



BOSNIA AND HERZEGOVINA

SELECTED ISSUES

July 2026

This paper on Bosnia and Herzegovina was prepared by a staff team of the International Monetary Fund [as background documentation for the periodic consultation with the member country. It is based on the information available at the time it was completed on July 10, 2026.

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International Monetary Fund
Washington, D.C.



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Approved By
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THE IMPACT OF THE EU CBAM AND CARBON PRICING IN BOSNIA AND HERZEGOVINA¹

This paper assesses the macroeconomic impact of the European Union's Carbon Border Adjustment Mechanism (EU CBAM) on Bosnia and Herzegovina (BiH). It first sets out the key features of CBAM and quantifies BiH's exposure, illustrating that current scope affects about 11 percent of BiH exports (or 3.2 percent of GDP), given the country's significant sales of aluminum, cement, electricity, and iron and steel to the EU. The paper then quantifies the macroeconomic impact of the current scope of CBAM, demonstrating that under a 'no domestic policy response' scenario, the negative macroeconomic impact is significant, ranging from 0.4 to 0.7 percent of real GDP in 2035. The paper then proceeds to propose policy recommendations for BiH to reduce its CBAM costs. While an ETS is planned in BiH over the medium term, more immediate policy action through a modest carbon tax on coal or on emissions of key industrial sectors, phased in gradually, would allow BiH to retain carbon tax revenues domestically, and, if revenues are used productively, to partially offset the macroeconomic costs of CBAM over time. Revenues should be recycled to protect vulnerable households, support energy-intensive trade-exposed (EITE) firms in adopting more energy efficient technology, and to incentivize decarbonization of the overall energy mix. As such, the paper concludes by providing some complementary policy options for BiH to assist firms and households through the energy transition.

A. The EU Carbon Border Adjustment Mechanism

1. Carbon pricing policies are widely acknowledged as the most economically efficient tools in realigning economic incentives and reducing emissions through abatement. However, since they charge firms for their unabated emissions, they often raise questions around carbon leakage and competitiveness. Reduced competitiveness for energy-intensive, trade-exposed industries can lead to reduced output as well as relocation of production abroad, resulting in carbon leakage, where higher emissions in other countries partly offset domestic reductions.² These risks can weaken the environmental effectiveness, revenue generation, and political durability of carbon pricing, especially as carbon prices rise over time.

2. One instrument to address these concerns is a border carbon adjustment (BCA) which aims to apply charges on the embodied carbon of imports equivalent to those faced by domestic producers. In ensuring equal treatment of imports and domestically produced goods, BCAs allow countries to sustain more robust domestic carbon pricing, reducing reliance on

¹ Written by Alpa Shah, Daniel Bastidas, Nate Vernon-Lin and Karlygash Zhunussova, with research assistance from Estefania Cohn Bech and Jing Han.

² Estimates from Parry et al. (2025) suggest that a domestic carbon price of USD 50 per tonne of CO₂ applied in selected countries could result in carbon leakage rates in energy-intensive sectors such as steel, cement, and chemicals of 20–50 percent, implying that a substantial share of domestic emissions reductions may be offset by increases abroad. However, if countries are adhering to binding economy-wide emissions caps, as stipulated under nationally determined contributions (NDCs), any leakage from relocated production would be offset elsewhere—turning leakage into internal reallocation, rather than an increase in total emissions.

alternative measures to maintain competitiveness such as free allowance allocation or output-based rebates, which tend to erode domestic revenues.³

3. The EU CBAM, which went into effect in January 2026, represents the most advanced implementation of a BCA. ^{4,5} CBAM is designed to apply the same carbon price to selected imported goods as those applied to domestic producers under the EU Emissions Trading System (ETS). Box 1 sets out the main design features of both the ETS and CBAM. In extending carbon pricing to imports, it has important implications for its trading partners. Moreover, since EU CBAM has been designed to credit imports for carbon prices already paid domestically, it has had policy spillovers to trading partners, providing incentives for these governments to pursue carbon pricing to retain revenues at home, and to take steps to help their industries reduce emissions.

Box 1. EU ETS and CBAM: Key Design Features

EU ETS: The existing EU ETS covers industry, power, and aviation within the European Economic Area. It sets a cap on annual emissions allowances issued, with the cap decreasing by 4.3-4.4 percent per year from 2024 onwards. The emissions price has historically been volatile but has hovered around EUR 70 per tonne over the 2022-2025 period. EITE industries (e.g., metals, chemicals) have historically been granted free allowances to address competitiveness and leakage concerns, but these will be phased out starting in 2026 as CBAM is phased in. There is an inclusion threshold for participation by firms in the ETS, set at emissions of 25,000 CO₂ tonnes annually.

The EU plans to introduce in 2027 a separate ETS covering buildings, transport, and small industry, with a price stabilization mechanism to keep allowance prices at a soft price cap of EUR 45 per tonne and the allowance cap set to an annual linear decline of 5 percent per year from 2024 emission levels. An exemption is available until 2031 for member states with a national-level carbon tax equal to or above the ETS allowance price. A portion of the ETS revenues will support vulnerable households and small businesses through a Social Climate Fund.

CBAM

Timing: CBAM entered its definitive, financial phase from January 1, 2026, following a transitional phase from 2023-2025, which served as a pilot period focused on reporting of emissions by importers.

Scope: CBAM will initially apply to Scope 1 emissions related to specific carbon-intensive goods in the iron and steel, aluminum, electricity and hydrogen sectors, and Scope 1 and 2 emissions for cement and fertilizer and certain iron and steel products. Scope 1 covers on-site fuel combustion and process emissions, while Scope 2 covers emissions from electricity used in manufacturing. The EC has issued proposals to extend

³ For further literature on BCAs, see [Keen, Parry and Roaf \(2021\)](#), [Parry et al \(2021\)](#), and Parry et al. Strategies for Climate Mitigation: A Handbook for Policy Design (Forthcoming), Chapter 6.

⁴ The CBAM also includes non-EU countries such as Switzerland, Norway, and Iceland.

⁵ The United Kingdom's CBAM scheduled take effect from January 2027, and BCA proposals are also under consideration in Australia, Türkiye, and other countries. From January 2026, Serbia introduced a domestic carbon tax along with a tax on imports of industrial products (see Section D for additional details) at EUR 4 per tonne. The effects of the UK CBAM and Serbia BCA are not analyzed in this paper—in practice exports to the UK across all goods amounted to less than 1 percent of total exports in 2024 ([UN Comtrade](#)), of which only about 8 percent (at 4-digit level) might fall within the scope of CBAM. While BiH trade to Serbia is more significant, the BCA is currently set at EUR 4 per tonne of CO₂, with no stated plans for further increase - if the BCA is increased over time, this may impact BiH more significantly, and limit its scope for trade diversion to Serbia as a response to the EU CBAM.

Box 1. EU ETS and CBAM: Key Design Features (Concluded)

the CBAM coverage in iron, steel and aluminum to additional downstream products from 2027, as well as to include Scope 2 emissions from all covered iron and steel, and aluminum products. After 2030, CBAM is expected to apply to all [EU ETS sectors](#), including petroleum products (oil refinery emissions), lime, glass, ceramics, pulp, paper, cardboard, acids and bulk organic chemicals.

Level: The tax rate is the effective EU ETS price less any carbon price paid in the producing country. For non-electricity sectors, importers will only be charged for a percentage of emissions that accounts for the free allocations applicable to EU domestic producers. This percentage starts at 2.5% of emissions in 2026 and increases annually to 100% by 2034 as the ETS allowances are phased out. For electricity importers, however, since no free allowances apply under the EU ETS, the full CBAM price applies. For 2026, CBAM certificate prices will be determined on a quarterly basis, and weekly thereafter. For Q1 of 2026, the CBAM price was EUR 75.36 per tonne.

Inclusion Threshold: Importers below a de minimis threshold of 50 tonnes of CBAM-covered goods per calendar year are exempt from registration, reporting, and purchasing CBAM certificates. There is no inclusion threshold for electricity imports into the EU.

