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April 8, 2025

Approved By
European Department

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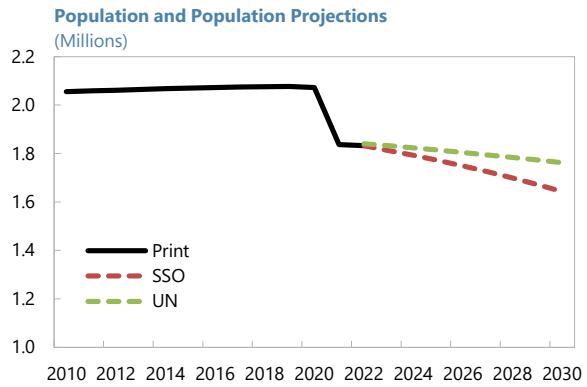
POPULATION DYNAMICS, LABOR MARKET INTEGRATION, AND MIGRATION

The population of North Macedonia has been steadily declining over the past two decades and is projected to continue to decline into the foreseeable future due to emigration. This paper examines the expected costs of the population decline on potential output growth. Staff estimates that the population decline would create a drag on output growth of around 0.5 percentage points. Increased emigration, potentially driven by further EU integration, presents a downside risk to outlook as it could further worsen population dynamics. To study the impact of further EU integration, the paper employs a structural model of the European labor market with migration. Negative impacts of further EU integration from increased emigration can be offset by increasing productivity. The paper also shows that productivity-increasing structural reforms, active labor market policies, new business support, and labor participation support can all boost potential output, helping to offset some of the negative impact of migration.

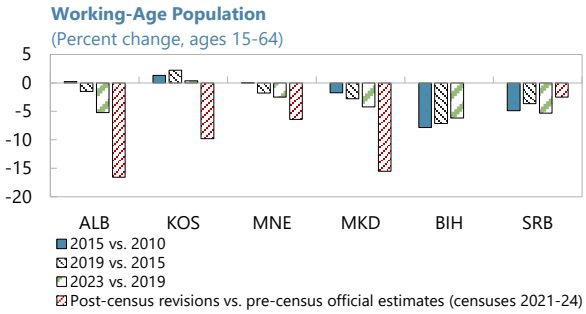
A. Introduction

1. The population in North Macedonia has been steadily declining, largely because of high emigration, and is expected to continue declining into the medium term. The 2021 population census revised the population down by around 11 percent relative to its previously estimated values (Figure 1, left panel). The loss in population is not unique to North Macedonia as other Western Balkan countries experienced similar declines in population over the past decade, as well as similar downward revisions following censuses (Figure 1, right panel). The UN World Population Prospects (2024 Revision) projects the population of North Macedonia to decline by around 4 percent by 2030. Estimates by the statistics office of North Macedonia are more pessimistic, projecting the population to decline by almost 9 percent over the same period (see Figure 1, left panel).

Figure 1. Change in Population in North Macedonia and the Western Balkan Countries



Sources: UN 2024 Revision of World Population Prospects; SSO.



Sources: World Bank World Development Indicators, national authorities, and IMF staff calculations.
Notes: The red bars refer to census numbers compared to pre-census estimates. The Kosovo post-census revision refers to preliminary data for the total population (i.e. not age specific).

2. Large declines in population can have a devasting impact on potential output, warranting the need for policymaker action. Standard theories predict that long-run potential output varies one-for-one with the aggregate population of the country (see Section B) implying that a 4 to 9 percent decline in population should result in an equivalent drag on potential output growth. That said, several additional factors may represent downside or upside risks to the link between population and potential output.

- *Downside risk factors*. Young and higher skilled individuals may be more likely to seek opportunities elsewhere draining valuable future knowledge sources in the economy. Additionally, empirical evidence for North Macedonia points to entrepreneurial individuals being more likely to migrate (see, Li and Gade, 2023). A loss of the young population could accelerate population aging in North Macedonia and increase the associated costs. Lower entrepreneurship and an aging population could also spill over to lower productivity growth, further limiting potential.

- *Upside risk factors*. Workers with closer links to the market (i.e., those employed or with strong networks) may be less likely to search outside the economy. Return migrants may bring new knowledge and networks opening new paths for future growth. Further emigration may be limited as individuals with the highest willingness to move may have previously emigrated.

B. Projecting Future Potential Output

3. Staff employ a production function methodology to project future potential output growth. Potential output Y_t is produced using a combination of capital K_t and labor L_t according to $Y_t = A_t K_t^{\alpha_t} L_t^{1-\alpha_t}$. Rearranging this expression, output-per-capita depends on

$$\frac{Y_t}{N_t} = A_t^{\frac{1}{1-\alpha_t}} \left(\frac{K_t}{Y_t}\right)^{\frac{\alpha_t}{1-\alpha_t}} \frac{L_t}{N_t},$$

where A_t is total factor productivity and α_t is that capital share of production.

4. Each component of production is constructed using data and projected into the medium term. The baseline does not take a stance on when, or whether, EU accession will occur but assumes that there is a constant increase in total factor productivity associated with structural reforms.

- *Capital* is constructed with the perpetual inventory method as $K_t = (1-\delta_t)K_{t-1} + X_t$ where δ_t is the depreciation rate and X_t is gross fixed capital formation in year t. Capital in the initial period is set to $K_0 = X_0/(\bar{g}_X + \delta_0)$ where $\bar{g}_X$ is the average growth rate of gross fixed capital formation over the sample. Capital is projected up to 2030 using the IMF WEO values and beyond 2030 by assuming that the capital-output ratio is constant, as would be implied in steady state of the textbook neoclassical growth model. This leads to a sharp drop in the capital and output growth

rate in 2031, which should be taken as indicative of the long-term growth potential rather than a year-by-year projection.

- *Labor* is constructed as the historical employment trend. Labor is projected as the sum of labor by age and sex sub-groups of the population. Populations for each subgroup are taken from the UN World Population Prospects dataset using the Medium Forecast scenario. Because each subgroup potentially differ in their participation $LP_{a,s,t}$ and unemployment rates $u_{a,s,t}$, the total labor stock is projected as:

$$L_t = \sum_{a,s} LP_{a,s,t} \times \left(1 - u_{a,s,t}\right) \times \frac{N_{a,s,t}}{N_t}.$$

The labor participation rate and unemployment rates are projected as:

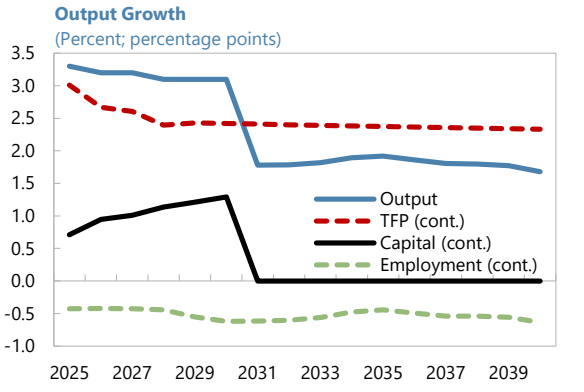
$$LP_{a,s,t} = \left(1 - \xi^{LP}_{a,s}\right) LP_{a,s,t-1} + \xi^{LP}_{a,s} \overline{LP}_{a,s}$$
$$u_{a,s,t} = \left(1 - \xi^{u}_{a,s}\right) u_{a,s,t-1} + \xi^{u}_{a,s} \bar{u}_{a,s}$$

where $\xi^{X}_{a,s}$ is the convergence rate to some long-run steady state for labor participation and the unemployment rates. The long-run steady states for each group are taken to be the EU average values in 2023 and the convergence rate parameter is set to 2.5 percent based on the historical convergence of labor participation rates in the pre-pandemic period.[1]

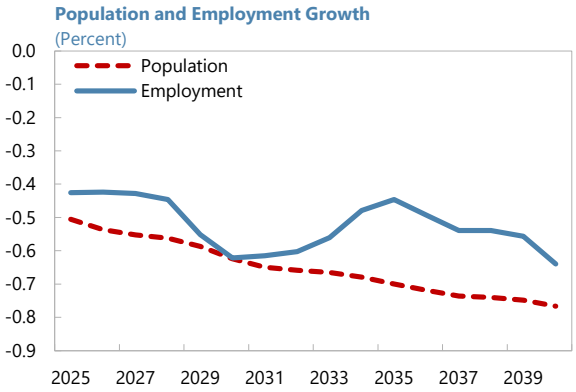
- *Total factor productivity* is constructed as a Solow residual $A_t = Y_t / K_t^{\alpha_t} L_t^{1-\alpha_t}$ using the constructed stocks of capital and labor. Productivity is constructed using the IMF WEO values until 2030 and then assumed to follow $g^A_t = (1 - \xi^A) g^A_{t-1} + \xi^A \bar{g}^A$ for $\xi^A = 2.5$ percent and $\bar{g}^A =$ 1 percent , in line with values typically assumed in advanced economies.

[1] The gap in the labor participation rate of men (women) aged 15 to 64 fell from 5.7 (14.0) percent in 2004 to 0.2 (11.9) in 2019 and then rose to 3.8 (15.5) percent in 2023. Rearranging the expression for labor participation convergence implies that $\xi = 2.5\%$ is within the range of estimates. Since the labor participation rate gap has mostly closed, this parameter is most relevant for explaining the projected path for women.

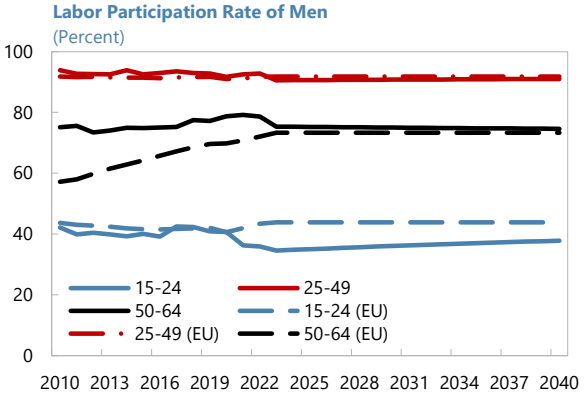
Figure 2. Potential Output Projections



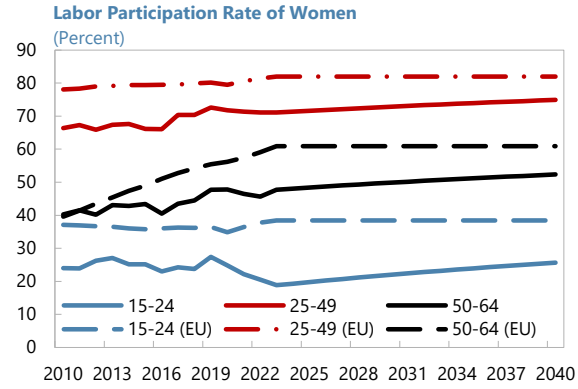
Sources: SSO, UN World Population Prospects, and IMF staff estimates.



