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Unleashing Potential: Structural Reforms for Boosting Long-Term Growth

Adina Popescu, Chan Kim, Simona Kovachevska Stefanova, Ming Ma, and Rimtautas Bartkus

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Unleashing Potential: Structural Reforms for Boosting Long-Term Growth, Republic of North Macedonia

Prepared by Adina Popescu, Chan Kim, Simona Kovachevska Stefanova, Ming Ma, and Rimtautas Bartkus

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ABSTRACT: This paper assesses North Macedonia's long-term growth prospects and the potential output gains from structural reforms. Potential growth is estimated at 2.6–2.9 percent in 2025 using univariate filters and semi-structural models estimated with a Kalman filter, with results pointing to a small positive output gap. Benchmarking against EU and U.S. frontiers highlights sizable gaps in labor market outcomes, the business environment, and governance. Simulations suggest that closing half of the gap relative to CESEE peers could raise GDP by about 14 percent over five years. The paper discusses reform priorities and implementation considerations to support faster income convergence.

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SELECTED ISSUES PAPERS

Unleashing Potential: Structural Reforms for Boosting Long-Term Growth

Republic of North Macedonia

Prepared by Adina Popescu, Chan Kim, Simona Kovachevska Stefanova, Ming Ma, and Rimtautas Bartkus[1]

[1] The authors wish to express their gratitude to Nick Gigineishvili and Oya Celasun for their insightful guidance and comments and to the seminar participants at the National Bank of the Republic of North Macedonia for their valuable feedback.

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REPUBLIC OF NORTH MACEDONIA

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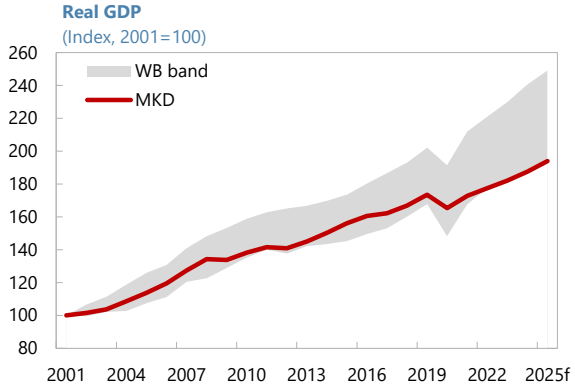
UNLEASHING POTENTIAL: STRUCTURAL REFORMS FOR BOOSTING LONG-TERM GROWTH

This paper assesses North Macedonia's long-term growth challenges and quantifies the potential gains from structural reforms. Despite substantial progress since the early 2000s, average real GDP growth has lagged regional peers and income convergence remains slow, reflecting weak productivity growth and rising labor underutilization amid aging and emigration. Using a suite of methods—including univariate filters on annual and quarterly GDP and two semi-structural multivariate models estimated with a Kalman filter (an annual model with Okun's law and a quarterly projection model)—we estimate potential output growth at about 2.6–2.9 percent in 2025, with a small positive output gap. We then benchmark structural policy indicators against a CESEE frontier and simulate medium-term output effects from closing half the gap. The results suggest sizable gains over a five-year horizon—around 14 percent higher GDP in total—driven primarily by labor market and human capital reforms, improvements in the business environment, and stronger governance (notably control of corruption). The analysis highlights the importance of reform packages and sequencing, and underscores the EU Reform and Growth Facility as a key catalyst for accelerating implementation and sustaining faster, more inclusive convergence toward EU income levels.

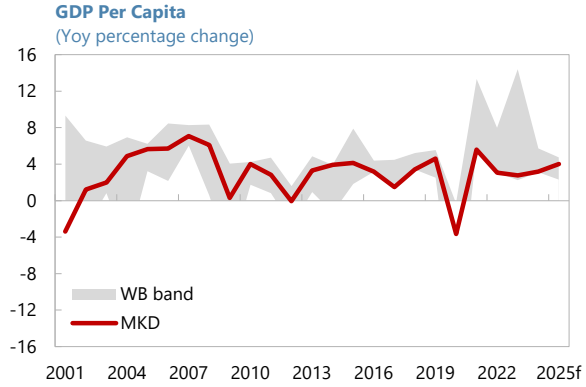
A. Growth Drivers and Performance

1. Despite commendable progress in raising output, North Macedonia's growth has lagged its regional peers. Real GDP growth has averaged about 2.6 percent annually since 2001, compared to 3.5 percent for the other Western Balkan countries. Following robust expansion prior to the Global Financial Crisis—when growth exceeded 5 percent in several years—economic activity moderated to about 2.4 percent during 2009–2019 in the subsequent decade amid weaker external demand and heightened regional uncertainty. After a sharp pandemic-induced contraction in 2020, the recovery has been gradual relative to peers, with growth averaging about 3 percent during 2021–25.

Figure 1. Growth Developments Relative to Western Balkan Peers



Sources: IMF WEO Database and IMF staff calculations.

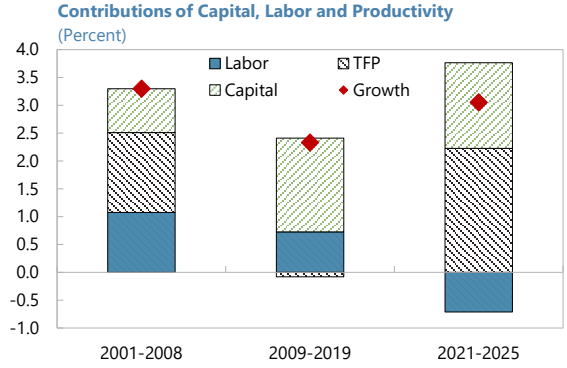


Sources: IMF WEO Database and IMF staff calculations.

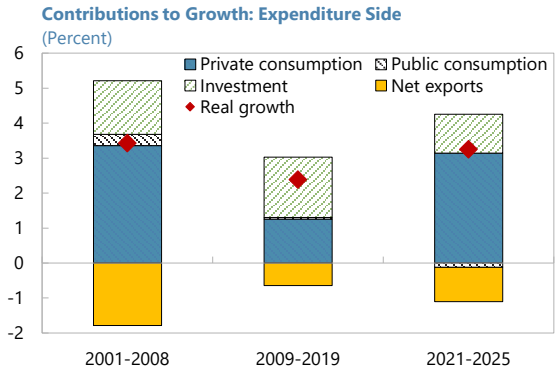
2. Growth has been driven primarily by private consumption and investment, while net exports have weighed on growth. Pre-GFC and post-COVID periods, private consumption contributed between 3.0 and 3.4 percentage points to GDP growth. This reflected rising household incomes, strong remittance inflows, and improved consumer confidence as North Macedonia made strides toward EU accession and joined NATO. Private investment has been the second most important driver, contributing 1.4–1.7 percentage points across all periods, supported by steady inflows of foreign direct investment in manufacturing and sustained infrastructure development. In contrast, public consumption has made only a modest contribution to growth. The contribution of external sector has been mostly negative.

3. On the production side, growth has shifted from balanced growth before the GFC to capital and TFP-driven growth after the GFC, amid declining labor contributions. In 2001–2008, balanced gains in labor, capital, and TFP supported post-conflict recovery, aided by reforms, FDI, and EU integration. However, the post-GFC decade (2009–2019) marked a significant shift in growth dynamics, as TFP's contribution turned negative, while capital accumulation became a more prominent driver, supported by sustained FDI in manufacturing and infrastructure. In the post-COVID period (2021–2025), productivity accounted for the majority of output gains, aided by robust investment. In contrast, labor's contribution — weighed down by demographic aging and persistent emigration—has weakened further in recent years and turned negative amid sluggish employment growth.

Figure 2. Real GDP Growth Decompositions: Demand and Production Side



Sources: Country authorities, Penn World Table (version 11.0), and IMF Staff calculations.



Sources: Haver and IMF Staff calculations.