Emissions Factors: For the calculation of CBAM, emissions factors reflect the greenhouse gas intensity of a product, typically expressed as emissions per unit of output (e.g., CO₂ per MWh or per tonne). They are calculated either from actual, verified installation-level data, or where such data are unavailable, from default values set by the EU based on benchmarks or country-level averages. From 2026, these values include an annually increasing mark-up to incentivize actual reporting. Data must be verified by accredited verifiers, following methodologies aligned with the EU ETS. For electricity specifically, the factor is a grid-average intensity (total power-sector emissions divided by total generation – however, if certain conditions are fulfilled (see paragraph 9 below), the importer may use actual emissions).

Exemptions: The EU's CBAM regulations (Article 2(7)) allow third countries to secure an exemption for electricity exports to the EU subject to certain conditions, namely the conclusion of an agreement to apply EU law for electricity including on renewable energy and electricity market coupling with the EU, commitment to carbon neutrality by 2050, and a roadmap and progress towards implementation of an EU-aligned ETS by 2030.

Exports: BCAs can include a rebate for carbon taxes paid on exports, placing the tax on an 'origin' basis, i.e. where emissions are generated. The EU CBAM does not contain this feature (i.e. a rebate for EU exporters on their ETS payments), as under WTO rules such rebates are only permissible for taxes and not regulatory instruments (like an ETS).

Revenue Allocation: CBAM revenues will be split, with 75 percent allocated to the EU budget and 25 percent allocated by the members state where the customs declarant is registered. The EU [estimates](#) that the EU budget portion of CBAM revenues will amount to about EUR 1.5 billion per year from 2028.

4. While the payment liability for CBAM has been deferred until 2027, its impact is already being felt, with the anticipated cost of CBAM for 2026 emissions being factored into export prices. On April 7, 2026, the EC published the official CBAM certificate price for Q1 2026 at EUR 75.36 per tonne of CO₂, based on the average EU ETS auction price in the first quarter. This price is applied retroactively to the emissions of goods imported during Q1 2026, for which importers will need to buy certificates at EUR 75.36 each (with each certificate covering one tonne of CO₂). CBAM certificate sales will begin in February 2027, with importers required to purchase the appropriate number of certificates at the relevant quarterly price. The first required submission (or 'surrender') of certificates (covering 2026 imports) is due by September 30, 2027. Reports from

companies and the authorities regarding electricity pricing at the BiH border suggest that during Q1 importers were anticipating these costs and including the expected CBAM cost in their offer prices.⁶

B. BiH and CBAM

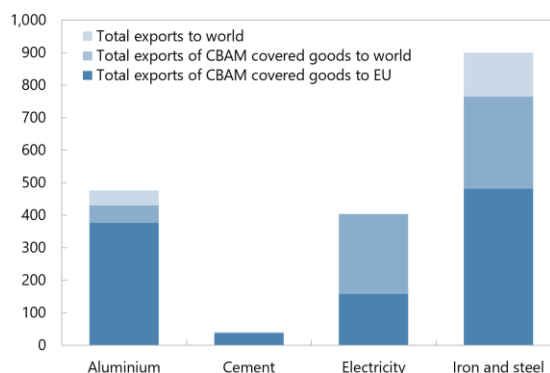
CBAM Exposure of Exports

5. As an exporter of aluminum, iron and steel, electricity and cement to the EU, a significant share of BiH exports are exposed to the EU CBAM. Analysis of trade patterns

shows that BiH almost exclusively exports cement and CBAM-covered aluminum products to the EU, while destination countries for electricity and CBAM-covered iron and steel products are more diversified (Figure 1). Figure 2 illustrates the distribution of CBAM exports by destination country both in the EU and to the rest of the world (ROW), suggesting a potential wide range of alternative non-EU markets for iron and steel and aluminum products. In contrast, there are fewer alternative markets for cement (currently only exported to Croatia and Montenegro), limited by the high cost of transporting cement over large distances.

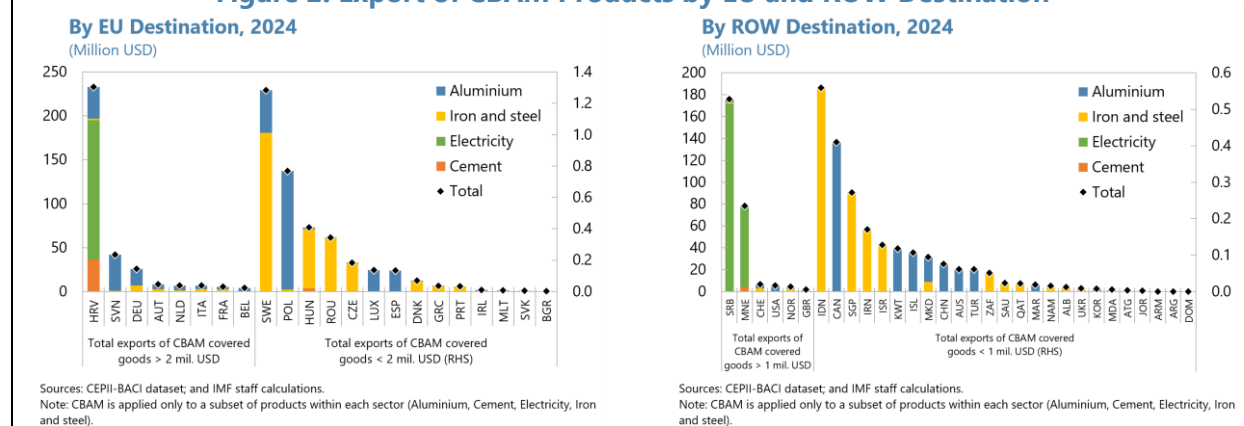
Similarly, alternative markets for electricity are limited by transmission infrastructure and border interconnections, with Serbia and Montenegro as the only non-EU alternatives.

Figure 1. Export of CBAM Products by Sector and Destination, 2024 (Million USD)



Sources: UN Comtrade; and IMF staff calculations.
Note: CBAM is applied only to a subset of products within each sector.

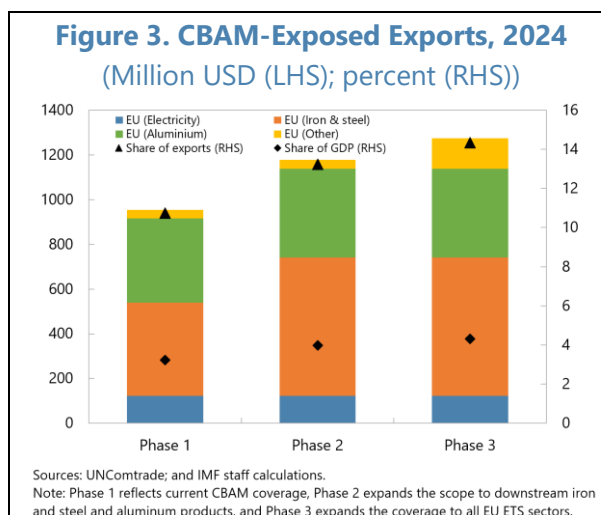
Figure 2. Export of CBAM Products by EU and ROW Destination



⁶ The practice of quarterly price publication will continue through 2026. From 2027, the system will become more flexible - CBAM certificate price will be determined on a weekly basis (based on the EU ETS auction price during the previous week), resulting in greater alignment with the EU market. The 'surrender' deadline for certificates for importers remains the end of September of following year. Importers must buy enough certificates to cover the emissions for the year, with compliance checks to make sure that by the end of each quarter they have at least 50 percent of the necessary certificates. With this weekly price system, importers will be able to time purchases to benefit from periods of more favorable prices or to purchase certificates in advance, given the expected increase in ETS prices over time.

6. Under the current coverage of CBAM products, estimates indicate that 10.7 percent of total BiH exports (equivalent to 3.2 percent GDP), will be subject to a CBAM charge (Figure 3).