Sources: SSO, UN World Population Prospects, and IMF staff estimates.



Sources: SSO, UN World Population Prospects, and IMF staff estimates.



Sources: SSO, UN World Population Prospects, and IMF staff estimates.

5. Despite convergence of the labor participation and unemployment rates, the projections imply that employment will become a drag on output growth of around - 0.5 percentage points by 2030. The convergence of the labor participation and unemployment rates is strongest for women where the gap with the EU is largest and implies a steady closing of the gap over the projection horizon. That said, population dynamics dominate leading to a decline in the working-age population and employment. The net impact is that employment creates around a - 0.5 percentage point drag on growth by 2030. The model compensates for some of the decline in employment growth with higher TFP growth over the projection horizon. While capital growth is positive, capital deepening is a relatively small component of growth over the horizon.[2]

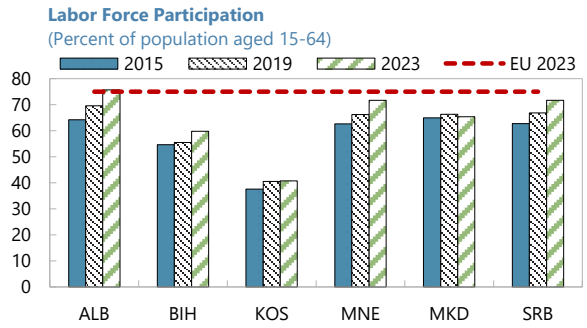
C. Comparison of Labor Markets in the Western Balkan Countries

6. Despite some improvement, labor market outcomes in North Macedonia have lagged the other Western Balkan countries and a considerable gap remains with the EU. The labor participation rate in North Macedonia is around 65 percent considerable below the 75 percent in the EU. While regional peers have made progress in closing the gap over the past decade, labor participation in North Macedonia has remained relatively flat. North Macedonia has performed

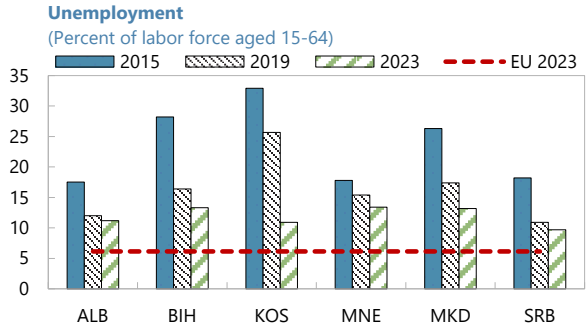
[2] See also Republic of North Macedonia: Selected Issues (IMF, 2024) for a detailed growth accounting and comparison of the capital-output ratio in North Macedonia and other countries.

better in terms of the unemployment rate, with the unemployment rate falling from about 26 percent to 13 percent over the past decade, similar to other Western Balkan countries. That said, the unemployment rate remains around twice as high as in the EU.[3]

Figure 3. Participation and Unemployment Rates in the Western Balkans and EU



Sources: Haver, Eurostat, national statistics offices, and IMF staff calculations.
Notes: Changes in methodology and population estimates can affect comparability over time.



Sources: Haver, Eurosat, national statistics offices, and IMF staff calculations.
Notes: Changes in methodology and population estimates can affect comparability over time.

7. Closing labor market gaps present a potential avenue for combatting the negative impact of the population loss from emigration. Based on a simple back-of-the-envelope calculation, closing the gap with the EU by increasing the participation rate by around 10 percentage points and lowering the unemployment rate by around 7 percentage points would increase potential output by around 25 percent ($\approx 75\% \times (1-6\%)/65\% \times (1-13\%) - 1$) implying that closing one-third of the gap would be more than enough to offset the projected loss in population by 2030. Additionally, any efforts to close these gaps would likely strengthen incentives for individuals to remain in the economy. The gender gap may be a particularly important channel to target as it is much larger in North Macedonia, and other Western Balkan countries, than in the EU (Box 1). Most of the labor participation gap between North Macedonia and the EU is explained by the low labor participation rate of women.[4]

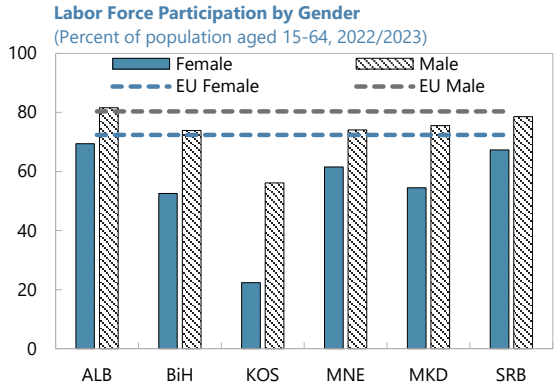
[3] Issues related to the large population revisions following the census make it difficult to compute employment growth over the past decade in North Macedonia.

[4] Other potentially relevant contributing factors include much higher youth unemployment, lower educational attainments, and differences in sectoral composition (see Ayerst et al., 2024 for discussion). Additionally, the prevalence of informal employment is an important labor market barrier.

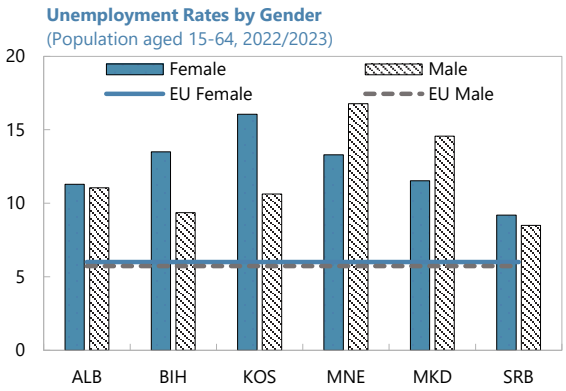
Box 1. Gender Market Gaps in North Macedonia and the Western Balkans

In North Macedonia, as well as in other Western Balkan countries, women experience more pronounced gender gaps in the labor market compared to the EU. In 2023, North Macedonia had a gender labor participation gap of about 21 percentage points (p.p.), which is higher than the Western Balkans average of 18.7 p.p. and the EU average of 8 p.p. (Box Figure). Women's employment rates are similarly lower than men's, with a gap of 16 p.p. This gap is surpassed by Kosovo (31 p.p.) and Bosnia and Herzegovina (22 p.p.) in the region. Women fare better than men in some labor market outcomes in North Macedonia. Active women are less likely to be unemployed than men, compared with the reverse in the EU and some other Western Balkan countries (Bosnia and Herzegovina, Kosovo). Men are also more likely to be informally employed than women, although this is not in all Western Balkan countries (e.g., Bosnia and Herzegovina, Serbia).

Box 1. Figure1. Gender Gaps in the Western Balkans



Sources: Labor Force Survey and IMF staff calculations.



Sources: Labor Force Survey and IMF staff calculations.

Wider gender gaps in the Western Balkan countries are driven by multiple factors. Inadequate education and lack of skills contribute to a more pronounced gender gap in labor participation at lower education levels, while this gap narrows at higher education levels. Additional constraints to women's labor market opportunities are imposed by significant caregiving burdens for women resulting from a combination of a lack of affordable quality childcare, parental leave policies, cultural norms, and increased emigration of men (Atoyan and Rahman, 2017). The tax burden on secondary earners, who are predominantly women, can affect gender participation (Gonzales, 2015), as the proportionally higher impact from taxes and social contributions on lower wages increase the overall tax burden. This is significantly relevant for the labor participation in the region, as women are often second earners who are influenced by a high tax wedge on low wages (Jousten et al., 2022), and a considerably more pronounced gender wage gaps than in the EU. Differences in wages is also a driver the gender gap in North Macedonia, and the Western Balkans. The 2018 wage gap was around 15.3 percent in North Macedonia, compared to 13 percent in the EU.

Closing the gender gaps could lead to significant gains in employment and potential output across the Western Balkan countries. Reducing underemployment of women could yield even greater gains than an equivalent increase in the employment of men due to the benefits of gender diversity, meaning women bring different skills, perspectives, and approaches to the workplace that complement those of men, and sectoral reallocation driven by economic development which increases demand for gender-equal service sector jobs (Ostry et al., 2018). Employment is projected to decline by around [4 percent] by 2030, which could be mostly offset by closing the gender gap between North Macedonia and the other Western Balkan countries and completely offset by closing one-third of the gender gap with the EU. A back-of-the-envelope calculation implies that closing the gender gap completely could increase potential output by

$$\Delta \mathrm{Y}_t/N_t \approx \Delta L_t/N_t = 14.4\%.$$

Closing the gender employment gaps could significantly increase economic development, help in addressing labor shortages, and improve productivity.

D. Modeling Labor Markets and Migration in North Macedonia and Europe

9. Staff employ a structural multi-country model of labor markets to examine endogenous relationships between labor market outcomes and emigration. Building on Ayerst and Zhang (2025), the model characterizes household transitions between employment, unemployment, and inactivity as well as transitions across countries.[5] Households decide whether to be inactive or enter the labor market as an unemployed worker based on personal preferences (e.g., value of leisure) and economic factors (e.g., probability of finding work, wage). Unemployed workers then search for vacancies posted by firms. With some probability, an unemployed worker is matched to a vacant firm and the pair begins to produce revenues, which are divided between the worker and firm through a bargaining process. Households can also choose whether to relocate to a different country, in which case they choose to be inactive or search for employment in the new location. Households weigh idiosyncratic preferences (e.g., locational preference), bilateral migration costs (e.g., moving costs), and economic factors (e.g., probability of finding work, wage) when deciding where to move. The equilibrium of the model describes how the flow of households in inactivity, unemployment, and employment and across countries depends on economic factors.