4. North Macedonia's GDP per capita (PPP) has nearly doubled since 2001, but in 2024 it still stood at just 43 percent of the EU average. Convergence has been slower relative to many early EU-accession peers, with growth in output per capita of around 3.0 percent per year compared to 3.7 percent on average in other Western Bakan countries. At this rate, the "half-life" of the income gap (the time required to halve the remaining difference with the EU average) is of almost 20 years, emphasizing the need for higher growth to accelerate catch-up. The principal bottlenecks are weak productivity growth and labor underutilization with low participation rates and employment dominated by low-skill segments. UN projections indicate that continued emigration will shrink the working-age population, leading to a 0.5 percentage point decline in employment by 2030. This

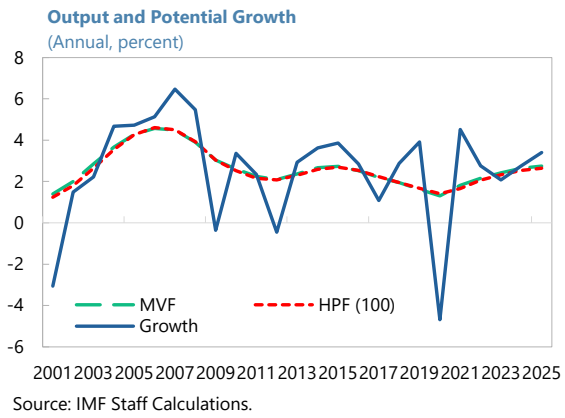
erosion of labor supply is expected to exert a drag on potential output (Ayerst and Kovachevska Stefanova, 2025), unless it is offset by productivity gains and capital accumulation.

B. Estimating Potential Output

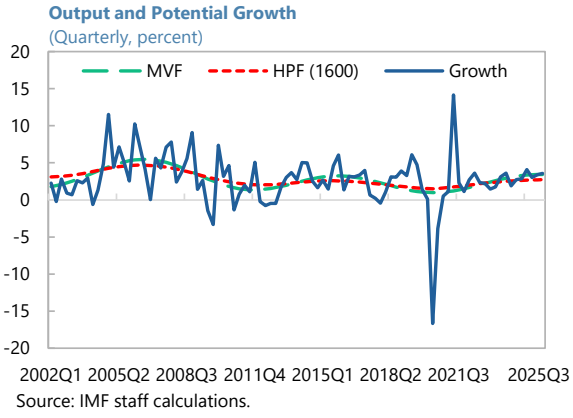
5. Estimating potential output is essential for assessing both the cyclical position of the economy and its long-term growth prospects. Potential output denotes the level of real GDP consistent with low and stable inflation given existing structural conditions (often referred to as the non-accelerating-inflation rate of output or NAIRU-consistent level). It also describes the economy's long-run productive capacity—the output path that could be sustained under full and efficient utilization of labor, capital, and technology. In this section, we draw on a range of econometric and model-based approaches to estimate North Macedonia's current potential output. The following section then builds on these results to identify and quantify the structural reforms that could strengthen the country's long-term growth potential.

6. First, we use several common univariate filtering methods to capture the underlying growth trend. We estimate trend (potential) output using a dual Hodrick–Prescott filter on annual and quarterly GDP data from 2001. Our findings show that potential output growth averaged around 2.6–2.8 percent over 2001–2025 (Figure 3 and Table 1), slowing from 3.4–4.0 percent before the global financial crisis to 2.3–2.4 percent in the years that followed (excluding 2020 due to COVID-related distortions). Both the annual and quarterly models indicate a pickup in potential growth in 2025 to about 2.6–2.7 percent, implying a positive output gap in the range of 0.7–1.0 percent.

Figure 3. Output Growth and Potential Growth



Source: IMF Staff Calculations.



Source: IMF staff calculations.

7. We complement the univariate filters with two structural multivariate filtering models. The models are estimated using the Kalman filter and jointly extract trend and cyclical output components from a broader set of macroeconomic indicators. Both models follow a semi-structural New Keynesian design. The annual model is a reduced-form framework incorporating unemployment dynamics and Okun's law (Alichi et al., 2015), while the quarterly model is a Quarterly Projection Model (QPM) model which features a more detailed supply side, a monetary policy block, and is akin to projection models widely used in central banks (Berg et al., 2006),

including the NBRNM's MAKPAM model (Hlédik et al., 2016). Despite their greater complexity, the multivariate models produce potential output estimates broadly consistent among themselves as well as with the HP filter (see Figure 3 and Table 1). The structural models, however, point to a somewhat larger positive output gaps in the most recent period, which is consistent with the observed higher inflation. Taken together, the various approaches suggest that North Macedonia's potential output growth in 2025 is estimated at about 2.9 percent. The next section of this paper quantifies how structural reforms can durably lift potential growth from this level over the medium term.

Table 1. North Macedonia: Potential Output Growth Estimates
(Percent averages)

	HP Filter (Q Model)	Multivariate Filter (Q Model)	HP Filter (A Model)	Multivariate Filter (A Model)	Average
2001-2008	4.0	4.1	3.3	3.4	3.7
2009-2019	2.3	2.2	2.3	2.4	2.3
2021-2025	2.3	2.5	2.2	2.4	2.3
2001-2025 *1/*	2.8	2.8	2.6	2.6	2.7
2025	2.7	3.4	2.8	2.6	2.9

Source: IMF staff estimates.
1/ includes 2020

C. Estimating the Medium-term GDP Impact of Structural Reforms

8. North Macedonia shows sizeable structural policy gaps relative to the global frontier. Following Budina et al. (2025), we compile a comprehensive set of structural policy indicators for European countries and the United States, grouped into six areas: governance; labor and human capital; business regulation; R&D and digitalization; credit and capital markets; and the external sector. For each indicator, the frontier is defined as the average of the two best-performers among European economies and the United States, normalized to 100. Figure 4 shows that, in most areas, North Macedonia ranks below both the 25th percentile of the cross-country distribution and the average of its regional peers in Central, Eastern, and Southeastern Europe (CESEE)—comprising 11 new EU member states (Bulgaria, Czech Republic, Estonia, Croatia, Hungary, Lithuania, Latvia, Poland, Romania, Slovak Republic, and Slovenia), six Western Balkan economies (Albania, Bosnia and Herzegovina, North Macedonia, Montenegro, Kosovo, and Serbia), and four other countries (Moldova, Belarus, Russia, and Türkiye)—with the exception of business regulation.

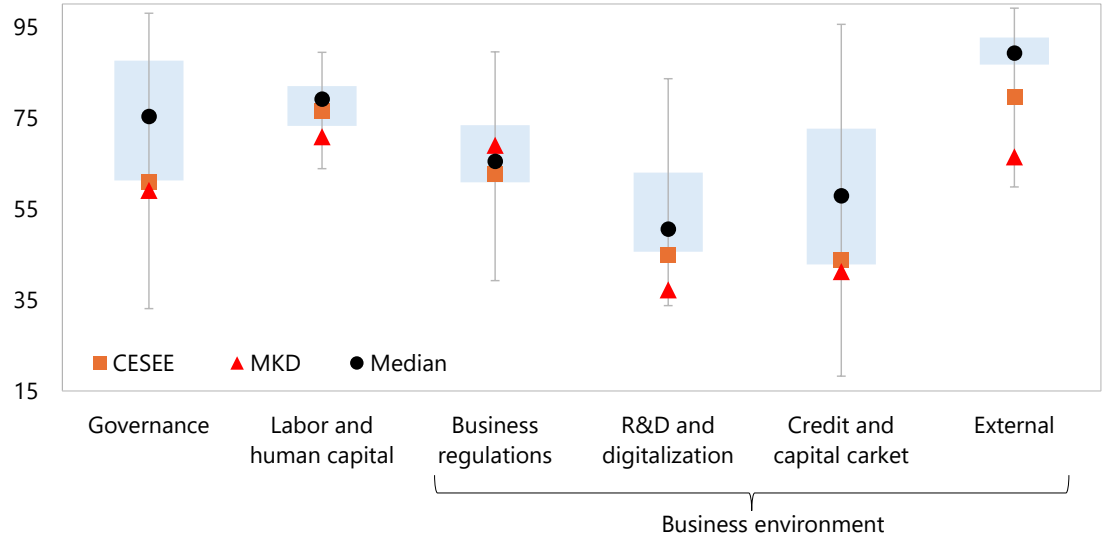
9. We estimate the medium-term impact of closing structural reform gaps on potential output. Following Budina et al. (2025), we use the following relationship to compute output gains for North Macedonia from closing gaps in selected indicators:

*Output Gains = Closed Policy Gaps * Output Elasticities.*

We assume that North Macedonia closes 50 percent of its gap relative to the CESEE frontier. This benchmark provides an estimate of the potential GDP gains from reforms that move the country toward regional best practices—a realistic, though still ambitious, reform objective. Estimated gains are computed from using representative indicators from each area, selected based on their relevance and data availability for North Macedonia. Output elasticities are drawn from IMF and OECD studies (see Annex III, Table 1) and capture the impact on GDP over a five-year horizon. As noted in Budina et al. (2025), the estimates are subject to both under- and over-estimation, as the framework abstracts from interactions across reforms and general equilibrium effects that could amplify or crowd out impacts of other reforms. Nevertheless, the exercise provides a useful illustration of the relative importance of structural reforms for medium-term growth.