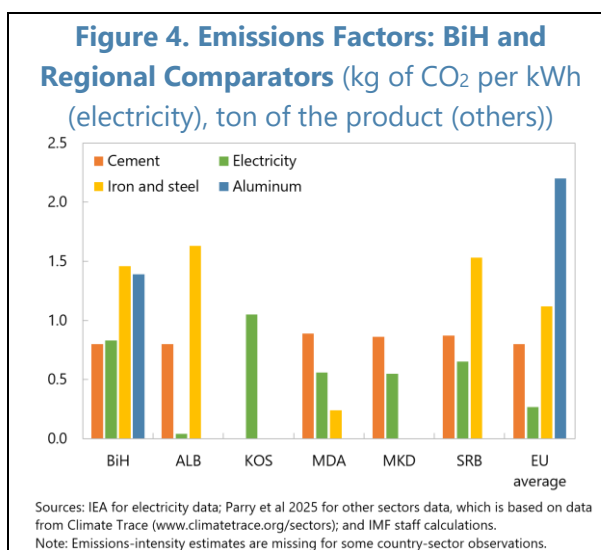
These exports are dominated by iron and steel and aluminum sectors (approximately 9 percent of total export value),⁷ with remaining smaller contributions from electricity and cement. The EU has issued proposals to extend the scope of CBAM to steel and aluminum-intensive downstream products, and from 2030, to apply CBAM to all sectors covered under the EU ETS (see Box 1). Calculations suggest that based on the 2024 trade structure BiH's exposure would increase to 13.2 percent of total exports under the proposed second phase, and to 14.3 percent of total exports from 2030 (4.3 percent of GDP) when CBAM is expected to apply to all ETS sectors.



Emissions Intensity of Exports

7. Relative emissions intensity of BiH exports compared with the EU and regional comparators varies by product and will be a key factor for assessing CBAM's impact.

Figure 4 illustrates the estimated emissions intensity for each sector, along with selected regional comparators as well as the weighted average of EU domestic production and imports for each sector.⁸ Given the coal intensity of the BiH electricity grid,⁹ the emissions intensity of electricity is higher than other Western Balkans countries (with the exception of Kosovo, which also has a heavily coal based energy mix) and almost three times the EU average. Similarly,



⁷ Until halting its operations in April 2026, Arcelor Mittal Zenica (or now Nova Zeljezara) was the main producer of semi-finished steel and steel products, exporting primarily to EU markets—in 2024, it had export revenues of 290.5 million KM, representing approximately 75 percent of total BiH iron and steel exports. If the plant remains closed, this would imply a significant reduction in EU iron and steel exports (5.2 percent of total exports and 1.6 percent of GDP) and thus CBAM exposure. The FBiH government has announced plans to take ownership of the plant – however, the timing and plans for restructuring operations and reinstating production remain unclear.

⁸ Based on 2021 data.

⁹ In 2025, thermal power plants comprised 55 percent of total energy generation, with the remainder from hydropower (30 percent), solar and wind IPPs (8 percent) and generation in small and industrial PPs (7 percent) (SERC, 2025).

the intensity for iron and steel (Scope 1 emissions) is 1.3 times the EU average, although similar to other producers such as Serbia and Albania. For aluminum, the BiH emissions factor is significantly lower than the average intensity of EU-produced and imported aluminum, since it largely focuses on casting of primary aluminum and scrap into billets and semi-finished products, does not conduct smelting operations (typically the most energy-intensive part of the aluminum production process).^{10,11} For cement, BiH is in line with the region and slightly above the EU average (0.8 tonnes CO₂ per tonne of output), reflecting the limited cross-country variation of carbon intensity globally in this sector (Parry et al, 2025).

Default vs Actual Emissions Factors

8. The large difference between estimated actual factors and the EC's default factors suggests that across all sectors, investing in the capacity to monitor, report and verify emissions per EU standards is an important policy lever for BiH to reduce CBAM costs in the near term. Table 1 shows the actual emissions factors estimated for BiH by sector,¹² along with the EU default values for 2026. These are calculated by the authors using available data, and thus limitations apply; further work should be done to monitor emissions at the firm level to accurately gauge emissions intensity. However, the order of magnitude between estimated actual and default emissions factors suggest that they may imply a significant difference in the CBAM cost for BiH.¹³

Table 1. Bosnia and Herzegovina: Default vs Estimated Actual Emissions Factors

Product	Unit	Direct emissions factor (EF)		CBAM costs under EU ETS EUR 100 price, EUR/unit	
		Actual	Default	With actual EF	With default EF
Aluminum	Tonnes	1.39	3.73	67	181
Cement	Tonnes	0.8	0.95	39	46
Iron and steel	Tonnes	1.46	2.76	71	134
Electricity	MWh	0.83	1.148	83	115

Sources: IMF staff calculations using emission factors data from the IIASA's GAINS model, weighted by fuel usage, for the electricity sector, and Parry et al 2025 for other sectors, which in turn is based on data from Climate Trace (www.climatetrace.org/sectors). EC-Default factors from EC Regulation 2025/2621 and Energy Community Q1 CBAM report (www.energy-community.org/news/Energy-Community-News/2026/4/29A.html)(for electricity).

¹⁰ BiH's largest aluminum producer [reports](#) that it consumes electricity entirely from renewable sources.

¹¹ Smelting of aluminum (i.e. the production of alumina) is not included under CBAM but is included under the EU ETS. Calculation of EU average emissions factor for aluminum does not separate the smelting and refining emissions. The modeling in this paper assumes a conservative scenario in which the importers of aluminum in the EU pass the CBAM payment backwards to alumina producers. Modeling could be refined in future to separate these processes, for a more accurate comparison.

¹² Since default emissions factors are provided under EU regulations at the product level, the actual default factors reflect an average of actual emissions factors, weighted according to each products significance in the export basket, using 2024 data.

¹³ In general, this could introduce trade re-shuffling, with exporters diverting products from their dirtiest operations to non-EU countries and their cleanest to the EU to reduce CBAM payments. Discussions with BiH private sector representatives suggest that for metals processing operations, CBAM may also incentivize shifts in the supply chain, with inputs procured either from the EU or from countries that can demonstrate lower carbon intensity.

9. For electricity, the emissions factor reflects the overall intensity of the BiH grid and is applicable to all exports.^{14,15} The implication of this is that all companies exporting to the EU, even those that are fully renewable energy generators, will be faced with CBAM charges, introducing distortions by penalizing clean energy sources even though they have no carbon content. This is particularly important for BiH, which meets its baseload needs through coal and hydropower, and exports any excess power at varying levels throughout the year depending on the hydrology. Scope 2 emissions (from electricity usage) embedded in CBAM-covered products are also calculated using overall grid intensity figures. EU regulations provide for actual emission factors to be used (instead of the default grid average) if strict conditions are met although it is unclear whether they are feasible to meet in practice¹⁶: exporters must prove that the exported power is delivered into the EU grid via a direct or certified congestion-free link and comes from a low-carbon source (generation below ~550 g CO₂/kWh). The exporter must also provide high-quality, verified data, including hourly metering of generation matched to delivery, validated by an accredited verifier.

Electricity Market Outcomes

10. The electricity sector is already facing the full impact of the CBAM charge,¹⁷ presenting a challenge to the economic viability of BiH electricity exports to the EU, and has resulted in companies redirecting exports to non-CBAM countries. In 2025, BiH exported 8.45 GWh of electricity, of which 26 percent (2.16 GWh) was exported to the EU via Croatia (SERC, 2025). Discussions with the authorities and electricity companies suggest that average electricity supply costs (excluding transmission costs) for key exporters in recent years have been in the range of EUR 50–70/MWh. With prices on the Hungarian exchange (HUPEX)¹⁸ at EUR 108 per MWh (average in 2025), combined with a CBAM charge of EUR 86.1 per MWh,¹⁹ margins would be compressed or negative across most scenarios.²⁰ Indeed, discussions with generators and traders indicate that producers have begun to redirect flows toward non-CBAM markets, particularly

¹⁴ As discussed in Section C, BiH has not fulfilled the necessary conditions to obtain a CBAM exemption on electricity exports, as offered under CBAM Regulation Article 2(7).

¹⁵ The initial approach of the EC was to calculate default factors taking into account only fossil fuel sources, resulting in the high emissions factor for BiH reflected in Table 1. A new proposal issued in December 2025 (yet to be adopted) amends the default factor to an overall average grid intensity taking into account all power sources (i.e., total power-sector emissions divided by total generation), based on the previous 5 years of data as published by the IEA), which would reduce the default factor to a number closer to the actual emissions intensity reflected in Table 1.

¹⁶ It is understood that questions remain between trading partners and the EC around how this would work in practice – these rules are expected to be clarified in the coming months.

¹⁷ For industrial sectors, since the CBAM charge will be phased in over the next decade, the authorities and industry have not reported notable impact since January 2026.