10. The model is estimated to match labor market flows and bilateral migration flows for EU and candidate countries. Model parameters are estimated for 35 European countries, which includes the EU countries, six Western Balkan countries, Türkiye, and Switzerland, over the 2011 to 2019 period.[6] The labor market is matched to data on transitions between inactivity, unemployment, and employment, the labor market tightness (measured as the ratio between the vacancy rate and unemployment rate), and the net PPP-adjusted wage rate. Bilateral migration costs are set to match bilateral migration flows between countries allowing the model to replicate the migration patterns observed in the data.

E. Examining Further EU Integration and Policy Scenarios

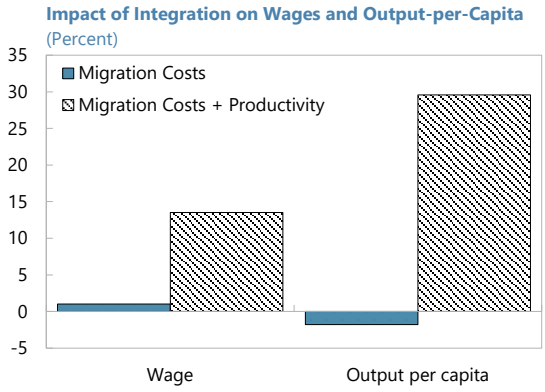
11. The model is used to simulate the impact of further EU integration on North Macedonia. Two scenarios are constructed that capture the impact of EU integration when, first, only migration costs between North Macedonia and EU countries are reduced and, second, when both migration costs are reduced and labor productivity is increased. EU integration could boost labor productivity either by reducing barriers (e.g., increased trade and FDI) or through inducing discretionary policy actions (e.g., structural reforms associated with EU accession). The two scenarios provide a stark contrast between EU integration with and without productivity improvements, that may be tied, at least in part, to these discretionary actions of policymakers. The reduction in migration costs are calibrated to match a doubling of the emigration rate, consistent with empirical evidence in Ayerst et al. (2025) between EU member countries. The increase in productivity is

[5] See also Ayerst et al. (2024) for description of model and calibration used here.

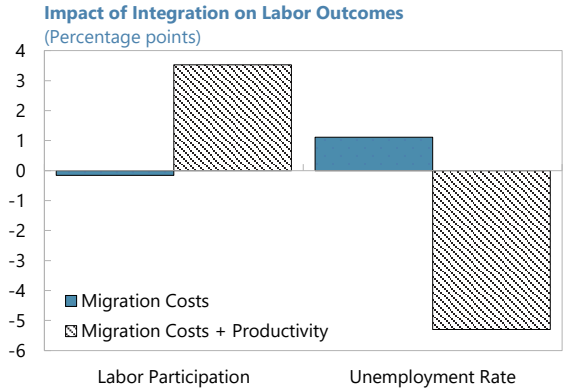
[6] Not all data moments are available for all countries over this time period. Missing data is interpolated using economic relationships as described in Ayerst et al. (2025).

calibrated to match an increase in output-per-capita of around 30 percent, consistent with evidence reported in IMF (2024).

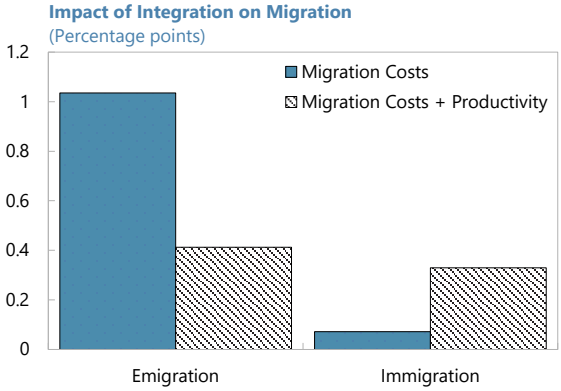
Figure 4. Simulated Impact of EU Integration on North Macedonia



Source: IMF staff calculations.



Source: IMF staff calculations.



Source: IMF staff calculations.

12. The simulations highlight that productivity improvements are necessary to offset the negative impact of lower migration costs (Figure 4). Without productivity improvements, the reduction in migration costs leads to a decline in wages and output-per-capita, worsening labor market outcomes (labor participation, employment, unemployment), and a decline in population from increased emigration. Lower migration costs lead to domestic firms competing more with foreign firms leading to a higher wage rage at the cost of profits. Lower profits decrease firms' willingness to post vacancies, raising unemployment. Increasing productivity offsets these negative impacts by raising both the wages and profits received by workers and firms, incentivizing participation and entry of new vacancies. This creates positive pull factors to the domestic economy as unemployed workers more readily find employment and employed workers receive higher wages, disincentivizing emigration and incentivizing immigration. The net impact is that population is relatively unchanged while output-per-capita increases. Importantly, the results highlight that productivity may not fully offset the increase in emigration but can lead to increased immigration and labor market performance that offset the negative impacts on output-per-capita.

13. The model is also used to simulate four types of broad policies to boost potential output and support the labor market. The previous experiment highlights how increased

productivity can combat the negative impacts associated with further EU integration. The policy experiments show that policymakers have a range of options to support the economy, all with broadly similar impacts on key outcomes (Figure 5). The policies are described below.

- *Structural reforms*. The first class of policies is productivity-enhancing structural reforms that boost production. These policies are modeled as a one percent increase in the production of matched firms and workers. In practice, these policies would include any types of policies that increase output in the economy including, for example, reduced misallocation of factors of production through reducing financial constraints and/or increased investment by firms driven by improved rule of law and corruption or reduced competition by the informal sector.[7]

- *Active labor market policies*. The second class of policies is active labor market policies (ALMP) that help match unemployed workers and vacancies. These policies are modeled as a 10 percent increase in the matching rate between unemployed workers and vacancies, all else equal. In practice, these policies would include any types of policies that help unemployed workers find work (or firms find new employees) such as, for example, job search assistance programs, vocational training, lifelong learning programs, and youth training and apprenticeship programs.

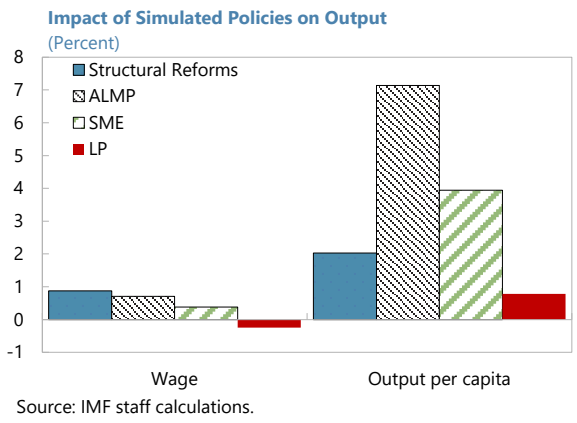
- *Business support*. The third class of policies is support for small and medium sized enterprises (SME). These policies are modeled as a 10 percent reduction in the vacancy cost of new firms entering the market. In practice, these policies would include any types of policies that reduce bureaucratic barriers to firms entering the market such as one-stop shops to business registration and improving access to digital public services.

- *Labor participation*. The fourth class of policies is increased support for labor participation (LP). These policies are modeled as a 10 percent reduction in the benefits from inactivity, which increases the relative value of working.[8] In practice, these policies would capture any types of policies that incentivize workers to enter the economy such as increasing access to quality child and elder care, improving access to flexible work arrangements, and programs to help out-of-the-labor-force individuals acquire skills and knowledge to reenter the labor market.

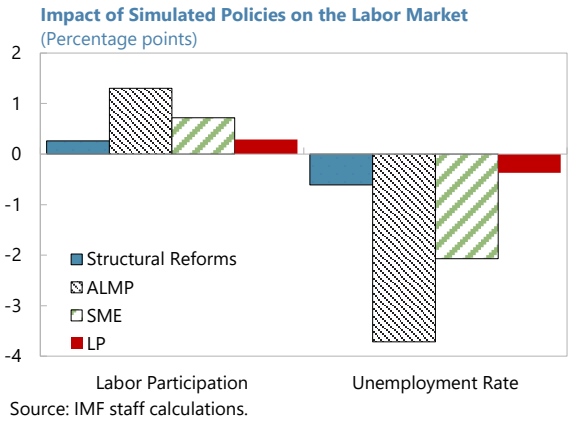
[7] See also the Republic of North Macedonia: Selected Issues (IMF, 2024) for a detailed discussion on policies that can boost productivity.

[8] The policy simulation reduces home production benefits to inactive and unemployed workers, which are valuable to the individuals living in the country. Due to model limitations, this leads to some counter-intuitive results with emigration for this experiment.

Figure 5. Simulated Impact of Policies on North Macedonia



Source: IMF staff calculations.



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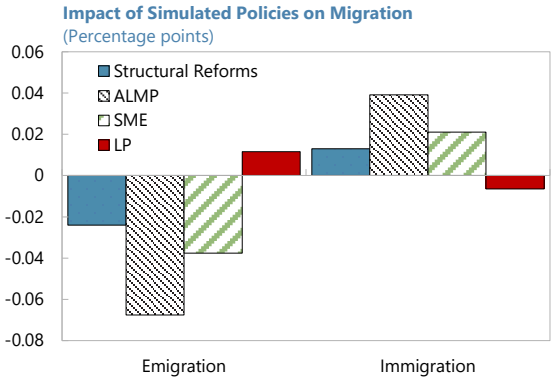

Source: IMF staff calculations.

F. Conclusions and Policy Discussion

14. A declining population, driven by emigration, threatens to drag down potential output growth going forward. Based on UN projections, higher emigration is projected to lead to a decline in the working-age population and, consequently, is expected to shrink employment by around 0.5 percentage points going into the future. Without counteracting measures, the decline in employment is projected to drive a similar decline in potential output, as a smaller labor force translates into less output and less investment.

15. Policies can bolster the labor market and be a catalyst for economic growth. The analysis highlights large structural barriers in the productivity of workers, the matching efficiency between workers and firms, and the cost of creating new vacancies in North Macedonia compared to European countries. Policies targeting these areas could help lift the quality of the labor market and boost potential. A key result from the policy simulations is that, while the policies target different stages of the labor market (e.g., participation, job finding, the productivity of the match), the policies have similar macroeconomic impacts. In this regard, it is important for policymakers to focus on policies with the largest potential impact relative to the cost of implementation. Additionally, policies should be combined with careful monitoring and updating to ensure that they remain effective and efficient.