Figure 4. Distance to Frontier in Selected Structural Policy Areas

(Percent, relative to Europe and USA frontier, 2022)

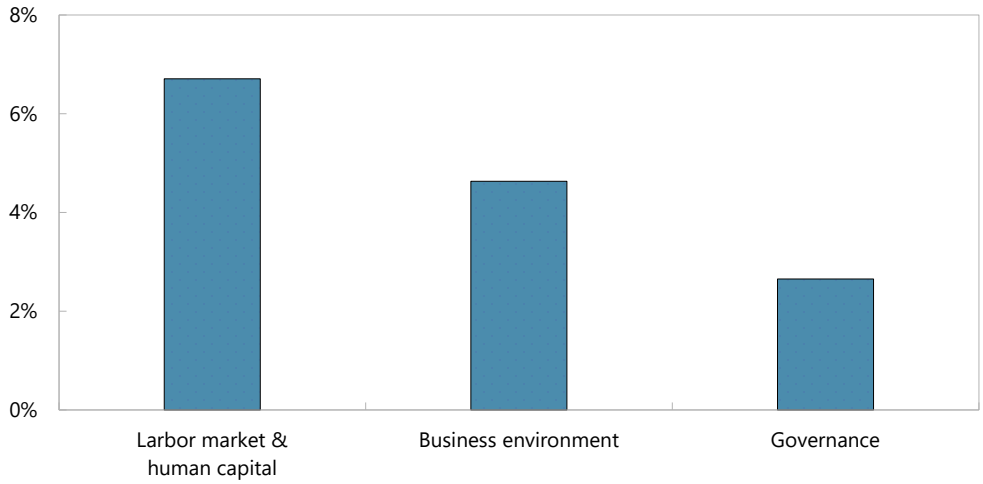


Sources: Fraser Institute; OECD; Eurostat, Berkeley; IMF, World Bank; and IMF staff calculations.
Note: Most indicators refer to 2022. The frontier is defined as the average of the two best-performing countries among European economies and the United States and is normalized to 100; all other values are expressed relative to this benchmark. Whiskers denote the full range (minimum to maximum), while bars indicate the interquartile range (25th to 75th percentiles). Regional aggregates are simple averages. CESEE comprises 11 EU member states (BGR, CZE, EST, HRV, HUN, LTU, LVA, POL, ROU, SVK, SVN), six Western Balkans countries (ALB, BIH, MKD, MNE, KOS, SRB), and four other countries (MDA, BLR, RUS, TUR).

10. Reform-specific estimates suggest sizable possible gains over a five-year horizon from labor market, business environment, and governance reforms. As shown in Figure 5, labor market and human capital reforms generate the largest estimated gains, increasing output by 6.6 percent. Within this category, closing gaps in labor force participation and the human capital index would raise GDP by 5.5 percent and 1.1 percent, respectively. Business environment reforms also generate significant gains of about 4.6 percent in total, driven by lower external trade restrictions (2.5 percent), improvements in product market regulations (1 percent), deeper financial markets (0.6

percent) and higher business R&D spending (0.5 percent).[1] Governance reforms—proxied by improvements in control of corruption—would raise GDP by an additional 2.7 percent. Beyond their direct effects, governance reforms should remain a priority because stronger institutions can amplify the payoffs from reforms in labor markets and the business environment. IMF (2019) finds that the gains from such reforms can be more than twice as large in economies with strong governance compared with those with weak governance.

Figure 5. Medium-Term GDP Impact of Selected Structural Reforms
(Percent, by closing 50% policy gaps with CESEE frontier)



Sources: Fraser Institute; Haver Analytics; IMF; OECD; and IMF staff calculations.
Note: The selected indicators are the labor force participation rate and the UNDP Human Capital Index for labor market and human capital; the Measure of Aggregate Trade Restrictions (MATR), the IMF financial market depth index, R&D expenditure as a share of GDP, and the OECD Overall Product Market Regulation (PMR) indicator for business environment; and the control of corruption indicator from the Worldwide Governance Indicators (WGI) for governance. Output elasticities are drawn from IMF and OECD studies; further details are provided Annex II.

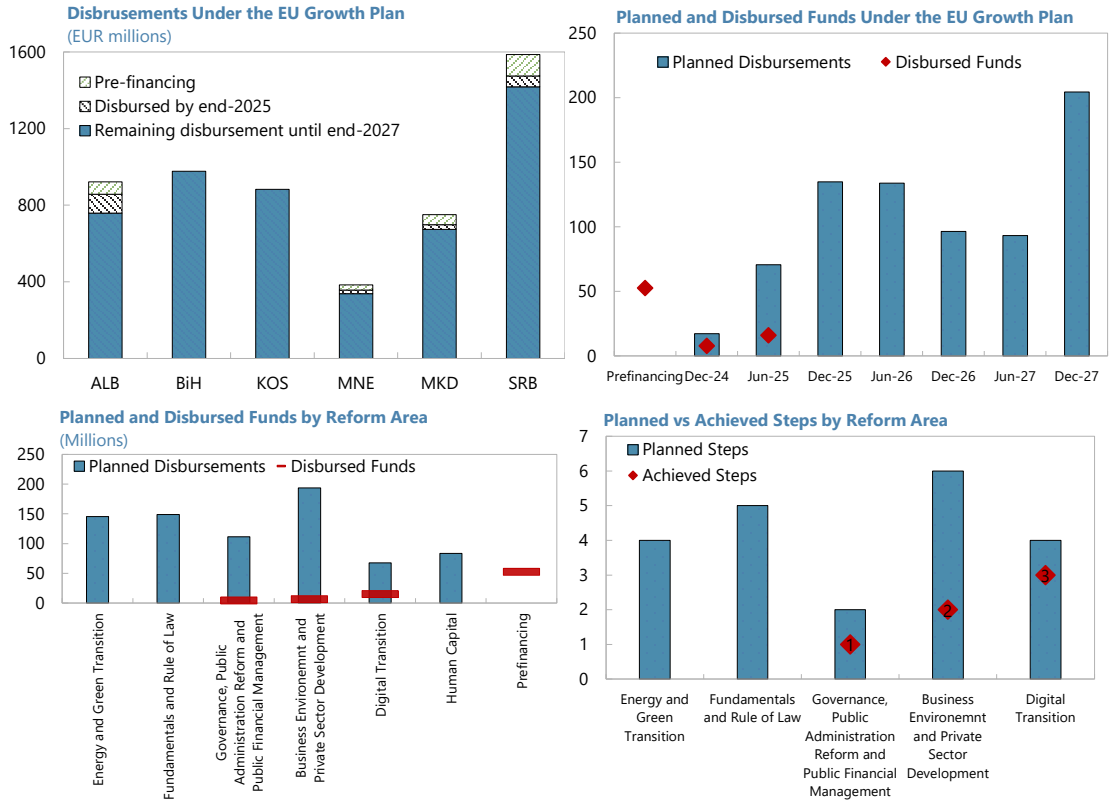
11. The combined reform gains could be significant. Taken together, these reforms imply cumulative medium-term output gains of about 14 percent, which means roughly 2-3 percent additional annual growth, nearly doubling current estimates of potential growth. This estimate, however, is subject to important caveats. The aggregation assumes additivity across reform areas, which may overstate gains when reforms work through overlapping channels. For example, reducing corruption in licensing and permit approvals would strengthen both governance and the business environment. However, the exercise may also understate gains by abstracting from complementarities and by relying on a limited set of indicators that do not capture the full reform agenda within each area (IMF, 2019). Robustness checks that re-weight governance elasticities toward countries similar to North Macedonia produce results nearly identical to the baseline (Annex III, Figure 1), and external evidence—such as World Bank (2025) simulations showing medium-term gains of about 15 percent even under narrower reforms—further supports the plausibility of sizable cumulative effects.

[1] For tractability, we combine four reform areas—business regulation, R&D and digitalization, credit and capital markets, and the external sector—into the business environment category, reflecting their joint role in shaping firms' competition, financing, innovation, and market integration.