¹⁸ The Hungarian exchange (HUPEX) is the main reference market for exports of BiH electricity into the EU.

¹⁹ Assuming a CBAM price of EUR 75 per tonne of CO₂ and BiH's current default emissions factor for electricity as determined by the EC of 1.148 CO₂ tonnes per MWh.

²⁰ Discussions suggest that traders still take advantage of periods of extreme price spikes in the EU market, when profit margins are large enough to absorb CBAM costs.

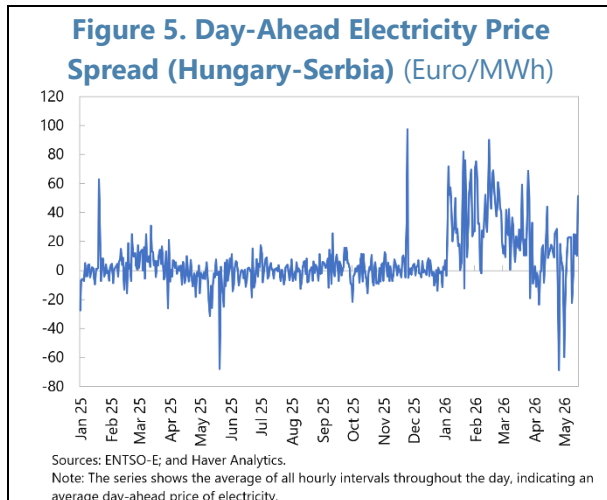
Serbia.²¹ While in theory, hydropower and solar power producers may still be able to absorb the CBAM cost and sell to the EU given their low marginal costs or if they invested in meeting the conditions to demonstrate actual emissions, it is understood that most renewables producers sell to intermediary traders who currently prefer to sell at the non-EU borders given the higher profit margins, as long as Serbia and the Western Balkan region are able to absorb this supply.

11. Reconfiguration of electricity trade flows may have dampened prices on the Serbian exchange and reduced scheduled allocations on cross-border transmission infrastructure at the Croatian border. Routing of supply to the Serbian border seems to have led to a wider spread between the Serbian (SEEPEx) and Hungarian (HUPEX) day-ahead markets of approximately EUR 24 per MWh, and an average price of EUR 95 per MWh on the SEEPEx market from January to May 2026, compared with EUR 108 per MWh in 2025, implying a lower price for BiH electricity exports compared with the pre-CBAM period (Figure 5). While not all exports are sold on the day-ahead market, this price differential provides an indication of the spread that may be emerging under longer-term contracts, resulting in lower export revenues. In relation to transmission infrastructure, SERC (2025) reported significantly reduced revenue from auctions for the allocation of cross-border transmission capacities held at the beginning of December 2025 for the next year—44.3 percent less than in the previous year—due to reduced demand at the Croatian border because of the application of CBAM.

12. While redirecting electricity flows offers a useful near-term solution, BiH should look to develop a more sustainable medium- to long-term strategy for electricity exports. Reliance

on redirection of exports concentrates trade at fewer border points, increasing exposure to disruption risks from transmission infrastructure outages or from any future Serbian or Montenegrin border adjustment tax on electricity imports.²² Moreover, over the medium term, as Western Balkans countries develop their own energy generation capacity, it is not certain that these markets will continue to fully absorb BiH exports. If it proves to be technically feasible, investing in the capacity to demonstrate actual emissions associated with hydropower and renewable generation would enable these

volumes to be exported to the EU without incurring CBAM charges and allow BiH to regain access to a broader set of markets, with potentially higher export prices. Greater electricity market integration with both the EU and the Western Balkans will also be important for improved competition, price



²¹ The [Energy Community's Q1 CBAM report](#) also observes redirection of electricity exports in the region to non-CBAM countries.

²² As noted in Section D, Serbia has recently introduced its own carbon tax, along with a tax on embedded emissions in imports. While this does not currently include electricity imports, this does not preclude potential expansions in the scope of the import tax in future.

transparency and optimal use of regional interconnections, allowing countries to efficiently direct electricity flows and exploit complementary generation profiles. This underscores the urgency for BiH to pursue with greater urgency its plans for a power exchange, in order to enable future integration and market coupling with neighboring countries.

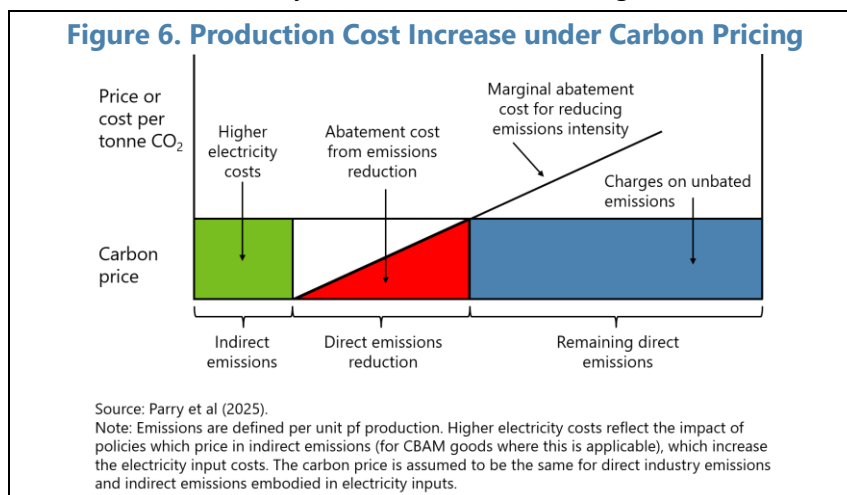
C. Quantitative Modeling of CBAM Impacts

Methodology

13. The quantitative analysis is based on the IMF-World Bank Climate Policy Assessment Tool (CPAT), augmented using international trade data. CPAT is a spreadsheet-based model providing country-level projections of fuel use and emissions by major energy sector and the environmental, fiscal, economic, and distributional impacts of a wide range of alternative mitigation instruments. In order to model the impact of CBAM, detailed country-level data on emissions rates, production levels, electricity consumption, and prices (or supply costs) for the iron and steel, aluminum, and cement industries were compiled along with marginal abatement cost schedules for the industries from the literature. For the electricity sector, the CPAT power sector module simulates the impact of mitigation policies on electricity generation, pricing, and emissions. It evaluates carbon pricing, coal phaseouts, and renewable subsidies by calculating investment based on levelized total cost, assessing fuel switching, energy demand changes, and fiscal impacts. Product level trade data was used to assess trade between individual countries and the EU for the specific goods covered by the CBAM.

14. The modeling analysis assumes that a carbon border adjustment applied to the import of BiH goods into the EU will impact exporters through a number of channels:

- **Abatement Costs:** These are the costs of reducing the emissions intensity of production and are determined in the modeling by marginal abatement cost curves for each sector based on literature. Firms will undertake abatement as long as the marginal abatement cost is less than the carbon price they face (Figure 6).
- **Carbon Price on Unabated Emissions:** Tax payments on remaining emissions per unit of output - this is determined by the CBAM charge applicable for each sector, multiplied by the country level emissions intensity factor for each sector (Figure 6).



- Passthrough:** During the phase-in period, in the non-electricity sectors, since the carbon price increases for both importers (due to CBAM) and EU producers (due to ETS free allowance phase-out), it is assumed that the overall market price in these sectors and thus the import price faced by those exporting to the EU increases.²³ The extent of this price increase i.e., the passthrough to EU buyers, is calculated as a function of the price elasticity of demand of EU consumers, price elasticity of non-EU supply (which depends on international mobility of products and openness of the economy to global trade) and price elasticity of EU supply. It is assumed to be the same for all trade into and within the EU, and as a monetary value is calculated based on the average emissions intensity of EU imports and production in each sector. In general, the share of costs that can be passed into higher consumer prices increases with higher supply elasticity and decreases with higher demand elasticity. The remainder of the CBAM price will be absorbed by the BiH exporter. The methodology for calculating this passthrough coefficient is based on Parry et al (2025).²⁴ In the case of electricity, since the EU ETS applied to EU electricity producers is unchanged, it is assumed that the introduction of the CBAM does not lead to an increase in prices and is entirely borne by third country electricity producers.²⁵ The passthrough coefficients and key determinants are specified in Table 2 and in Annex I.
- Relative Emissions Intensity:** BiH exporters have a different emissions intensity to the EU average, and thus the actual CBAM burden for BiH will vary depending on whether production is significantly cleaner or more carbon intensive than the EU average. The difference between the country-specific charge and the general increase in the international price as a result of the ETS and CBAM will determine the actual impact on the export price for BiH exporters. It is assumed that the actual emissions intensities are applied for CBAM calculation – companies are likely to have an incentive to invest in monitoring, reporting and verification, and for electricity it is assumed that the current calculation of the grid intensity is corrected per recent EU proposals. However, a sensitivity analysis is conducted to assess the impact of applying default factors.
- Export quantities** to the EU from BiH are then determined by the change in import prices and price elasticity of EU consumers from one side, and by the change in exporters' prices and the price elasticity of supply.