16. Reducing the gender gap can be an effective way to combat the loss in employment and protect potential output growth. The gender gap in North Macedonia is around 21 percentage points, compared with 18.7 in the Western Balkan countries and 8 in the EU. Closing the gender gap with the other Western Balkan countries by 2030 would offset most of the projected loss in employment from emigration. Closing the gender gap with the EU would offset the loss in employment that is projected up to 2050. Policies to close the gender gap could include increasing access to affordable childcare, improving education investment in women, aligning parental leave policies with EU standards including introducing mandatory paternity leave, and removing tax disincentives for multi-income households.

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IMPACT OF INTERNATIONAL SHOCKS ON NORTH MACEDONIA AND THE WESTERN BALKANS[1]

A. Introduction

1. The Western Balkan economies have been buffeted by a series of external shocks in recent years, with varying intensities across countries. The COVID-19 pandemic disrupted supply chains (Jovanović et al., 2024), dampened external demand, and exposed vulnerabilities in key sectors, including the export-driven industries of North Macedonia. Post-pandemic, surging inflation compounded these challenges, as rising global energy and food prices rippled through the region. North Macedonia, with its open economy and reliance on key trading partners, was particularly affected by these overlapping crises. Understanding the diverse impacts of such shocks is essential for tailoring policy responses to bolster resilience in these economies.

2. Economic spillovers to the Western Balkans have been identified through multiple channels, but the literature remains limited. Gouveia (2014) links business cycle synchronization with the euro area to trade integration. Inflation spillovers are found to be significant for countries with strong trade ties and flexible exchange rates (Ramadani & Pandiloski, 2018). Euro area (EA) monetary policy shocks, both conventional and unconventional, transmit quickly in unofficially euroized economies, constraining monetary independence (Moder, 2021). EA shocks also impact sovereign debt markets, triggering currency depreciations and output declines (Engler et al., 2024). Fixed exchange rates amplify negative output spillovers from ECB tightening, whereas inflation-targeting regimes with floating currencies mitigate them. Eurosystem balance sheet expansions boost output in some countries, with price spillovers driven by import prices and exports playing a larger role than financial linkages (Moder, 2017).

3. Few studies on North Macedonia have highlighted the trade, financial and monetary policy channels. Melecky (2010) finds that foreign shocks are key drivers of variations in output, inflation, interest rates, and real exchange rates in North Macedonia. Unevska Andonova and Petkovska (2011) identify trade (export demand) and financial (FDI, remittances) channels as the primary mechanisms for spillovers. Cabezon and Kovachevska Stefanova (2024) find that structural euroization weakens domestic monetary transmission and amplifies the effects of ECB policies on domestic interest rates.

4. The Western Balkans' growing integration with the EU during the accession phase is expected to intensify spillovers. EU accession efforts have strengthened institutional frameworks and deepened trade and financial linkages, driving increased business cycle synchronization with the euro area, while also increasing resilience and growth. Regional initiatives like the Central European Free Trade Agreement (CEFTA), Open Balkan, and the Berlin Process were designed to foster intra-regional trade and collaboration. Additionally, the EU's Growth Plan for the Western Balkans' growth

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plan adopted in 2023 aims to further integrate the Western Balkan partners into the EU's single market, advance regional economic cooperation, deepen EU-related reforms and increase pre-accession funding in view of accelerating socio-economic convergence. These integration efforts may on the one hand amplify the transmission of shocks from the EU but on the other hand offer opportunities for economic transformation, which may increase resilience to various types of international shocks. Empirical analysis of these spillovers is crucial to disentangle their net effects, assess the relative strength of transmission channels, and inform policies that maximize the benefits of integration while mitigating potential risks.

B. Western Balkan Integration with the Euro Area: Descriptive Evidence

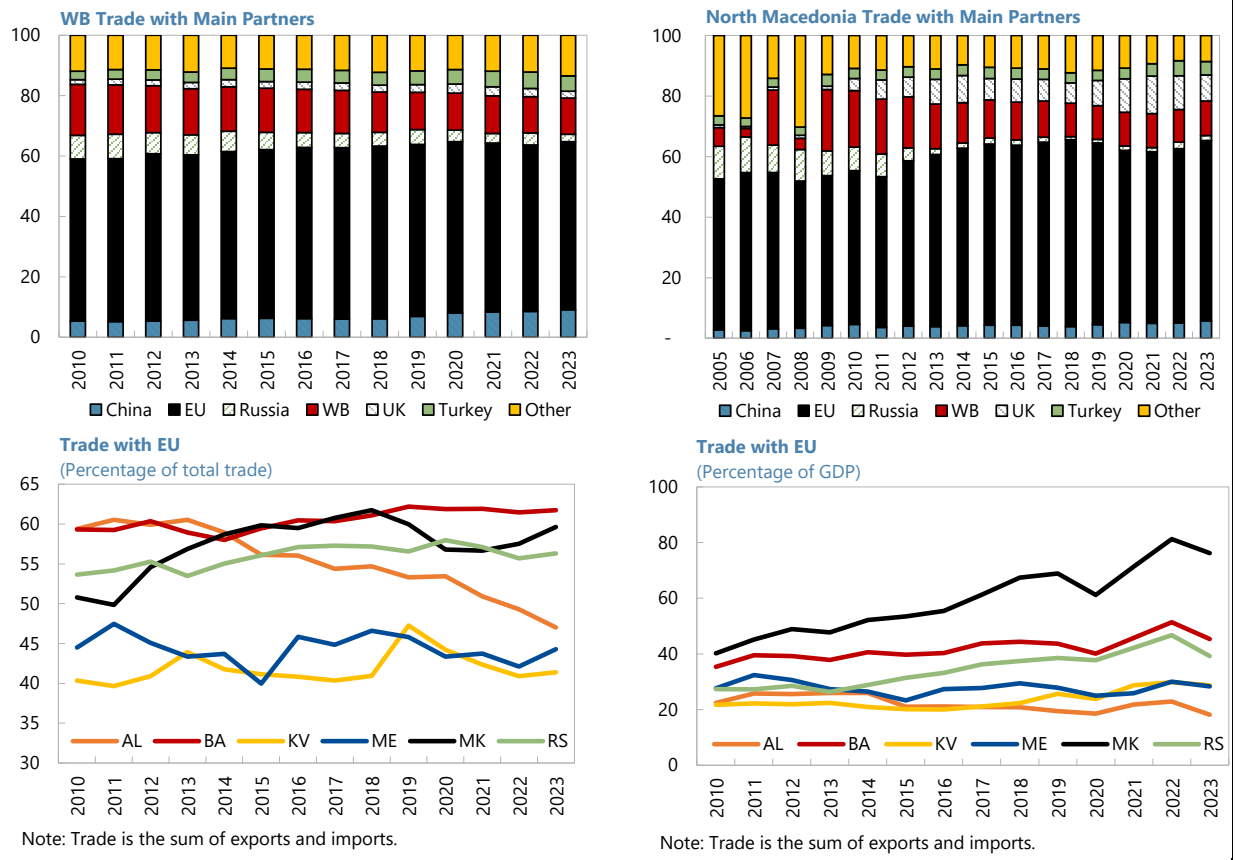
This section presents descriptive evidence for the main potential channels for spillovers from the EU to North Macedonia and the other Western Balkan countries: the trade channel, the remittances channel, and the financial and monetary policy channel. The evidence indicates that Western Balkan countries exhibit robust trade and financial ties with the EU. Along a number of indicators, North Macedonia stands our as one of the most integrated countries with the EU. This robust interconnectedness suggests potentially substantial economic spillovers from the European Union to the Western Balkan countries.

The Trade Channel

5. The European Union is the Western Balkan's primary trade partner, accounting for more than half of total trade. On average, trade with the EU accounts for around 54 percent of total trade in the Western Balkans – with North Macedonia more integrated that others at over 60 percent (Figure 1). Notably, North Macedonia also stands out as its EU trade amounted for over 76 percent of GDP in 2023, nearly double the regional average of around 40 percent (Figure 1). Western Balkan countries exhibit relatively similar trade patterns concerning their partners and the composition of traded goods. The dominant trade partners for the region continue to be Germany and Italy, which accounted for approximately 26 and 14 percent, respectively, of the total trade in 2023.

6. Despite efforts at regional integration, intra-Western Balkan trade has lagged behind. In pursuit of EU accession, Western Balkan countries are striving to align with EU acquis to strengthen trade relations and participate in regional initiatives. The Stabilization and Association Agreements (SAA), the Central European Free Trade Agreement (CEFTA), and the Open Balkan initiative aim to promote trade in goods and services among member countries, removing trade barriers while facilitating integration in the EU by aligning policies and regulations with EU standards. Yet trade among Western Balkan countries amounts to only about 12 percent of the total trade in the region and the share of intra-Western Balkan trade in total trade has seen a decline of around 2.8 p.p. (Figure 1).

Figure 1. Panel on Trade Linkages

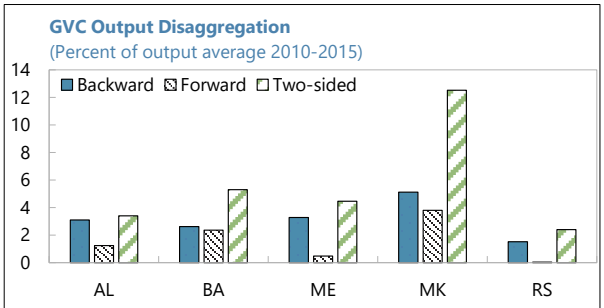


Note: Trade is the sum of exports and imports.

Note: Trade is the sum of exports and imports.

Sources: Eurostat and IMF staff calculations.