Box 1. The EU Growth Plan: A Catalyst for Structural Reform

The Reform Agenda supported by the EU Growth Plan for the Western Balkans offers an opportunity to accelerate income convergence by addressing structural barriers to growth (EC, 2025). According to World Bank estimates, full implementation of reforms under the EU Reform and Growth Facility (RGF)—targeting closure of 70 percent of critical gaps with the EU in five key areas over 20 years—could boost baseline annual GDP per capita growth in the Western Balkan countries by up to 3 percentage points (World Bank, 2025). The five priority areas include: (i) digital infrastructure; (ii) regulatory quality; (iii) government effectiveness; (iv) financial development; and (v) female labor force participation (LFP). Among these, reforms in regulatory quality (1.13 pp), government effectiveness (0.95 pp), and digitalization (0.63 pp) offer the largest growth dividends, while improvements in female LFP (0.35 pp) and financial sector development (0.03 pp) remain essential for inclusive, sustainable growth.

The RGF incentivizes North Macedonia's socio-economic convergence by linking financial support to the delivery of concrete reform outcomes. Under the RGF, the country is eligible for up to €750 million in grants and favorably priced loans over 2024–2027, conditional on meeting clearly defined reform milestones (EC, 2025). As of the latest assessment, North Macedonia has completed 6 of the 50 steps (12 percent) and received €76 million, including €52.5 million in pre-financing. Progress has been concentrated in digital transition legislation, strengthening financial controls, SOE management (specifying requirements for independent board members), and labor and market inspections. Several other important milestones—such as optimizing para-fiscal charges, establishing a comprehensive SOE register, and advancing railways restructuring—have not yet been met.



Sources: Reform Monitor, "Scoreboard," and IMF staff calculations.
Note: Figures reflect the December 2024 and June 2025 assessments and prefinancing; the December 2025 assessment is pending.

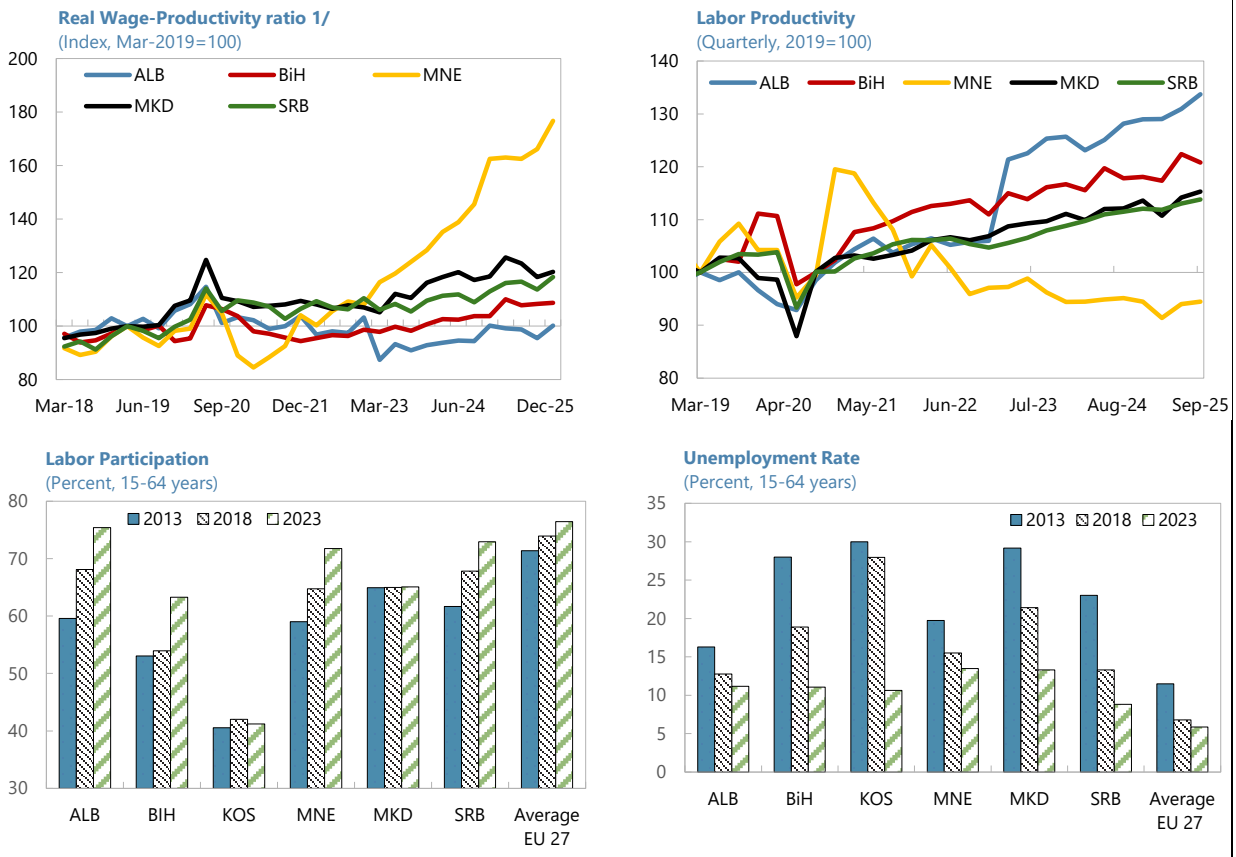
D. Priority Reform Areas for Accelerating Convergence

12. This section translates the quantified growth payoffs into concrete and actionable reform priorities. The previous quantification exercise found that closing 50 percent of reform gaps compared to the CESEE frontier could raise medium-term GDP by around 14 percent, with the largest contributions coming from labor markets and human capital (6.6 percent), the business environment (4.6 percent), and governance (2.7 percent). Priorities below, which are focused on these three high-return areas, closely align with North Macedonia's Reform Agenda supported by the EU Reform and Growth Facility (RGF). Delivering on these reforms, therefore, would not only raise growth but also support EU accession and unlock financing.

13. Labor market inefficiencies represent significant structural bottleneck to growth. On the supply side, female labor force participation remains approximately 20 percentage points below the EU average, while youth unemployment is about 29 percent for those aged 15–24 with persistently elevated rates of young people not in employment, education, or training (NEET). These gaps are compounded by ongoing emigration, which Ayerst and Kovachevska Stefanova (2025) project will reduce employment by around 0.5 percentage points by 2030, eroding labor supply and growth potential. Skills mismatches further constrain supply: despite improvements in educational attainment, the share of adults participating in learning and training remains low, and vocational programs are insufficiently aligned with employer needs.

14. On the demand side, sluggish labor productivity growth and institutional rigidities compound the problem. Productivity has risen by a cumulative 15 percent since 2019. While post-pandemic annual productivity growth accelerated to around 5 percent, it remains insufficient to close income and competitiveness gaps with regional peers or the EU. At the same time, real wages have outpaced productivity, pushing the real wage–productivity ratio up by around 18 percent and eroding external competitiveness. Collective wage-setting mechanisms (prevalent in the public sector) continue to be weakly linked to productivity, while the labor code—covering hiring practices, flexible work arrangements, and frameworks for foreign and regional workers—is broadly aligned with EU benchmarks (Annex II). Lowering the labor tax wedge would boost participation by strengthening work incentives and reducing structural barriers to formal employment (IMF, European Department, 2024). At the same time, high informality, concentration of employment in low-productivity sectors, and limited availability to quality entry-level positions for young people reduce incentives and dampen wage growth potential. Closing these supply and demand-side gaps could significantly improve labor market outcomes and generate sustained productivity gains.

Figure 6. Labor Market Performance in North Macedonia Relative to Western Balkan Peers



Sources: ILO, LFS – Labor Force Survey, Haver Analytics and IMF staff calculations.
1/ Real wage deflated using the GDP deflator.

15. The labor market gaps can be narrowed through participation incentives, active labor-market policies, and targeted business support. Expanded affordable childcare, wider use of flexible work arrangements, and strengthened activation and re-skilling programs would facilitate labor force participation and re-entry into employment (Ayerst & Kovachevska Stefanova, 2025). These measures, which align with the RGF 2024–27 and the Government's Strategic Priorities for 2026, should be reinforced by targeted efforts to reduce skills mismatches, including by increasing adult-learning participation, strengthening vocational education and training, and enhancing the recognition of non-formal and informal learning. To maximize their effectiveness, these reforms should be well-sequenced and mutually reinforcing, with improvements in ALMP design and governance implemented alongside measures to raise labor participation. Given declining demographic trends, a gradual increase in the statutory retirement age for women would also help mitigate the workforce losses stemming from emigration and population aging (Ayerst & Kovachevska Stefanova, 2025; IMF Article IV, 2025).