The relative impact of these channels will determine the impact on both the volume and export price of BiH exports in the CBAM-affected sectors. A detailed representation of the methodology is specified in Annex I.

²³ The model assumes a competitive market for CBAM commodities.

²⁴ The passthrough coefficient is calculated based on the following formula:

$$\text{Pass-through} = \frac{\frac{\text{for supply elasticity}}{\text{dom. supply elasticity} + \text{for supply elasticity}}}{\text{for supply elasticity} + \text{dom. demand elasticity}}$$

²⁵ This is consistent with the current situation reported by the authorities and electricity companies. However, should concerns over EU energy security intensify, BiH exporters may have greater scope to pass CBAM charges to EU buyers.

Table 2. Bosnia and Herzegovina: Determining the CBAM Passthrough Coefficient

Industry	Elasticity assumptions			Passthrough to EU consumers
	EU demand	Domestic (BiH) supply	Foreign (RoW) supply	
Iron and steel	-0.5	1	4.5	74%
Aluminum	-0.5	1	3.0	64%
Cement	-0.2	1	0.7	31%

Source: Authors, based on methodology in Annex I.

- **Electricity:** The modeling treatment of the electricity exports differs from the methodology applied to industry - the analysis assumes that electricity exports to the EU are not viable (as described in paragraph 10) but that the current redirection of EU electricity exports to other Western Balkans countries becomes less sustainable over time, as these countries develop their own generation infrastructure. The assumption is that these currently redirected exports decline gradually by 50 percent by 2035.

15. A second stage of the analysis then considers a reduction in exports of a subset of goods, spread into production and import of other good categories, through input-output connections. The analysis tracks how an export shock in certain goods (and the government's responses, modeled in Section D) ripple through the economy via supply-chain linkages. The exercise relies on detailed input-output tables for BiH from GLORIA's multi-regional dataset,²⁶ where trade flows are aggregated to distinguish the transactions between BiH, the EU and the rest of the world. The process maps the CPAT results described above into the sectors of economic activity to understand how a focalized export shock spreads into the rest of the economy through the structure of the production network.²⁷

16. The analysis estimates the medium-term impact of the current scope of CBAM, until 2035 to provide a baseline indication of economic impact. Given the uncertainty surrounding the timing of expansions in scope to downstream products and to Scope 2 emissions from the metals sectors, these are not modeled.²⁸ Extensions to this analysis could consider wider scope, as well as expansions to other EU ETS sectors after 2030.

17. Results presented here aim at contributing to a set of growing efforts to estimate CBAM effects in the economy of an exporting country. Relevant similar exercises include partial equilibrium approaches, such as Dolphin and Ferrucci (2026), that estimate the static incidence of CBAM as an implied tariff cost on existing trade flows, without modeling behavioral responses or economy-wide feedback. Analysis including input-output approaches, such as the World Bank's MRIO MINDSET simulations in the Bank's 2024 Country Economic Memorandum for BiH, capture

²⁶ GLORIA (Global Resource Input-Output Assessment) database is a multi-regional input-output (MRIO) dataset.

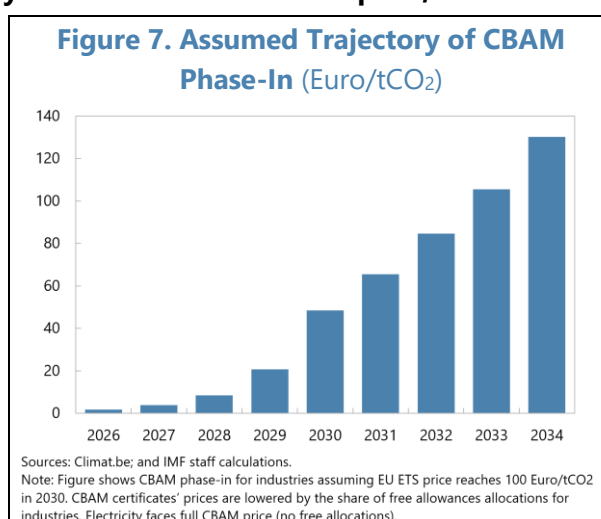
²⁷ The analysis is elasticity-based with fixed production coefficients, abstracting from behavioral adjustments and general equilibrium effects — including investment responses, labor market adjustments, and fiscal implications of revenue recycling, and redirection of trade flows. Results are sensitive to assumptions on EU ETS carbon prices and cost passthrough rates. Firmer policy conclusions would require a full general equilibrium model calibrated to BiH's economic structure.

²⁸ Analysis includes Scope 2 emissions on all cement imports and all iron and steel imports, except HS code 260112

supply chain multiplier effects but assess impacts at a single point in time under a worst-case, business-as-usual energy mix assumption, without modelling the gradual phase-in of CBAM alongside rising EU ETS prices. While not relying on a structural macroeconomic model, the combination of CPAT with detailed trade flow data and an input-output framework, allows the incorporation of feedback effects—through the production network and multiplier channels—to understand not only the potential effects of CBAM under changing assumptions, but also the potential results from introducing domestic policy responses. Any differences with these or similar studies should be understood in the light of these methodological choices, as well as differences in key parameters; in particular, the assumed EU ETS carbon price trajectory, the degree of cost passthrough to export prices, and whether behavioral adjustments such as export reallocation or input substitution are considered.

18. A key assumption underpinning the analysis is the assumed EU ETS price, which is used as the benchmark for determining the CBAM charge.

While the 2026 Q1 CBAM price was approximately 75 EUR per tonne of CO₂, it can be assumed that the price will increase over time as the overall emissions cap is reduced. The analysis considers a scenario in which the ETS price increases from EUR 75 per tonne in 2026 to EUR 100 per tonne by 2030 and further to EUR 138 by 2035. While the CBAM is phased in per the announced trajectory for non-electricity sectors (Figure 7), the power sector is assumed to be charged the full CBAM cost from the start of 2026.



Modeling Results

19. BiH's exports to the EU would be affected by both volumes and prices, with real GDP falling by 0.36-0.53 percent compared to baseline by 2035 depending on passthrough and ETS price assumptions used (Table 3 and Figure 7). By 2035, total export volumes are projected to fall by 0.82 percent relative to the baseline, while export volumes to the EU are projected to fall by 1.73 percent. Sectoral impacts vary significantly, ranging from a 3.57 percent volume decline for iron and steel to 74.87 percent for cement. The negative impact on exports alone is estimated at 0.31 percent of GDP, while real GDP (factoring in second round effects) is projected at 0.43 percent below baseline by 2035.²⁹ Sensitivity analysis suggests that with lower (and zero) passthrough levels and a higher ETS price, this effect would increase to 0.52 percent (Figure 8).

²⁹ The GDP impacts are obtained considering the contraction of the exports to the EU, amplified in time by expenditure multipliers. For reference, for the base MRIO year of 2024 the exports of industries associated with the four key products represent nearly 9.2 percent of the total in basic prices. Of these, nearly 48 percent went to the EU. Overall, around 4.5 percent of total exports would be subject to CBAM, and any resulting reduction would have negative dynamic effects given the expenditure multipliers. The mechanism assumes no behavioral adjustments other than those incorporated in the use of estimated emission factors, and hence the results remain to be considered as those of a worse-case scenario.

