |
| Computer & electronics | 0.117** | 0.0541** | 0.0359 | -0.0751*** |
| | (0.0555) | (0.0218) | (0.0503) | (0.0262) |
| Electric eq. | 0.0672 | 0.0832*** | -0.0138 | -0.0460 |
| | (0.0629) | (0.0240) | (0.0584) | (0.0281) |
| Machinery & eq. | 0.0995** | 0.0395** | 0.0185 | -0.0896*** |
| | (0.0500) | (0.0191) | (0.0442) | (0.0240) |
| Motor vehicles | 0.112 | 0.0365 | 0.0308 | -0.0926*** |
| | (0.0787) | (0.0314) | (0.0752) | (0.0346) |
| Other transport eq. | -0.0324 | 0.0218 | -0.113 | -0.107*** |
| | (0.0810) | (0.0286) | (0.0775) | (0.0321) |
| Furniture | 0.0251 | 0.0135 | -0.0560** | -0.116*** |
| | (0.0344) | (0.0132) | (0.0251) | (0.0196) |
| Other | 0.0387 | -0.000971 | -0.0423 | -0.130*** |
| | (0.0443) | (0.0164) | (0.0376) | (0.0219) |
| Fixed tangible assets | 0.314*** | 0.314*** | 0.314*** | 0.314*** |
| | (0.00186) | (0.00186) | (0.00186) | (0.00186) |
| Constant | -0.916*** | -1.025*** | -0.732*** | -0.732*** |
| | (0.101) | (0.0522) | (0.0853) | (0.0853) |
| Observations | 35,073 | 35,073 | 35,073 | 35,073 |
| R-squared | 0.475 | 0.475 | 0.475 | 0.475 |
| Year FE | YES | YES | NO | NO |
| Sector FE | YES | NO | YES | NO |
| Year-Sector FE | YES | YES | YES | YES |

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

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