16. Governance reforms may also have a considerable effect on growth potential. IMF analysis finds that governance weaknesses—including corruption—can have a material impact on key determinants of growth, such as macro-financial stability, investment, human capital accumulation, and total factor productivity (IMF, 2016). Such vulnerabilities often reflect institutional

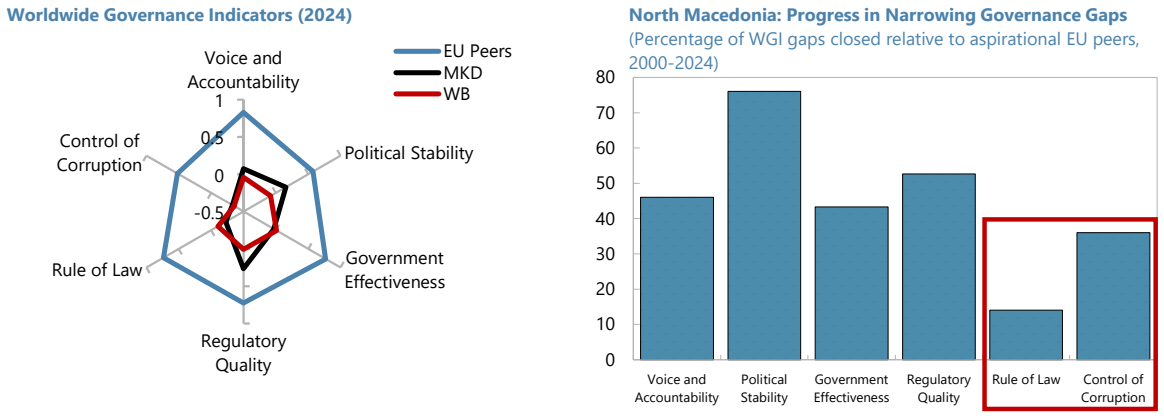
weaknesses and capacity constraints, which undermine the efficiency of delivery of public goods. IMF work also highlights a strong association between effective control of corruption and indicators of sound fiscal governance, including fiscal transparency and the quality of public financial management and tax administration (IMF, 2018). In contrast, opaque and overly complex regulatory frameworks can grant excessive discretion to public officials, weakening regulatory predictability and distorting market competition.

17. While performing close to the Western Balkan average, North Macedonia could achieve significant gains by narrowing governance gaps relative to EU peers. Over the past 24 years, it has almost halved its WGI-based governance gaps relative to economies that joined the EU since 2004 (Figure 7). Progress, however, has been uneven and slow in strengthening the rule of law and reducing corruption which are critical for strong and inclusive growth. Persistent weaknesses of the justice system and shortcomings of the anti-corruption framework have also been identified as obstacles to EU accession (EC, 2025a).

18. Against this backdrop, governance reforms should focus on strengthening integrity and effectiveness across key state functions. These include:

- Strengthening judicial independence and integrity through transparent and merit-based appointments, enhanced accountability mechanisms, adequate staffing and resources, the full operationalization of case management systems, and effective implementation of the 2024–2028 Judicial Reform Strategy;
- Adopting a new Criminal Code aligned with EU and international standards and improving the track record in high-level corruption cases, including through stronger financial investigation and confiscation tools;
- Reinforcing the capacity, independence and credibility of the State Commission for the Prevention of Corruption and improving the effectiveness of asset and conflict of interests' declarations by public officials;
- Accelerating implementation of the national anti-corruption strategy, including by preparing a credible, well-prioritized updated 2026–2030 strategy with clear institutional responsibilities, sequencing, and adequate resourcing; and
- Strengthening coordination, data exchange and integrity systems across institutions responsible for the prevention, detection, investigation, and prosecution of corruption.

Figure 7. North Macedonia and Aspirational EU Peers: Governance Gap



Sources: WGI and IMF staff calculations.
Notes: Aspirational EU Peers include Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia, and Slovenia.

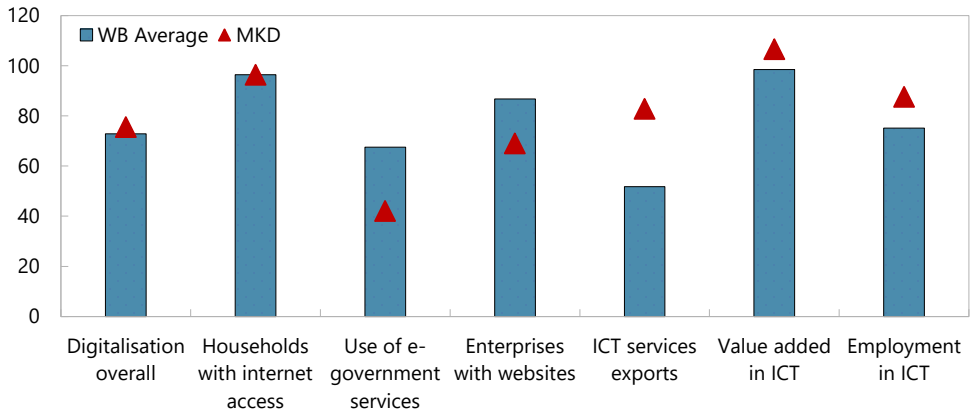
19. Improving the business environment and reducing informality would foster investment and enhance competitiveness. Key priorities include strengthening transparency and digitalization, easing regulatory and financial constraints on SMEs, simplifying licensing and permit procedures and streamlining administrative, licensing, and registration fees. Domestic enterprises should be strengthened by fostering entrepreneurship and innovation, while enhancing integration in the EU internal market, alignment with EU legislation, and strengthening internal trade policy by improving connectivity, promoting fair competition, transparency, consumer protection and legal certainty. Measures to promote formalization should focus on strengthening tax compliance through continued reform efforts, and reducing regulatory delays and inconsistencies (Article IV, 2024).

20. Investment and state aid frameworks also need to be improved. The model centered on generous tax incentives and export oriented FDI—concentrated in a narrow set of industries—generated limited spillovers to the domestic economy, kept export concentration high, and entailed sizable fiscal costs (World Bank, 2022). Going forward, investment policy should shift toward a broader competitiveness agenda, with performance-based and EU consistent state aid schemes that strengthen linkages with domestic firms, support productivity gains, and facilitate deeper integration into EU and regional value chains. Further tariff alignment with the EU and continued progress in enhancing efficiency of customs procedures would also facilitate trade.

21. Advancing digitalization in the public sector would further enable the business environment. According to the SIGMA Service Delivery and Digitalisation indicators, North Macedonia's digital government tools perform overall well compared with Western Balkan and EU Enlargement countries, but weaknesses remain in e-government strategy and coordination, architecture and infrastructure maturity, digital identity, signature and trust services. Reforms should therefore prioritize strengthening integrated e-government services and platforms, improving interoperability and data sharing across institutions and expanding the use of digital tools for more efficient and transparent service delivery. Initiatives such as E-PRO or mandatory e-invoicing (e-

Faktura) can streamline administrative procedures enhance compliance and increase revenues (Fan and others (2020), Bellon and others (2022)). Digitalizing public financial management systems through IFMIS can enhance transparency and reduce opportunities for corruption by strengthening budget execution and capital projects oversight, while improving compliance, lowering costs and improving revenue mobilization. Continued progress will require sustained investment in institutional capacity, system integration, and strengthening of the Legal and regulatory frameworks, including for digital governance and cybersecurity.

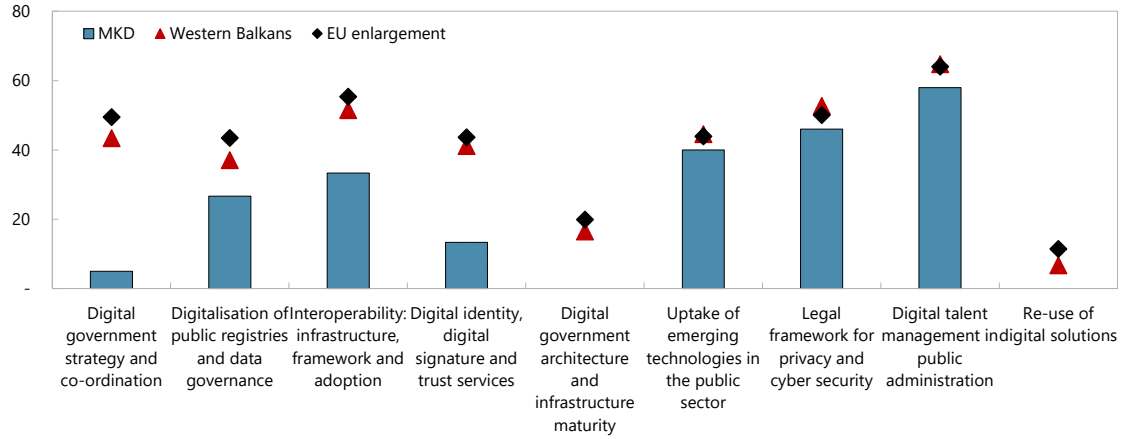
Figure 8. Overall Digitalization
(Percent of EU average)



Sources: Converge2.eu and IMF staff calculations.
Note: EU-relative indicators based on official data, expressed as percentages of the EU average. EU-relative indicators based on official data, where higher values indicate better performance. Indicators are considered converged if above the EU average and diverging if recent average changes are negative. Estimates are indicative. Convergence estimates are indicative and based on recent trends and available data.