7. The Western Balkan countries have deepened their integration into global value chains (GVCs), particularly with the European Union. The region benefits from geographic proximity, competitive labor costs, substantial FDI inflows, and the presence of multinationals which have facilitated the integration of the region into European production networks (Ilahi and others, 2019). Western Balkans are predominantly integrated into GVCs through intermediate goods trade, primarily in manufacturing sectors such as automotive, machinery, electrical equipment, and textiles. North Macedonia and Serbia have become key suppliers in European manufacturing networks, particularly in automotive and electrical components. Based on the latest data available, North Macedonia stands out with the highest GVC participation as a percent of gross exports compared with its Western Balkan peers, largely due to its integration into German automative manufacturing. Albania and Bosnia and Herzegovina are more integrated in lower-value-added segments, such as textiles and basic manufacturing, while Kosovo's participation remains relatively limited due to structural constraints (Ilahi and others, 2019). Further progress towards EU integration



Sources: World Bank, and World Integrated Trade Solution (WITS).
Notes: Two-sided GVC participation refers to a country's involvement in Global Value Chains (GVCs) both as a user of foreign inputs for its exports (Backward) and as a supplier of inputs for other countries' exports (Forward).

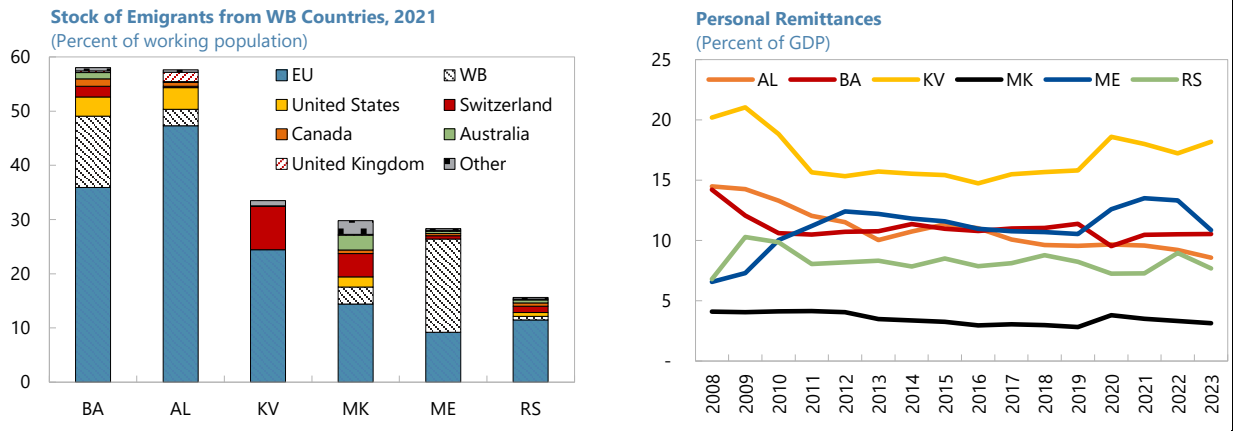
is expected to further strengthen participation in GVCs, as Western Balkan economies address infrastructure deficits, technology gaps, skills and labor mismatches and regulatory barriers to allow them to move up the value chains.

Remittances Channel

8. Emigration has been a defining socio-economic challenge for the Western Balkans, driven primarily by economic factors. Despite strong trade and investment ties with the EU, Western Balkan countries also see significant emigration to EU member states (with Germany, Italy, Slovenia, and Austria the most important destinations). While there are various policy-related factors, including visa liberalization and plans to enhance mobility for Western Balkan citizens prior to EU accession, the primary incentives for emigration are largely economic (Ghodsi et al., 2024). High unemployment, particularly among youth, limited career prospects, and wage disparities with the EU have fueled sustained outflows of skilled and unskilled labor. The brain drain is particularly concerning, further weakening human capital development in the region.

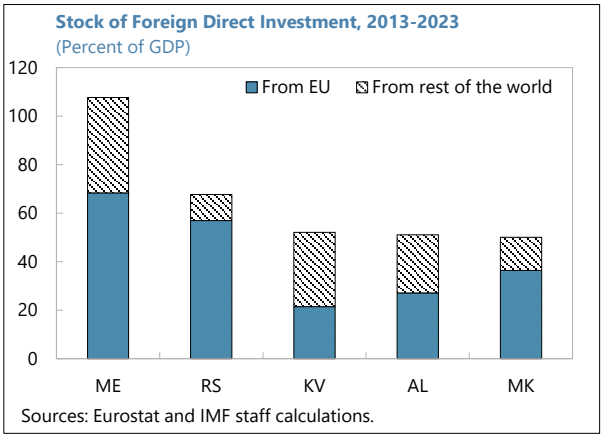
9. Remittances have become an important source of household income and stable BOP inflows. Migration has led to remittances accounting for a substantial share of GDP in many Western Balkan countries. Kosovo stands out with the highest contribution from remittances of around 17 percent of GDP. However, there are challenges related to data accuracy and methodology, such as the transfer of remittances in cash versus through formal channels (Figure 2). For example, figures for North Macedonia may significantly underestimate these inflows, with Central Bank calculations suggesting they could be three times higher than reported, around 14 percent (Miteski, M., 2024). While remittances provide a crucial buffer for household consumption and financial stability, dependence on them may also heighten vulnerabilities to economic downturns in the EU.

Figure 2. Panel on Migration and Remittances



Sources: World Bank and IMF staff calculations.

Financial Channels

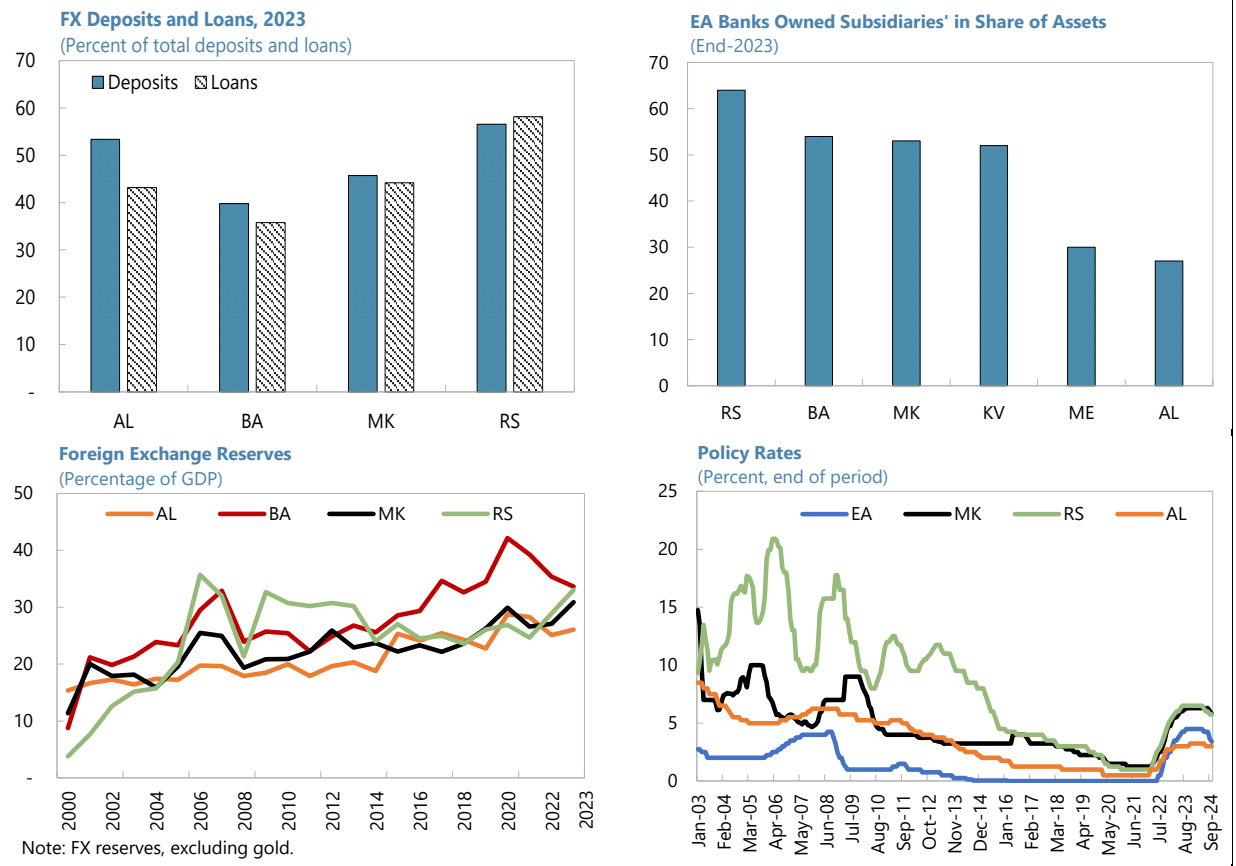


10. The European Union is the dominant source of foreign direct investment (FDI) in the Western Balkans, accounting for the majority of inflows into the region. As of 2023, EU-based companies accounted for 58 percent of the FDI stock in the Western Balkans (Council of the European Union, 2024). North Macedonia, in particular, has strong FDI linkages with the EU, with around 67 percent of its FDI originating from EU countries, including approximately 9 percent from Germany. The country's export performance has been bolstered by a targeted strategy to attract export-oriented FDI, particularly in the automotive industry, as well as in chemicals, machinery, electronics, and transportation (World Bank, 2022). FDI can have significant macroeconomic spillovers in the medium to long-term, while in the short term, they may dampen the transmission of more volatile financing sources.

11. Financial exposures in Western Balkans are significant due to the high levels of euroization. The preference for foreign currency deposits and loans stems from a lack of trust in the stability of the local currency and expectations of depreciation, both driven by past economic crises. Euro-denominated deposits and loans range from between 36 percent to about 58 percent in the Western Balkans, reflecting the elevated use of the euro in local financial activities (Figure 3). Despite North Macedonia's denarization strategy to promote the denar by building trust in the currency, promoting savings and loans in denars through regulatory and macroprudential measures, around 40 percent of both deposits and loans occur in foreign currency.

12. Foreign bank ownership of local banks is high. Foreign bank ownership ranges between 65 percent to 84 percent of the banking sector in Western Balkan countries, with an average of 47 percent of this ownership coming from the EA. The highest EA ownership of the banking sector is in Serbia at 64 percent, followed by Bosnia and Herzegovina at 54 percent, North Macedonia at 53 percent and Kosovo at 52 percent (Figure 3). This foreign presence can provide access to EA capital and liquidity, increasing spillovers through financial channels. For example, Morder (2021) finds significant interest rate pass-through of euro area monetary policy to retail rates outside the euro area linked the degree of financial euroization.

Figure 3. Panel on Financial Linkages



Note: FX reserves, excluding gold.