Table 3. Bosnia and Herzegovina: Relative Changes in Key Aggregates with Respect to their Baseline Projection

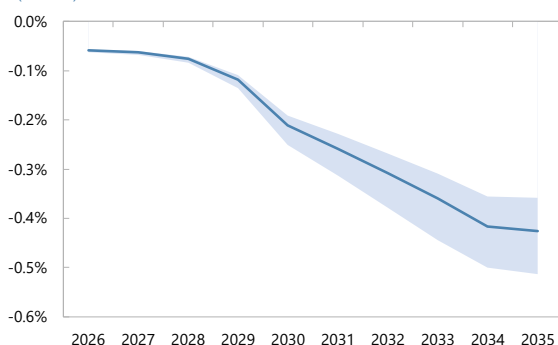
Product	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
<i>Change in percentage points of baseline GDP</i>										
GDP	-0.06%	-0.06%	-0.08%	-0.12%	-0.21%	-0.26%	-0.31%	-0.36%	-0.42%	-0.43%
Exports	-0.04%	-0.04%	-0.05%	-0.08%	-0.15%	-0.19%	-0.22%	-0.26%	-0.31%	-0.31%
Iron and steel	-0.01%	-0.01%	-0.01%	-0.02%	-0.03%	-0.04%	-0.05%	-0.06%	-0.07%	-0.07%
Aluminium	0.00%	0.00%	0.00%	0.00%	0.00%	-0.01%	-0.01%	-0.01%	-0.02%	-0.02%
Cement	-0.01%	-0.02%	-0.02%	-0.04%	-0.06%	-0.07%	-0.09%	-0.10%	-0.11%	-0.12%
Electricity	-0.01%	-0.02%	-0.02%	-0.03%	-0.05%	-0.07%	-0.08%	-0.09%	-0.11%	-0.11%
<i>Change with respect to BAU projected total exports by product</i>										
Exports	-0.11%	-0.11%	-0.13%	-0.21%	-0.40%	-0.49%	-0.59%	-0.69%	-0.80%	-0.82%
Iron and steel	-0.74%	-0.67%	-0.69%	-0.95%	-1.66%	-2.03%	-2.46%	-2.92%	-3.46%	-3.57%
Aluminium	-0.06%	0.25%	0.44%	0.34%	-0.31%	-0.59%	-0.94%	-1.33%	-1.80%	-1.86%
Cement	-9.11%	-10.92%	-14.33%	-22.63%	-39.07%	-47.33%	-55.82%	-64.26%	-73.46%	-74.87%
Electricity	-4.29%	-4.73%	-5.92%	-9.38%	-16.66%	-20.31%	-24.15%	-28.03%	-32.32%	-33.01%
<i>Change with respect to BAU projected exports to the EU by product</i>										
Exports	-0.24%	-0.23%	-0.28%	-0.44%	-0.83%	-1.02%	-1.23%	-1.44%	-1.69%	-1.73%
Iron and steel	-2.50%	-2.27%	-2.32%	-3.20%	-5.60%	-6.83%	-8.29%	-9.85%	-11.64%	-12.02%
Aluminium	-0.09%	0.36%	0.66%	0.50%	-0.46%	-0.87%	-1.38%	-1.96%	-2.66%	-2.75%
Cement	-10.04%	-12.03%	-15.79%	-24.93%	-43.05%	-52.15%	-61.51%	-70.81%	-80.94%	-82.49%
Electricity	-6.49%	-7.16%	-8.97%	-14.20%	-25.24%	-30.77%	-36.59%	-42.47%	-48.96%	-50.00%
<i>Change in exporter's prices with respect to BAU</i>										
Iron and steel	-1.94%	-1.58%	-1.41%	-1.78%	-3.17%	-3.83%	-4.70%	-5.67%	-6.82%	-7.06%
Aluminium	-0.04%	0.49%	0.92%	1.14%	0.98%	1.01%	0.96%	0.85%	0.65%	0.62%
Cement	-9.76%	-11.68%	-15.26%	-24.02%	-41.66%	-50.66%	-60.03%	-69.47%	-79.90%	-81.51%

Source: Authors.

Note: Impact on GDP, imports and exports is calculated in constant prices. For electricity, volume reductions relate to exports previously sold to the EU but subsequently redirected to Western Balkan markets.

Figure 8. GDP Effects vs Baseline of EU CBAM, and Sensitivity Analysis**Sensitivity – ETS Price Range: 75-150 Euros**

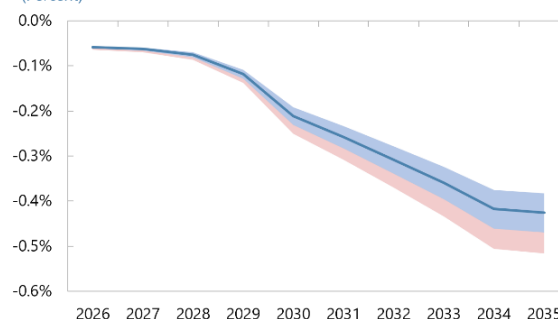
(Percent)



Source: IMF staff calculations.

Sensitivity – Passthrough Coefficient: 50%-150% and Zero Passthrough

(Percent)



Source: IMF staff calculations.

20. CBAM is expected to have a particularly significant impact on cement producers. Based on historical trade data, about 90 percent of total BiH exports of cement are estimated to flow to the EU. Given the relatively low passthrough of CBAM charges to EU consumers (about 30 percent), export prices and volumes to the EU are significantly affected, with simulations showing a reduction in exporter prices of 82 percent and a contraction in volumes of nearly 83 percent relative to baseline values by 2035. This amounts to a contraction in exports estimated at 0.12 percent of real GDP in 2035.

21. The iron and steel sector also sees a significant impact.³⁰ Iron and steel products have a higher carbon intensity relative to the EU, and Scope 2 emissions are included for certain products, which tightens profit margins for BiH producers. As a result, although the assumed passthrough of CBAM costs to higher EU consumer prices is high (74 percent), the impact on exporter prices and volumes to the EU is significant, declining by 7 and 12 percent in 2035, respectively. In real GDP terms, the contraction in export volumes amounts to 0.07 percent of GDP in 2035.

22. The contraction in electricity exports has a significant economic impact. The analysis assumes that export volumes to the EU (or previously exported to the EU and redirected to other countries) decline by 50 percent in 2035. This contraction in exports amounts to 0.11 percent of GDP.

23. The aluminum sector is expected to see the smallest overall impact, given the high expected passthrough to buyers and relatively low BiH carbon intensity. CBAM passthrough to EU importers is estimated at 64 percent, due to a large market for foreign suppliers and thus a high foreign supply elasticity. Given the lower relative carbon intensity of production of BiH aluminum production, there is an initial small positive impact on exporter prices and on volumes.³¹ However, as EU ETS prices rise (and EU producers decarbonize) and no domestic mitigation policy action is taken, this effect is eroded resulting in small negative price and volume effects relative to the baseline. While firm level data on costs were not available, the high rents generally enjoyed by the aluminum sector also imply a large capacity to absorb the CBAM charge, which represents a small proportion of revenue for producers. The contraction in aluminum exports is estimated at 0.02 percent of GDP in 2035.³²

³⁰ Since the FBiH Government has announced plans to introduce temporary administration at Nova Zeljezara Zenica, the analysis assumes continued operation of the steel plant.

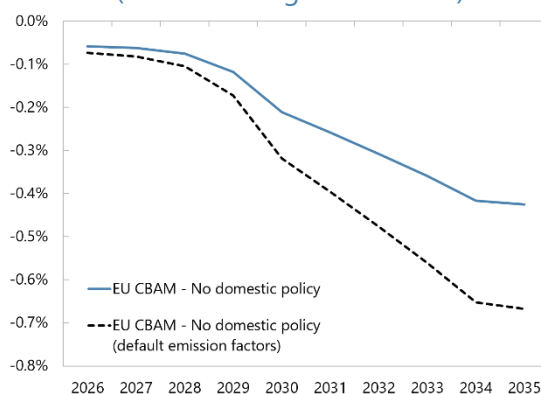
³¹ The exporter's price for aluminum changes sign between 2026 and 2027 because at first, the increase in regional prices of aluminum due to CBAM is higher than the negative abatement costs and losses in profits that must be absorbed by BiH exporters. Once the EU ETS price increases significantly, that effect disappears.