22. Private sector digitalization would boost competitiveness and innovation. North Macedonia's connectivity is close to the EU averages with 91.2 percent of household having internet access and 89.2 percent daily users, but only 28.5 percent of the population possess basic or average digital skills compared to the EU's 60.4 percent (Eurostat, 2026). In light of low digital skills, ICT talent shortages, and weak education–labor market linkages, priorities should include a national digital skills framework, targeted reskilling programs, and systematic strengthening of digital capacities in the private sector. These efforts could be complemented by promoting the adoption of digital solutions and innovation through targeted support for SMEs and startups, improved access to finance where bank lending remains limited, and public-private partnerships which could help mobilize private investment and share technical expertise, along with improved coordination of donor support and transparent management of funds for business digital transformation. At the same time, reforms should establish a flexible and robust legal and institutional framework for the safe and ethical use of AI, supported by long-term investment in talent attraction, research centers and laboratories to strengthen competitiveness and alignment with EU standards.

Figure 9. Digital Government Readiness and Maturity



Sources: Sigma and IMF staff calculations.
Note: Indicators are based on a mixed methodology combining legal and document analysis, administrative and statistical data, and perception-based surveys, and should be interpreted with caution. Results are shown as point scores and peer-group averages rather than country rankings.

E. Building a Cohesive Reform Roadmap

23. Well-designed, properly timed and coordinated structural reforms have the potential to deliver significant growth dividends. The analysis presented before has shown that closing half of the distance to the CESEE frontier—particularly in governance, labor and human capital, and the business environment—could raise GDP by up to 14 percent over the medium term. Reform complementarities suggest that reform bundles outperform isolated actions. For example, improving judicial efficiency strengthens contract enforcement, lowers corruption, increases returns to human capital investment, and improves the business environment. Better education and the quality of human capital improve not only labor market outcomes, but also productivity and the quality of public institutions, which in turn lead to better governance. Similarly, digitalization raises productivity and reduces administrative burden, strengthening the business climate and fiscal management. The IMF's structural reform literature consistently finds non-linear rising returns when labor, product, and financial market reforms are implemented simultaneously (IMF, 2019; Budina et al., 2023).

24. Reforms implemented in good times tend to generate larger and faster output gains, than in economic downturns. A growing literature shows that structural reforms are both easier to implement and more effective when undertaken during periods of strong growth and favorable external conditions (IMF, 2019). From a political economy perspective, reform costs are perceived lower in such periods: displaced workers face better re-employment prospects and governments have greater fiscal space to compensate the affected, reducing political and social opposition to reforms (Fernandez & Rodrik, 1991; Duval 2008). A strong political mandate of the ruling coalition provides a window of opportunity for reform acceleration to strengthen resilience and growth potential, which is particularly important in an environment of recurrent shocks, elevated uncertainty, constrained policy space, and mounting medium-term challenges.

25. Governance reforms should be prioritized because they both generate growth gains on their own and amplify the impact of other reforms. IMF analysis shows that improvements in the rule of law and control of corruption can directly raise investment, productivity, and human capital accumulation. At the same time, stronger institutions increase the effectiveness of labor market, business environment, and digital reforms by improving policy credibility, reducing implementation risks, and strengthening incentives for private investment. Prioritizing governance reforms early in the reform sequence would therefore maximize the overall growth payoff of the reform agenda and support sustained progress under the RGF.

26. With stronger governance, labor market, human capital and business-environment reforms can become the main engine of medium-term growth. In labor markets, effective activation frameworks, well-functioning public employment services, and wage-setting mechanisms that better align labor costs with productivity would unlock sizeable gains from improved labor utilization, enabling higher participation rates and productivity growth to materially offset adverse demographic trends like emigration and aging. Complementing this, business-environment enhancements—such as easing product-market regulations, streamlining licensing and registration, and advancing digitalization as a horizontal enabler—would level the playing field through stronger regulatory quality and predictable enforcement. It would also reduce scope for discretionary treatment, foster competition, enable productive domestic firms to expand, and strengthen North Macedonia's preparedness to compete within the EU Single Market. In parallel, well-designed and adequately targeted social safety nets can reduce households' need for precautionary savings, supporting more efficient capital allocation and risk-taking. This integrated approach, if implemented decisively and aligned with RGF milestones, would help sustain annual growth up to 2–3 percent higher than current potential, more rapidly narrowing the income gap with the EU.

Annex I. Multivariate Filter Models

1. We employ two structural models for filtering output, one at yearly frequency, and one at quarterly frequency. The annual model is a reduced form New Keynesian model featuring unemployment and Okun's law, based on Alichi et al. (2015), 'Multivariate Filter Estimation of Potential Output for the Euro Area and the United States.' The quarterly model is also a reduced form New Keynesian model, featuring a more complex structure including a carefully modelled supply side, monetary policy, and linkages with the rest of the world - akin to the quarterly projections models utilized in various central banks around the world (including the MAKPAM model employed by the NBRNM).

A. Reduced-Form New Keynesian Model with Unemployment and Okun's Law

2. The first model operates at a yearly frequency and is designed to estimate potential output while accounting for labor market dynamics. It is based on the multivariate filter framework outlined in Alichi et al. (2015), which extends earlier work on unobserved components models for potential output estimation. The approach is "reduced-form" in the sense that it simplifies complex dynamic stochastic general equilibrium (DSGE) models into a more tractable system of equations that capture key macroeconomic relationships without full micro-foundations, making it suitable for empirical estimation with annual data. The model treats potential output as a latent (unobserved) variable, decomposed into trend and cyclical components. It uses a system of equations to filter out these components from observable data, including real GDP, CPI inflation, and the unemployment rate. The estimation relies on the Kalman filter in a Bayesian framework. The key equations of the model are as follows.

The stochastic process for actual (log) output is the sum of potential output y_t^*, output gap $\tilde{y}_t$, while potential output, its growth rate g_t, and the output gap evolve according to their own stochastic processes:

$$y_t = y_t^* + \tilde{y}_t$$
$$y_t^* = y_{t-1}^* + g_t + \eta_t^{\gamma}$$
$$g_t = (1-\theta)\cdot g^* + \theta \cdot g_{t-1} + \eta_t^{g}$$

$$\tilde{y}_t = \rho \cdot \tilde{y}_{t-1} + \eta_t^{c}$$

where $\eta_t^{\gamma}, \eta_t^{g}, \eta_t^{c}$ are mutually uncorrelated white-noise shocks. This setup captures a variety of shocks to output, differentiating between business cycle shocks η_t^c, shocks that permanently raise the level of potential η_t^{γ}, shocks to the growth rate of potential η_t^g.

The Phillips Curve links the evolution of inflation to both forward-looking and backward-looking inflation and to the output gap, according to the process:

$$\pi_t = \alpha + \beta \cdot \tilde{y}_t + \lambda \cdot \pi_{t-1} + (1-\lambda)\cdot E_t\pi_{t+1} + \eta_t^{\pi}$$

The labor market is modelled by defining the unemployment gap $\tilde{u}_t$ as the difference between actual unemployment u_t and the equilibrium value of the unemployment rate (the NAIRU), denoted u_t^*:

$$\tilde{u}_t = u_t - u_t^*$$

Both the NAIRU and the unemployment gap are time varying, and subject to white noise shocks, while the NAIRU is also subject to variations in its trend $g_t^{u^*}$, to capture more persistent deviations. Okun's law relationship appears in the dependence of the unemployment gap on the amount of slack in the economy $\tilde{y}_t$.

$$\begin{gathered}\tilde{u}_t = \tau_1 \cdot \tilde{y}_t + \tau_2 \cdot \tilde{u}_{t-1} + \eta_t^u \\ u_t^* = (1-\tau_3)u_{t-1}^* + \tau_3 u^* + g_t^{u^*} + \eta_t^{u^*} \\ g_t^{u^*} = (1-\tau_4)g_{t-1}^{u^*} + \eta_t^{g^{u^*}}\end{gathered}$$

To assist with the end-of-sample identification, the model includes equations for forecasts (5-step ahead growth and inflation, derived from the IMF Staff macro-framework).