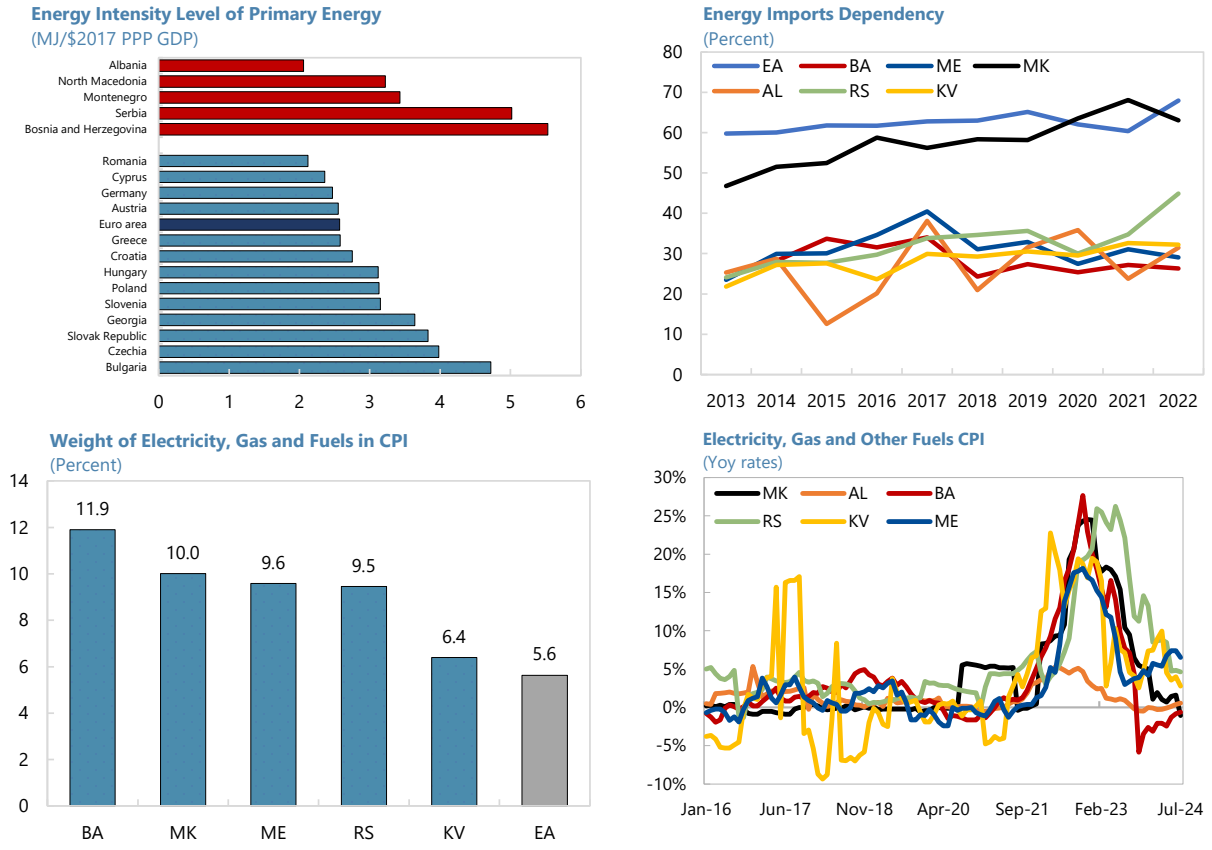
Sources: EcDatabase, FitchConnect, Haver Analytics, IMF Financial Data Portal, and IMF staff calculations.

13. Monetary and exchange rate policies in the Western Balkans range from full euroization to inflation targeting and floating exchange rates. Kosovo and Montenegro have adopted the euro as exclusive legal tender, effectively importing the ECB's monetary policy. While full euroization provides monetary credibility and eliminates exchange rate risk, it limits the ability to respond to asymmetric shocks. Bosnia and Herzegovina operates a currency board, pegging its currency to the euro, ensuring price stability but foregoing independent monetary policy. North Macedonia maintains a stabilized arrangement with de facto peg to the euro, and has price stability as its primary objective, with some limited scope to deviate from the ECB's rates cycle to implement countercyclical policy. Albania and Serbia use inflation-targeting frameworks with managed (Serbia) and free (Albania) floating exchange rates, allowing more flexibility to adjust interest rates and respond to shocks. Even where flexibility exists, all Western Balkan countries have closely followed the ECB's monetary policy, in particular more recently (Figure 3).

14. The degree of monetary autonomy in Western Balkan countries is likely to impact the intensity of external spillovers. Countries with flexible exchange rate regimes, such as Albania and Serbia, can absorb some of the impacts of external shocks, which can allow monetary policy more autonomy to stabilize inflation and output. In contrast, economies with more rigid exchange rate arrangements, such as Bosnia and Herzegovina's currency board or North Macedonia's de facto peg,

have limited room for exchange rate adjustments, increasing reliance on internal mechanisms such as such as fiscal discipline, structural reforms or wage flexibility.

Figure 4. Panel on the Energy Sector



Sources: World Bank's Development Indicators, Eurostat, Haver Analytics, and National SSOs.

15. Western Balkan countries have been increasing their foreign exchange reserves to increase credibility and resilience to shocks. The Western Balkan countries with scope for independent monetary policy have seen an increase in FX reserves (Figure 2), which can serve as a buffer to stabilize their local currencies and shield against external shocks, strengthen trade and investment ties with the EU, and utilize high Euroization to manage exchange rate risks and maintain investor confidence. While these reserves can help central banks maintain external stability and minimize spillovers of external shocks, they can lead to increased spillovers to the central bank's balance sheet. Indeed, the need to hold a sizable portion of foreign exchange (FX) reserves in euro has made reserve management increasingly challenging, and as times costly, such as the a negative interest rate environment (della Valle, 2017).

The Energy Commodities Price Channel

16. Western Balkans countries are vulnerable to energy commodity price shocks, while largely relying on outdated and inefficient energy sectors. Although on a declining trend, the energy intensity of WB economies still exceeds the EA average (Figure 4). This is to a large extent

attributable to the significant reliance of electricity generation on outdated, emission intensive fossil-fuel based generation. Albania stands out as an exception, relying almost entirely on hydropower, which contributes to a lower energy intensity. The significant reliance on aging and inefficient electricity generation, and the elevated energy intensity, heightens vulnerability to global supply shocks and limits the flexibility in adjustment to such shocks.

17. Overall, energy imports dependence in the Western Balkans is lower than in the euro area, with North Macedonia being the notable exception. Most countries in the region generate a higher proportion of their energy domestically, which helps reduce their vulnerability to global energy shocks. North Macedonia, however, relies on energy imports for over 60 percent of its needs. On the other hand, energy constitutes a significantly larger portion of the overall CPI in all the Western Balkans, nearly double that of the euro area, with North Macedonia at 10 percent. This combination of high energy import dependency and the substantial share of energy prices in the CPI accounts for North Macedonia experiencing the region's largest inflationary spike of 20 percent during the recent commodity-driven inflation surge (Figure 4).

18. Government interventions and price regulation in the Western Balkans can mitigate impact of energy price shocks but may also increase their persistence. Administered prices, particularly through offered subsidized prices from state-owned energy companies that dominate the market, can cushion the inflationary impact of global energy shocks. However, the presence of regulated tariffs, which are sometimes heavily subsidized—such as those for household electricity in North Macedonia—and are often adjusted slowly, can increase the persistence of inflation, as observed following the recent energy price shock.

C. Estimations Using a Bayesian GVAR Model

This section uses a quantitative model to estimate spillovers from real, financial, monetary, and global commodity price shocks for all countries in the region. The results indicate that real shocks from the euro area significantly affect economic activity, while the impact of financial shocks is influenced by the level of financial depth and integration. Monetary policy shocks also have an effect contingent on the degree of monetary autonomy, and global energy commodity price shocks emerge as key drivers of inflation.

19. We employ a Bayesian Global Vector Autoregressive (BGVAR) model to analyze real, financial, monetary and global commodity price spillovers. The GVAR approach, building on Pesaran et al. (2004), addresses overfitting and computational challenges in large cross-country VARs. Bayesian estimation (e.g., Böck, Feldkircher, and Huber, 2020) enables handling shorter estimation samples, mitigating data limitations in Western Balkans countries.

Table 1. North Macedonia: Data Description

Variable	*Transformations, units*
Industrial production (Manufacturing)	SWDA, in logarithms.
(Harmonized) Consumer price index	SWDA, in logarithms.
Real effective exchange rate (CPI based)	Index
Reference monetary policy rate/shadow rate/ short-term money market rate	Percent
Private sector credit	SA, in logarithms.
Stock price index	In logarithms.
Trade balance (exports/imports)	SA/SWDA, in logarithms.
Bilateral data on exports and imports of goods and services, annual data.	SWDA, Bil.Euro
S&P GSCI Energy Commodities Nearby Index	In logarithms.
Global Real Economic Activity Index in Industrial Commodity Markets	In logarithms.

Sources: IMF IFS Database, IMF DOTS Database, Haver Analytics, authorities, and L. Krippner (https://www.ljkmfa.com/).

The model incorporates stochastic volatility to account for periods of heightened volatility, such as the 2008/09 Global Financial Crisis and the COVID-19 pandemic. Key domestic macroeconomic and financial variables are included (see Table 1), with country coverage detailed in Table 2. The sample spans from 2007:1 to 2024:3, with some country-specific VAR variations based on data availability. A separate energy block is used to capture global energy market dynamics, including commodity price indices and supply factors.

Table 2. North Macedonia: Countries and Regions on the GVAR Model

Large Economies/Blocs	**Advanced Europe Non-EA**
Euro area	United Kingdom
US	Switzerland
China	Denmark
	Israel
CESEE (non-WB)	Iceland
Bulgaria	Norway
Croatia	Sweden
Czech Republic	
Hungary	**Western Balkans**
Moldova	Albania
Poland	Bosnia-Herzegovina
Romania	Kosovo
Russia	Montenegro
Türkiye	North Macedonia
Ukraine	Serbia

20. We estimate spillovers from real, financial and monetary shocks originating in the euro area, as well as from global commodity price shocks. Consistent with standard practice in this literature, all shocks are modeled as Generalized Impulse Response Functions (GIRFs) to a 1 percent positive shock to the variable of interest (1 percentage points for interest rates). We report medians and peak response medians with 68 percent credible intervals. Unlike orthogonalized

impulse responses, GIRFs do not depend on variable ordering in the VAR model. The analysis examines the key spillover channels discussed in the previous section (with the exception of the remittances channel due to missing data), namely: shocks to euro area real activity (industrial production), financial conditions (credit and equity prices), conventional and unconventional monetary policy, and global energy prices. While the estimation produces more results, we focus here only key impulse responses that are statistically significant and economically meaningful across most Western Balkan countries.