³² The assumed import price for aluminum is modeled at about USD 2473 per tonne in 2030, of which a EUR 100 per tonne of CO₂ EU ETS price would imply a CBAM cost of USD 77 per tonne value, or 3 percent.

24. If default emissions factors (rather than actual emissions factors) are applied, this contraction in volumes and GDP significantly worsens.

Exports to the EU of iron and steel would fall by 30 percent compared to the baseline, and by 18 percent for aluminum by 2035. Cement exports, under default emission factors, would become economically unviable by 2034 (Table 4). Moreover, under default emission factors, the larger export contraction across sectors would be translated into a GDP reduction of 0.67 percent by 2035 (Figure 9). The exercise presented in the rest of the analysis assumes that, given the magnitude of the potential shocks, both the authorities and firms will be incentivized to invest in demonstrating actual emissions for the calculation of CBAM (and ensure a default factor more reflective of actual grid intensity, in the case of electricity).

Figure 9. GDP Effects vs Baseline of EU CBAM with No Domestic Policy under Actual and Default Emission Factor
(Percent change vs baseline)



Source: IMF staff calculations.

Table 4. Bosnia and Herzegovina: Relative Changes in Key Aggregates under Default Emission Factors

Product	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
<i>Change in percentage points of baseline GDP</i>										
GDP	-0.07%	-0.08%	-0.10%	-0.17%	-0.32%	-0.40%	-0.48%	-0.56%	-0.65%	-0.67%
Exports	-0.06%	-0.06%	-0.08%	-0.14%	-0.26%	-0.32%	-0.39%	-0.47%	-0.54%	-0.56%
Iron and steel	-0.02%	-0.02%	-0.03%	-0.04%	-0.08%	-0.09%	-0.12%	-0.14%	-0.16%	-0.17%
Aluminium	0.00%	0.00%	0.00%	-0.02%	-0.05%	-0.07%	-0.09%	-0.11%	-0.13%	-0.14%
Cement	-0.02%	-0.02%	-0.03%	-0.05%	-0.08%	-0.09%	-0.11%	-0.13%	-0.14%	-0.14%
Electricity	-0.01%	-0.02%	-0.02%	-0.03%	-0.05%	-0.07%	-0.08%	-0.09%	-0.11%	-0.11%
<i>Change with respect to BAU projected exports to the EU by product</i>										
Exports	-0.32%	-0.34%	-0.44%	-0.74%	-1.42%	-1.78%	-2.16%	-2.55%	-2.98%	-3.06%
Iron and steel	-3.81%	-3.94%	-4.67%	-7.23%	-13.19%	-16.52%	-20.24%	-24.16%	-28.60%	-29.80%
Aluminium	-0.34%	-0.18%	-0.52%	-2.33%	-6.82%	-9.25%	-11.85%	-14.56%	-17.55%	-18.24%
Cement	-13.97%	-16.37%	-20.99%	-32.25%	-54.58%	-65.77%	-77.29%	-88.75%	-100.00%	-100.00%
Electricity	-6.49%	-7.16%	-8.97%	-14.20%	-25.24%	-30.77%	-36.59%	-42.47%	-48.96%	-50.00%

Source: Authors.

D. Carbon Pricing Options for BiH

25. CBAM allows a credit for any carbon price paid in the producing country, providing an incentive for affected trading partners to introduce a domestic carbon pricing policy to retain revenues. Although guidelines on how exactly these will be calculated and recognized are still under consultation, the CBAM regulation stipulates that if a non-EU exporter's goods have already been subject to a carbon price at home, that cost is deducted from its CBAM certificates, meaning those carbon payments stay in the producer's economy rather than being made to the EU, rewarding countries that price carbon domestically.

26. Carbon tax and ETS are both forms of carbon pricing that provide a full range of incentives to reduce emissions. Carbon taxes are usually implemented through a tax on the carbon content of fossil fuel supply since it is this carbon that is converted to CO₂ when the fuel is burned in combination with oxygen. ETSs, on the other hand, require firms to acquire allowances for their emissions or the carbon content of their fuel supply, with the government controlling the supply and market trading of allowances establishing the emissions price.

27. In the region, Serbia has adopted a carbon tax from 2026 starting at EUR 4 per tonne of CO₂ on emissions beyond pre-set thresholds. The tax applies to power plants, cement, steel, fertilizer, and aluminum producers and offers a 20 percent tax credit for qualified investments in emissions-reduction measures. A parallel carbon levy or border adjustment applies to imports of iron, steel, cement, fertilizer, and aluminum, with credits if carbon costs were paid in the country of origin.

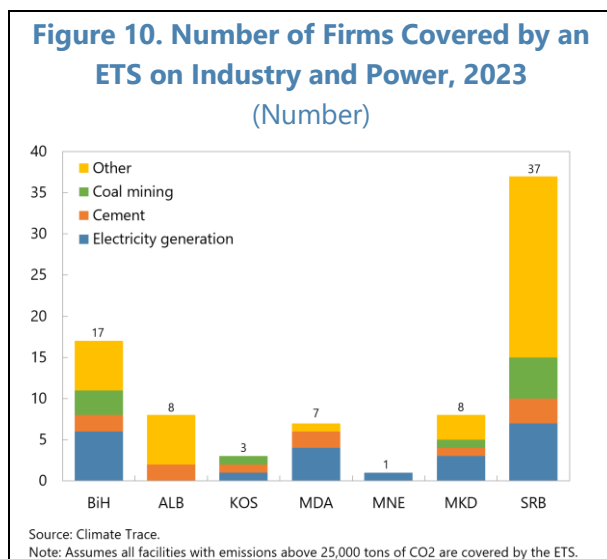
Emissions Trading System

28. BiH's National Energy and Climate Plan (NECP) states its intention to establish an ETS. However, to date, there has been limited progress. Discussions are ongoing regarding entity concerns on allocation of competences, with some resistance to the operation of the ETS at the state/national level. A revised roadmap has been drafted to address these concerns, but has not been officially adopted. Per the CBAM regulations, electricity market integration and the establishment of an EU-aligned, state-level ETS by 2030 would allow BiH to secure a CBAM exemption for electricity—however, progress to date suggests that this may not be likely in the required timeframe.

29. While an ETS will be important for EU accession, it may not be practical as a short-term solution for BiH for a number of reasons:

- **Institutional Capacity:** ETSs require significant institutional capacity—to monitor both downstream emissions and emissions trading markets. In addition, an ETS must decide on emissions allowances to assign to relevant industries and on how to assign them (e.g., via auctions and/or some free allocation by the regulator). Secondary market trading enables businesses in high abatement cost sectors to buy allowances from businesses in low abatement cost sectors and thus requires setting up and monitoring an allowance trading market. This in turn requires the businesses to have capacity in place to source allowance credits and demonstrate the associated abatement, so that the regulator can trace the total emissions and that no leakage occurs.
- **Legal Considerations.** An ETS requires a distinct tailored legislative architecture well beyond the existing tax and customs legislation, together with supporting regulations and institutions, including a national registry, a monitoring, reporting and verification framework, an enforcement and penalties regime, and, if secondary market trading is permitted, a market regulation framework covering trading, settlement, clearing, and participant conduct obligations.

- Market Liquidity:** For an ETS to function efficiently, it requires a liquid trading market and for emissions to be distributed across many covered firms. When the ETS allowance market has many covered firms that are actively trading, any single firm (or a set of colluding firms) cannot influence the emissions price, leading to efficient outcomes. An ETS in BiH covering the power and industrial sectors is estimated to cover 17 firms (Figure 10). Moreover, this assumes the functioning of the market at the national level; with 6 in scope companies in the FBiH and 11 in RS, any devolution to the entity level would lead to greater market concentration and be unviable. Countries in the region would have a similar issue of market size – indeed, Montenegro’s early ETS introduced in 2020 was effectively converted to a carbon tax because it covered only three companies, two of which subsequently shut down, with now one remaining participant. Other countries with existing ETS worldwide have significantly more firms covered, ranging from around 1,000 in the UK, to 10,000 in the EU, and over 2,000 in China. A regional ETS may be more appropriate for the Western Balkans region than individual country-level ETS, although this still may present a somewhat limited market size compared to existing ETSs. However, it is understood that this is not currently under consideration.