B. Reduced-Form New Keynesian Model with Monetary Policy

3. The second model operates at a quarterly frequency and is a semi-structural reduced form New Keynesian macroeconomic model designed to produce coherent medium-term projections and to assess monetary policy. The model featuring a more complex structure linking aggregate demand, inflation dynamics, monetary policy, and the external sector in a coherent system. The key equations of the model can be summarized as follows (see Berg et al. (2006) for full details).

First, aggregate demand depends on real interest rates, external conditions, and the country risk premium:

$$\hat{y}_t = b_1\hat{y}_{t-1} - b_2 mci_t + b_3\hat{y}_t^* + \varepsilon_t^y$$

$$mci_t = b_4\left(\hat{r}_t + cr_{prem_t}\right) + (1-b_4)(-\hat{z}_t)mci_t$$

Second, the aggregate supply block consists of separate hybrid Phillips curves for core, food and energy price inflation. Each features both backward-looking behavior and forward-looking expectations, as well as dependence on sector-specific real marginal costs (which in turn are driven by output gaps and specific factors, such as global prices).

$$\pi_t^{core} = a_1\pi_{t-1}^{core} + (1-a_1)E_t\pi_{t+1}^{core} + a_2 rmc_t + \varepsilon_t^{core}$$

$$rmc_t = a_3\,\hat{y}_t + (1-a_3)(\hat{z}_t - \widehat{rp}_t^{core})$$

$$\pi_t^{food} = a_{21}\pi_{t-1}^{food} + (1-a_{21})E_t\pi_{t+1}^{food} + a_{22}rmc_t^f + \varepsilon_t^{food}$$

$$rmc_t^f = a_{23}\left(\widehat{rp}_t^{WFOOD} + \hat{z}_t - \widehat{rp}_t^{food}\right) + (1 - a_{23})\hat{y}_t$$

$$\pi_t^{energy} = a_{31}\pi_{t-1}^{energy} + (1 - a_{31})E_t\pi_{t+1}^{energy} + a_{32}rmc_t^{energy} + \varepsilon_t^{energy}$$

$$rmc_t^{energy} = a_{33}\left(\widehat{rp}_t^{WOIL} + \hat{z}_t - \widehat{rp}_t^{energy}\right) + (1 - a_{33})\hat{y}_t$$

$$\pi_t = w^{energy}\pi_t^{energy} + w^{food}\pi_t^{food} + \left(1 - w^{food} - w^{energy}\right)\pi_t^{core}$$

Under North Macedonia'a fixed peg, the exchange rate serves as the nominal anchor, limiting monetary policy independence. Expected depreciation is zero, enforcing no-arbitrage, and domestic interest rates are modeled using the UIP equation:

$$i_t = i_t^* + prem_t + \varepsilon_t^s$$

The risk premium is modelled to contain both a slow-moving trend and a gap component, which depends on factors like the domestic and foreign output gaps, the real exchange rate gaps, and net foreign assets/GDP. This ensures the domestic rate shadows the anchor country's policy to prevent capital flows that could break the peg.

$$prem_t = \overline{prem_t} + \widehat{prem}_t$$

$$\widehat{prem}_t = c_1\widehat{prem}_{t-1} + (1 - c_1)(-c_2\hat{z}_t + c_3\hat{y}_t - c_4\hat{y}_t^* - c_5(\left(\frac{nfa}{y}\right)_t - \overline{\left(\frac{nfa}{y}\right)}) + \varepsilon_t^{prem}$$

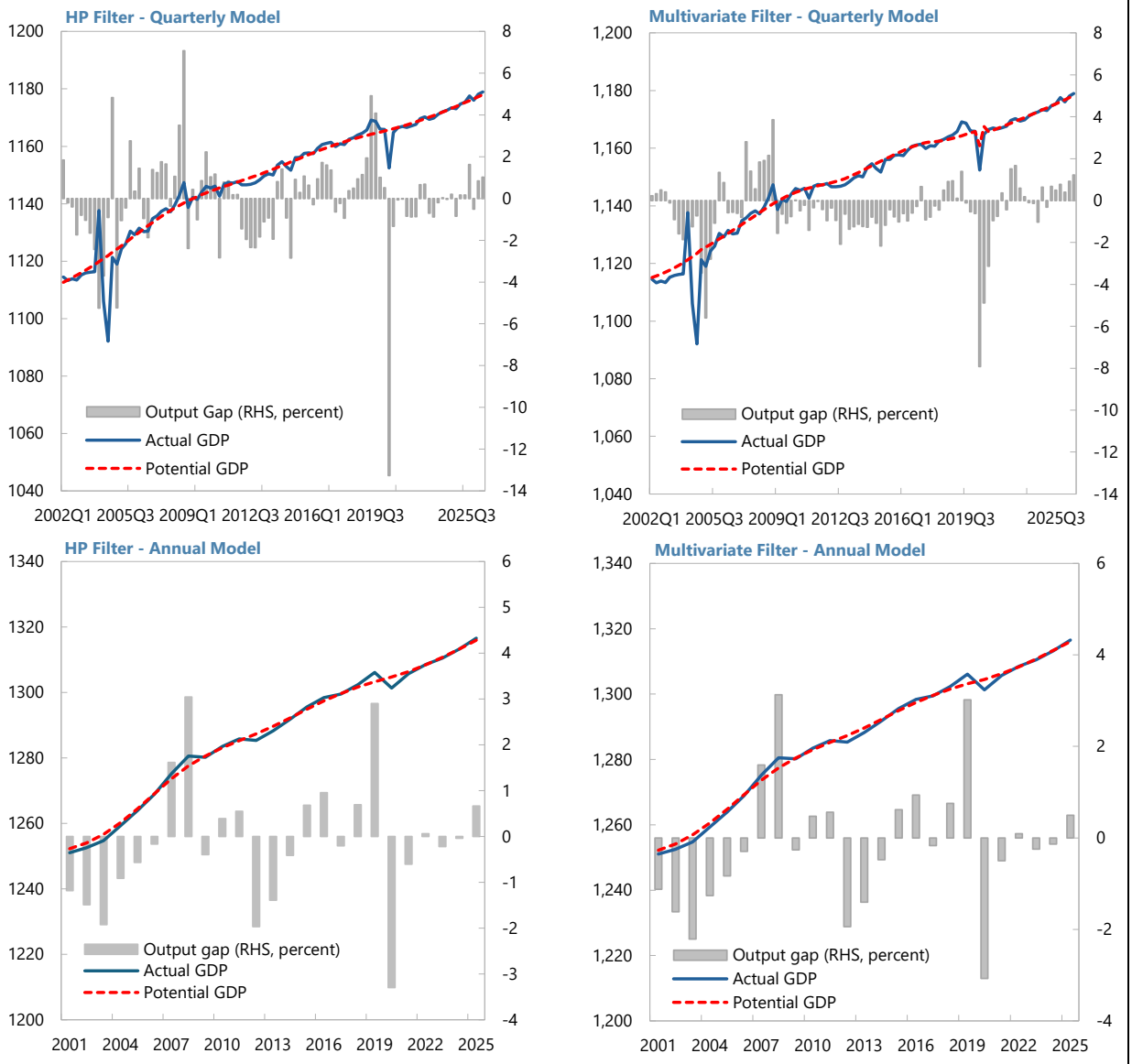
A long-run real UIP condition ensures consistency between trend real interest rates, the trend real exchange rate, and the country risk premium trend.

$$\Delta\bar{z}_t = \bar{r}_t - \bar{r}_t^* - \overline{prem_t}$$

The QPM also includes a set of identities and transformations that ensure internal consistency across national accounts, prices, and financial variables and parameters anchor the model's steady state and shape the medium- to long-run forecast path. Together, these blocks allow the model to generate internally coherent projections and to evaluate alternative policy paths or shocks in a structured, transparent way.

Annex I. Figure 1. North Macedonia: Output, Potential Growth and Output Gap

(Mil. Chn. 2005 Denars, percent) 1/



Sources: Haver Analytics and IMF staff estimates.

1/ 100 time natural log of real GDP in Mil. Chn. 2005 Denars, seasonally adjusted.