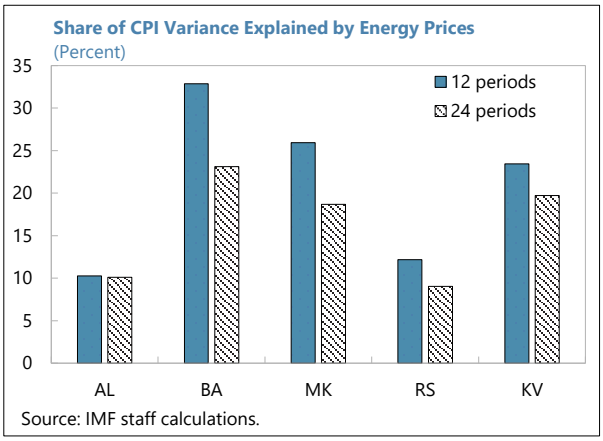
21. Euro area real activity shocks significantly impact Western Balkan economies, with spillover magnitudes closely linked to their integration in European global value chains (GVCs). North Macedonia experiences the largest effect on industrial production (0.96 percent), roughly twice or more the impact seen in Serbia, Bosnia-Herzegovina, or Montenegro (Figure 5). This reflects its deep integration into European manufacturing, particularly Germany's automotive sector. A disaggregated model confirms that supply-side shocks from Germany drive this effect. Consistent with this, manufacturing exporters' trade balances improve in response to euro area real activity shocks, with North Macedonia again showing the largest and most sustained improvement, lasting up to one year.

22. Financial spillovers from the euro area to the Western Balkans depend on financial integration and market development. Euro area private credit shocks appear to boost credit activity in the region, though effects are not always significant or large (Figure 6). Serbia experiences the strongest and most persistent rise in credit (0.67 percent), reflecting the fact that it has the highest share of euro area-owned bank subsidiaries and levels of financial euroization in the entire region. Euro area equity price shocks have a limited impact, consistent with underdeveloped markets—North Macedonia sees only a 0.34 percent increase. These results highlight emerging financial transmission channels, which are however likely to strengthen as the region deepens financial ties with the euro area.

23. Spillovers from euro area interest rate shocks depend on the degree of monetary policy independence, with euroization limiting autonomy. Euro area policy rate changes transmit strongly across the Western Balkans (Figure 7), though with some variation. Aside from the fully euroized countries which experience full transmission, other countries—both with flexible and fixed exchange rates—also see significant effects. These findings align with evidence that EA monetary policy shocks quickly pass through to retail rates (Moder, 2021). Industrial production declines most in fully euroized economies, with Montenegro (-1.6 percent) and Bosnia-Herzegovina (-1.1 percent) seeing the largest impacts, while effects are more moderate in North Macedonia and Serbia (-0.5 percent). Similar results on output by Engler et al. (2024) link transmission to sovereign spreads and exchange rates. Inflation responses are present across the region, though often muted and initially affected by a "price puzzle" in some cases.

24. The transmission of Eurozone quantitative easing (QE) to Western Balkan economies is relatively muted and predominantly indirect. Unlike interest rate adjustments, which directly influence domestic policy, QE's effects are mediated via spillovers from Eurozone real activity, inflation, and financial markets. These indirect channels significantly can boost industrial production

in Bosnia and Herzegovina and Serbia, with a borderline significant effect in North Macedonia (Figure 8). Additionally, QE-driven Eurozone growth induce a modest uptick in inflation across these countries in line with euro area inflation and an increase in demand.



25. Global energy shocks have substantial effects on headline inflation across Western Balkan countries. All countries exhibit highly significant price responses (Figure 9). Inflation increases by approximately 1.5 to 5.2 percent in response to a 1 percent rise in the energy commodity price index, with peak impacts occurring between the third and fourth quarters before gradually tapering off in the second year. Bosnia-Herzegovina, Kosovo, and North Macedonia experience the sharpest inflationary spikes, while Albania, with its significant hydropower resources, faces the smallest impact. These variations stem from differences in energy's weight in consumer price indices and energy intensity, which is highest in Bosnia-Herzegovina. North Macedonia's vulnerability is also driven by its high dependency on energy imports. Forecast error variance decompositions (FEVD) show that global energy price shocks account for 20 to 30 percent of inflation variance at the 1 to 2 year horizon in Bosnia-Herzegovina, Kosovo, and North Macedonia. Global energy price shocks lead to a significant and persistent deterioration in the trade balance for the most energy intensive and energy import dependent countries (particularly Serbia and North Macedonia).

D. Conclusions and Policy Implications

26. As Western Balkan economies deepen their economic and financial ties with the euro area, carefully designed policies can help prevent rising spillovers from turning into vulnerabilities. A strategic approach to GVC integration—reducing concentrated dependencies and diversifying trade partners—would enhance resilience. Strengthening policy coordination with the Eurozone will become increasingly important as business cycle comovement intensifies. While deeper financial integration can support economic development, it should be pursued gradually, accompanied by strong institutional frameworks, and increasing cross-border supervisory cooperation with EA regulators.

27. Euro area monetary policy—both conventional and unconventional—creates significant spillovers, limiting the scope for independent monetary policies in Western Balkans. Nevertheless, reducing financial euroization, leveraging the flexibility in the inflation-targeting frameworks to strengthen policy independence, and enhancing transparency and communication could improve policy effectiveness and credibility. Additionally, an appropriate use of macroprudential and foreign exchange liquidity management tools can help provide space for monetary policy, while mitigating financial stability risks and capital flow volatility.

28. The Western Balkan economies' high vulnerability to global energy shocks necessitates a comprehensive policy response. Monetary policy may need to react more decisively to energy price shocks to prevent inflation expectations from becoming unanchored. Structural measures, such as reducing energy intensity, diversifying energy sources, and improving energy efficiency, would enhance resilience. Strengthening social safety nets can help shield vulnerable households from energy price volatility, while targeted fiscal policies, including temporary subsidies for low-income households, can cushion the social impact of energy price volatility.

Figure 5. Spillovers from Real Shocks to Eurozone Industrial Production

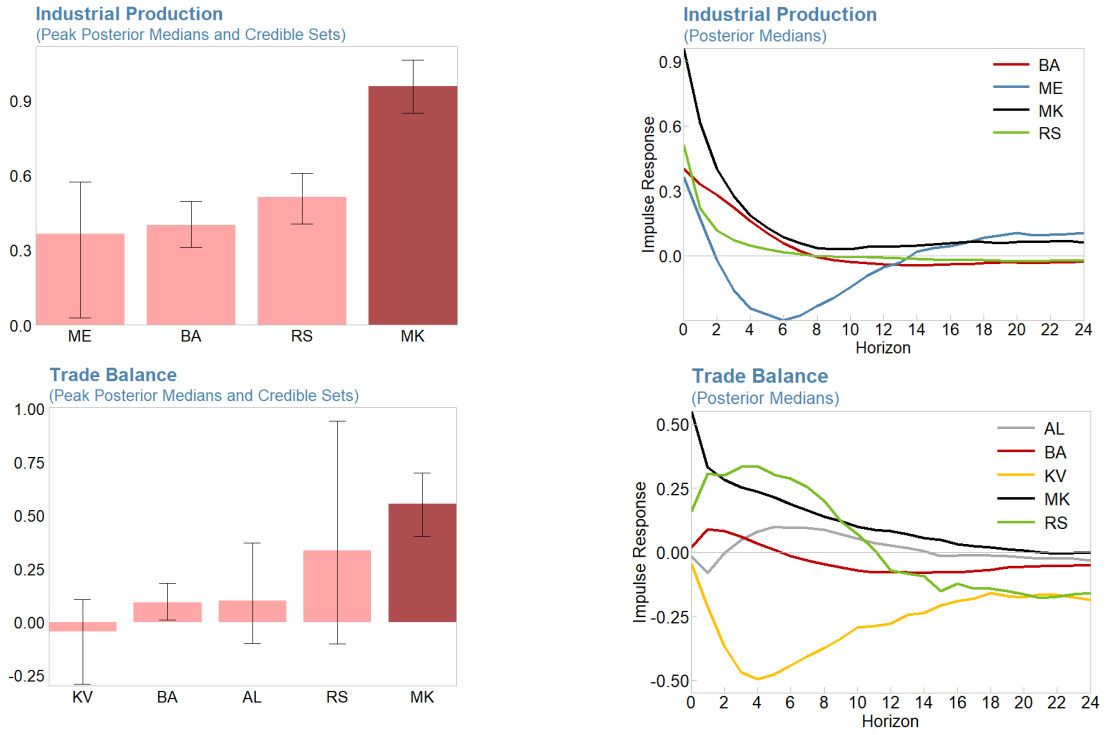


Figure 6. Spillovers from Euro Area Financial Shocks

(Credit shocks – top; Equity price shocks – bottom)