Annex II. Structural Reforms Heatmap by Country

Annex II. Table 1. North Macedonia: Structural Reforms Heatmap

	Alignment with Frontier	EUR	EU	CESEE	Western Balkan	MKD	Frontier 1	Frontier 2	Date	Source
I	**WGI governace index**	73	79	61	54	59				
I_1	Political stability	75	83	67	64	70	ISL	SMR	2022	WGI
I_2	Corruption	66	71	52	43	45	DNK	FIN	2022	WGI
I_3	Voice and accountability	78	85	65	59	63	NOR	CHE	2022	WGI
I_4	Government effectiveness	72	76	58	50	54	CHE	DNK	2022	WGI
I_5	Rule of law	73	79	59	52	54	FIN	DNK	2022	WGI
I_6	Regulatory quality	76	82	65	59	68	DNK	LUX	2022	WGI
II	**Labor human capital**	81	82	76	72	71				
II_1	EPL	71	72	72	71	71				
II_1a	Hiring and firing regulations	69	69	66	67	74	DNK	USA	2022	WEF-GCR
II_1b	Centralized collective bargaining	73	74	78	74	68	EST	LTU	2022	WEF-GCR
II_2	Easing of hiring foreign labor	73	76	68	73	75	IRL	ALB	2022	Fraser
II_3	Labor force	81	80	77	67	65				
II_3a	Labor force participation, total, 15+	83	82	80	69	71	ISL	MDA	2023	World Bank
II_3b	Labor force participation, female, 15+	78	77	74	64	60	MDA	ISL	2023	World Bank
II_4	Building human capital	88	89	85	75	72				
II_4a	Human capital index	87	88	82	74	71	ISL	FIN	2024	UNDP
II_4b	Years of schooling	87	88	85	75	73	DEU	CHE	2023	UNDP
II_4c	PISA score	91	92	87	75	74	EST	IRL	2022	OECD
III	**Business regulations**	67	69	63	63	69				
III_1	Regulatory burden	64	63	57	56	52	FIN	CHE	2022	WEF-GCR
III_2	Bureacracy costs	77	82	71	76	99	ISR	EST	2022	HIS Markit.
III_3	Impartial public administration	75	82	64	57	43	DEU	SWE	2022	V-Dem
III_4	Entry rate	53	49	56	72	60	GBR	BLR	2022	World Bank
III_5	Exit rate	38	35	39	34	59	GBR	LTU	2022	World Bank
III_6	Distortion of the business environment	70	76	62	67	80	USA	DNK	2022	Fraser
III_7	Formal sector labor share	95	97	91	81	90	BEL	BGR	2022	OECD
IV	**Innovation and digitalization**	54	56	45	38	37				
IV_1	Innovation activities	26	27	14	7	6				
IV_1a	R&D expenditure (% of GDP)	37	38	22	11	8	ISR	USA	2022	Eurostat
IV_1b	Patents per capita	15	15	7	3	4	USA	DEU	2021	WIPO
IV_2	AI preparedness for adoption	82	85	76	69	69				
IV_2a	Digital infrastructure	82	85	75	61	58	DNK	EST	2023	IMF
IV_2b	Digital innovation	80	83	70	62	63	ISR	SWE	2023	IMF
IV_2c	Human capital	83	84	78	69	63	CHE	EST	2023	IMF
IV_2d	Regulation	84	87	79	83	90	USA	IRL	2023	IMF
V	**Credit and capital markets**	60	63	44	40	41				
V_1	Central bank independence	78	81	71	60	63	SWE	CZE	2022	UC Berkely
V_2	Percent of bank deposits held in privately owned banks	81	85	80	95	100	AUT	CYP	2022	World Bank
V_3	Financial markets index	42	46	14	2	0	CHE	USA	2021	IMF
V_4	Financial markets depth index	37	40	9	2	1	GBR	CHE	2021	IMF
VI	**External sector**	86	91	80	74	66				
VI_1	Measure of aggregate trade restrictions (MATR)	80	88	69	61	63	FIN	ISR	2022	MATR
VI_2	Mean tariff rate	96	96	95	94	93	ISL	USA	2022	WTO
VI_3	Non-tariff trade barrier	82	88	75	67	43	LUX	MLT	2022	WEF-GCR

Sources: Fraser Institute; OECD; Berkeley; IMF; Eurostat; World Bank; WIPO; UNDP; and IMF staff calculations.
Note: The table reports normalized scores relative to international best practice (the "frontier") for each indicator. The frontier is defined as the average performance of the top two countries among European economies and the United States for a given indicator. These two benchmark countries are labeled *Frontier 1* and *Frontier 2*. The frontier value is normalized to 100, and all other country scores are expressed relative to this benchmark. Regional aggregates are simple (unweighted) averages.

Annex III. Structural Reforms Output Gains

Annex III. Table 1. North Macedonia: Data Sources, Definitions and Structural Reforms Output Elasticities

Area	Indicator	Indicator source and definition	Output elasticity	Reference
Labor market & human capital	Labor force participation, total	World Bank; labor force as a share of the population aged 15 and above.	60.0%	Labor Share of Income
	Human capital index	United Nations Development Programme; higher values indicate stronger human capital.	9.4%	Égert and Gal (2017) and Égert (2017)
Business environment	Measure of aggregate trade restrictions	IMF; higher values indicate more restrictive trade regime.	0.9%	Estefania-Flores et al. (2022)
	Product market regulation (PMR)	OECD Product Market Regulation database, higher values indicate greater barriers.	2.5%	Budina et al. (2023)
	Business sector R&D as a % of GDP	OECD Research and Development Statistics (RDS); business-funded R&D expenditure as a share of GDP.	0.8%	Égert and Gal (2017) and Égert (2017)
	Financial markets depth	IMF; higher values indicate better performance.	3.5%	International Monetary Fund (2019), Chapter 3
Governance	Control of corruption	World Bank, World Governnance Indicators; higher values indicate less corruption.	3.6%	Budina et al. (2023)

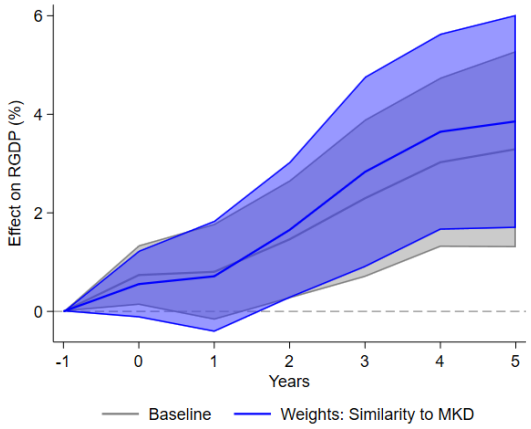
Note: The table lists the key structural reform indicators and their corresponding output elasticities used to quantify medium-term output effects. For each reform area, indicators are selected based on their relevance for North Macedonia and the availability of corresponding elasticity estimates in the empirical literature. The reported elasticities represent medium-term effects on real GDP, capturing the impact of reforms over a horizon of approximately five years.

Annex III. Table 2. North Macedonia: Structural Reforms Output Gains by Indicators

Area	Indicator	MT GDP effects	
Larbor market & human capital	Labor force participation, total	5.6%	**6.7%**
	Human capital index	1.1%	
Business environment	Measure of aggregate trade restrictions	2.5%	**4.6%**
	Product market regulation (PMR)	1.0%	
	Business R&D and digitalization	0.5%	
	Financial markets depth	0.6%	
Governance	Control of corruption	2.7%	**2.7%**
Total effects			**14.0%**

Note: The table reports medium-term real GDP gains at the indicator level within each reform area. Indicators are selected based on their relevance for North Macedonia and the availability of corresponding elasticity estimates in the empirical literature. Reported gains reflect the estimated impact of reforms on real GDP over a horizon of approximately five years.

Annex III. Figure 1. North Macedonia: GDP Impact of Structural Reform on Control of Corruption



Sources: WGI, IMF, and IMF staff calculations.
Notes: Elasticities are estimated using the local projection (LP) framework of Budina et al. (2023). Governance reforms are identified as a one–standard deviation improvement in the control of corruption indicator. t=0 is the year of the shock. The LP specification includes country fixed effects, the first two lags of GDP growth, and lagged reform shocks. The baseline line shows the estimated impulse response under the Budina et al. (2023) methodology, while the blue line shows the impulse response estimated using weights designed to better match North Macedonia. Specifically, we construct country weights using a Gaussian kernel applied to the squared Euclidean distance in standardized per capita GDP, population, and corruption indicators relative to North Macedonia. Shaded areas denote 90 percent confidence bands.

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