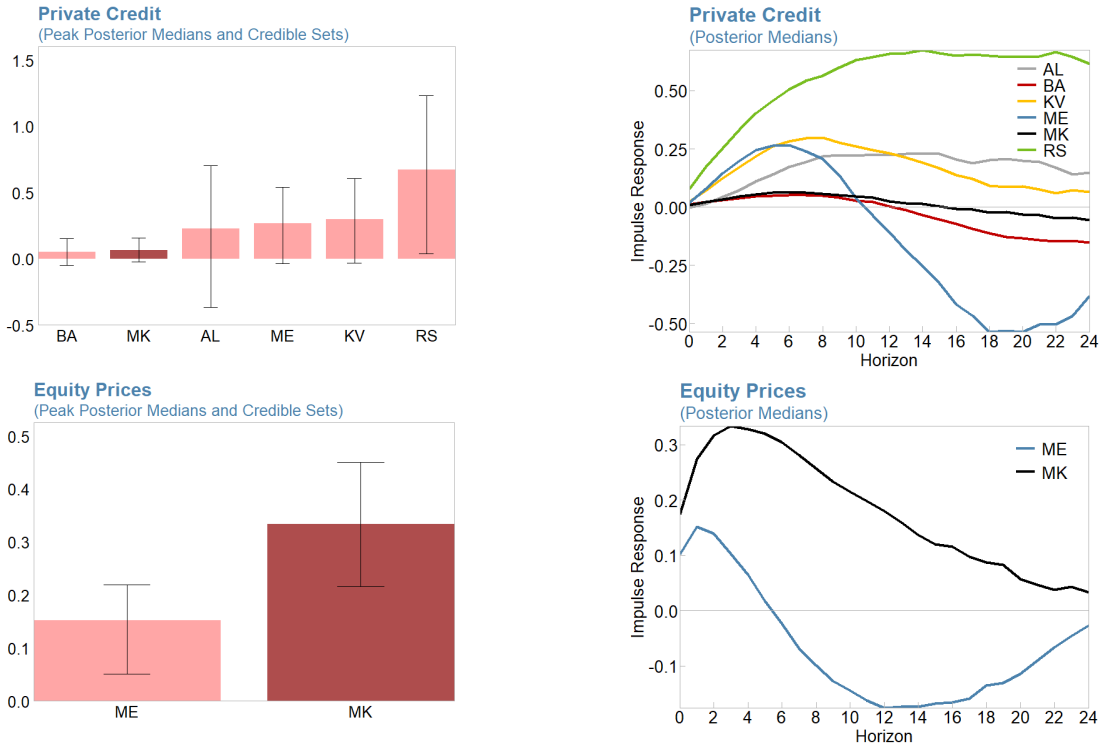


Figure 7. Spillovers from Euro Area Interest Rate Shocks

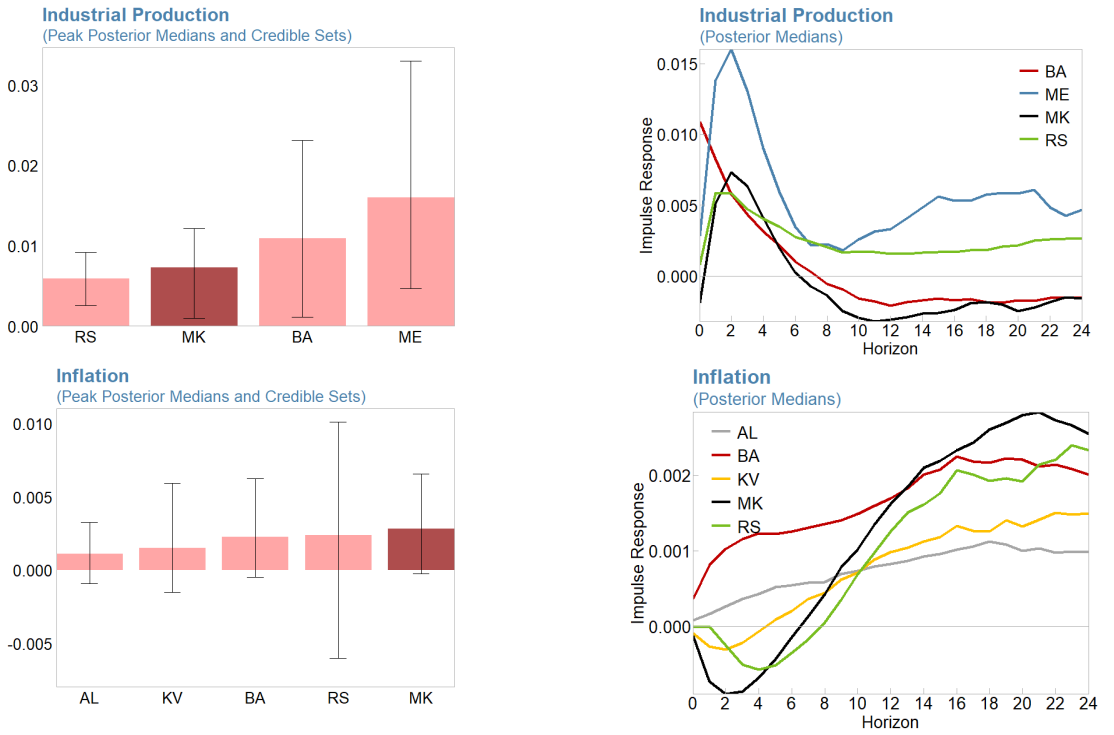


Figure 8. Spillovers from Euro Area QE Shocks

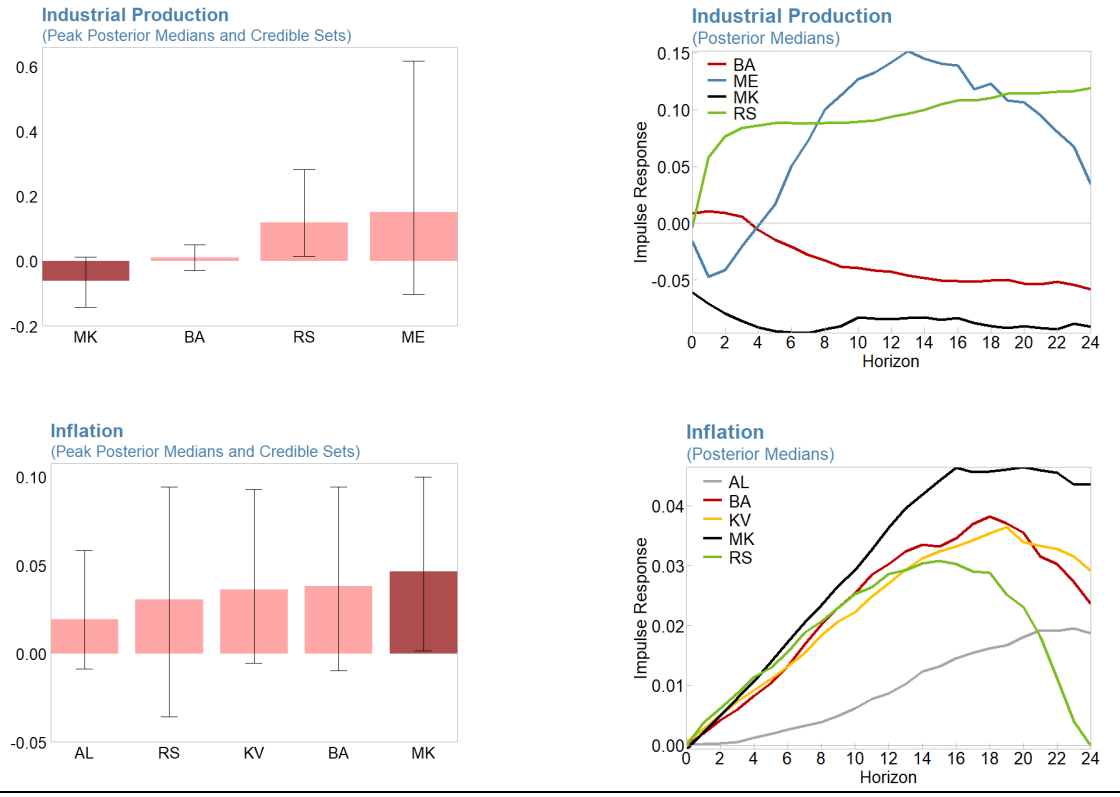
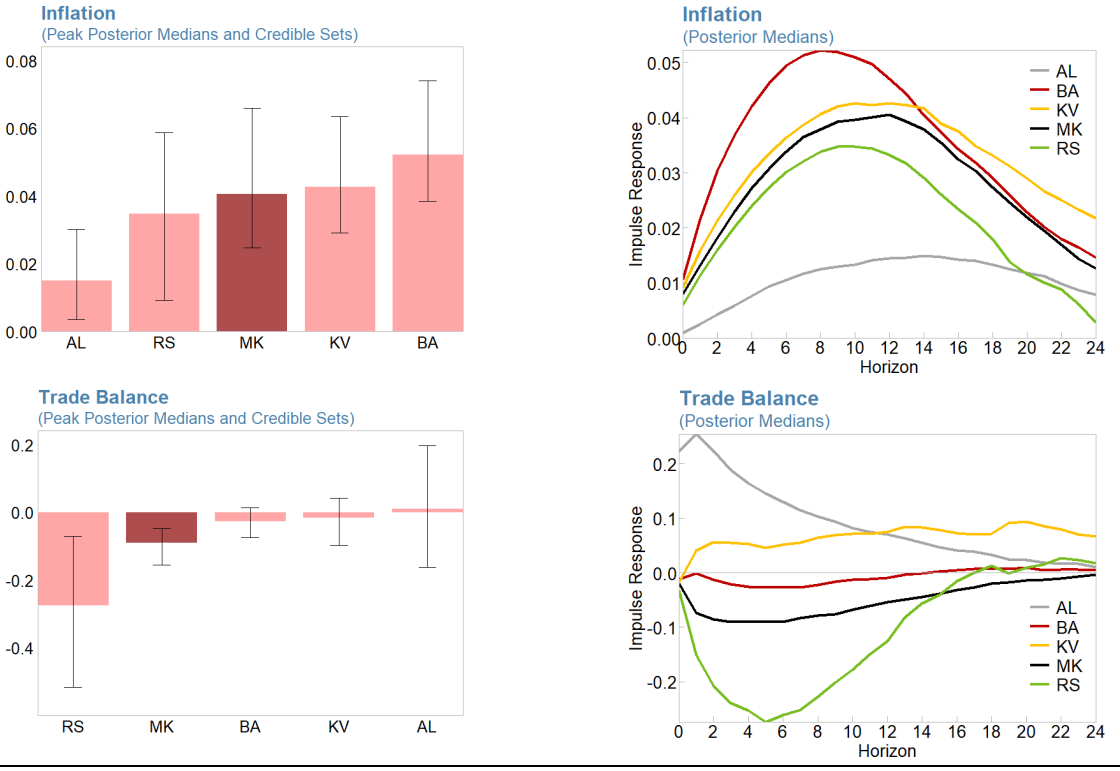


Figure 9. Spillovers from Energy Price Shocks



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