30. International experience suggests that establishing the legislative, institutional and administrative structure for an ETS could take several years depending on country capacity.

The decision to introduce an ETS should be understood not merely as a fiscal policy choice but as a significant undertaking in institution-building and legislative reform requiring sustained political commitment over an extended period.

31. BiH should continue pursuing the development of ETS as a forward-looking priority, particularly given its importance for eventual EU integration and accession.³³

Advancing a robust monitoring, reporting and verification (MRV) system is critical, as it would assist firms in demonstrating their actual emission for the calculation of CBAM (discussed in Section B), and enable the taxation of industrial process emissions even under a carbon tax (discussed in the next section). As an interim step toward a fully functioning ETS—especially in the absence of sufficient market liquidity—a fixed-price ETS³⁴ could be introduced to build institutional capacity and support a gradual transition to a market-based system.

³³ IMF (2024) provides economic modeling and analysis of ETS implementation in BiH.

³⁴ A fixed-price emissions trading system is a hybrid scheme in which emissions allowances are supplied at a predetermined price—rather than traded in a market—effectively combining features of a carbon tax with the institutional structure of an ETS. Examples include the ETS and Germany, Austria applied to the buildings, transportation and waste sectors.

32. However, as a response to CBAM, a more expeditious alternative will be necessary.

The subsection which follows considers possible design of a carbon tax and the associated macroeconomic impact.

Carbon Taxes

33. Carbon taxes can be assessed similarly to existing fuel excises, making them relatively straightforward to implement. As such, their administration and collection can be integrated into existing tax systems—particularly at midstream points such as fuel processing or import—making them among the simplest taxes to administer.

34. The BiH Indirect Tax Authority’s current tax collection infrastructure for fuel could be extended and used as an interim carbon pricing tool. BiH’s system of fuel excises, collected at the state level, applies only to liquid fuels, and comprises a fuel excise plus a ‘toll’ fee part of which is earmarked for road and highways public enterprises. Given current elevated global petroleum prices, an economy-wide carbon tax on liquid fuels may place undue additional pressure on households and firms. However, there is currently no excise applied to coal use or electricity generated from coal, and both energy SOEs cross-subsidize loss making coal mines.³⁵ Phasing out any coal subsidies, and introducing a carbon tax on coal may be a pragmatic option that is relatively simple to administer while still capturing a large share of emissions from power and industry that will be subject to CBAM charges (coal accounted for 95 percent of power and industry emissions in 2022).

35. A carbon tax on coal should be levied at a single stage in the supply chain. In BiH, coal is domestically mined (lignite) for use in thermal power plants, while imported coal is used for metallurgy and coke production (bituminous coal) and for heating (coal briquettes). Any imported coal should be taxed at the point of import, while domestically mined coal could be taxed at the mine gate or at the point of processing (washing). Application of a carbon tax on fuels requires knowledge of the carbon content per unit of fuel. For coal, carbon content can vary by mine or coal grade—policymakers can start with default emission factors and put the burden on each mine or processing facility to prove if their coal is lower in carbon via certified lab analysis to qualify for a reduced tax rate.

36. An alternative option could be to consider taxing emissions from the (non-electricity) CBAM sectors i.e. iron and steel, aluminum and cement in order to offset the CBAM charge.³⁶

Institutionally, this may be more complex, since the current indirect tax system is designed for taxes on goods and services, and is not set up for more complex instruments such as charges on emissions. Introduction of a new tax would require agreement across the entities and may require

³⁵ By comparison the EU Energy Taxation Directive, minimum excise duties are set at EUR 0.5 per MWh for electricity used by businesses and EUR 1 per MWh for households, and at EUR 0.15 per GJ for coal used by businesses and EUR 0.30 per GJ for households.

³⁶ The power sector is not included here – as discussed in Section B, CBAM levels are currently much higher for electricity and the exports of fossil fuel-based electricity does not seem viable with the CBAM charge, and are therefore being redirected to non-CBAM countries.

new primary legislation or modification of the indirect tax legislation. Administratively, taxation of emissions rather than fuel at source requires direct (but not necessarily continuous) monitoring of emissions of the targeted sectors or taxpayers using MRV infrastructure in order to measure the tax base. Such monitoring may already be in place for the largest firms that are subject to CBAM or could initially be inferred from inputs and default emissions factors while monitoring infrastructure is being established. An inclusion threshold could be established so that smaller firms can be exempted from the administrative burden of reporting emissions. Such an emissions tax could also be proxied through upstream taxes on fuel inputs (e.g., coal, gas) and, in cement, through charges on clinker production or use for CBAM sectors.³⁷

Modeling the Impact of a Carbon Price

37. The analysis which follows considers two scenarios: The first carbon tax option models a phase out of coal subsidies and the introduction of an economy-wide tax on coal, starting at EUR 6.25 per tonne of CO₂ in 2027 and increasing to EUR 25 per tonne of CO₂ by 2030 and linearly on the same path thereafter until 2035. A second option considers a tax directly on emissions from non-electricity CBAM sectors, broadly tracking the expected trajectory of CBAM charges (and thus largely offsetting the CBAM payment on BiH exports to the EU), starting at EUR 12.5 per tonne of CO₂ in 2027 and increasing to EUR 50 per tonne of CO₂ by 2030. Both scenarios include gradual removal of coal subsidies by 2030.³⁸

38. The economic impact of the coal tax depends on the extent to which currently regulated electricity prices are increased. Currently electricity prices in both entities are regulated at below cost-recovery levels for households, with price increases proposed each year by the SOEs and subject to approval by the relevant energy regulator.³⁹ Fully liberalizing prices would allow for a coal-tax inclusive price signal to be passed onto consumers, and help to incentivize investment in low carbon electricity generation. This, in turn, could reduce the cost of electricity generation over the medium term. However, given current electricity price-setting practices in both entities, the analysis considers two coal tax scenarios, one where the impact of the tax is fully passed through to electricity prices, and another under which only 50 percent of the impact is passed on to end-user electricity prices.

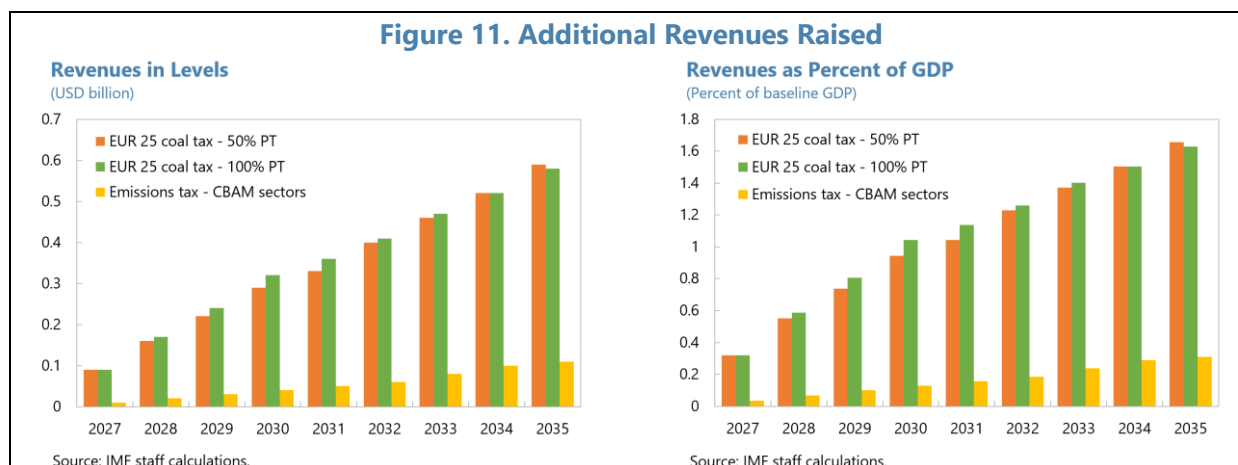
³⁷ This approach proxies the economic effect of emissions pricing in a context where there are limited possibilities carbon capture and storage to reduce emissions.

³⁸ A domestic tax on coal inherently applies more widely to Scope 1 and 2 emissions. In contrast, an emissions tax on non-electricity CBAM sectors would cover only Scope 1 emissions in three sectors (iron and steel; aluminum; cement). Both taxes would apply to all production, including to domestic and other markets beyond the EU.

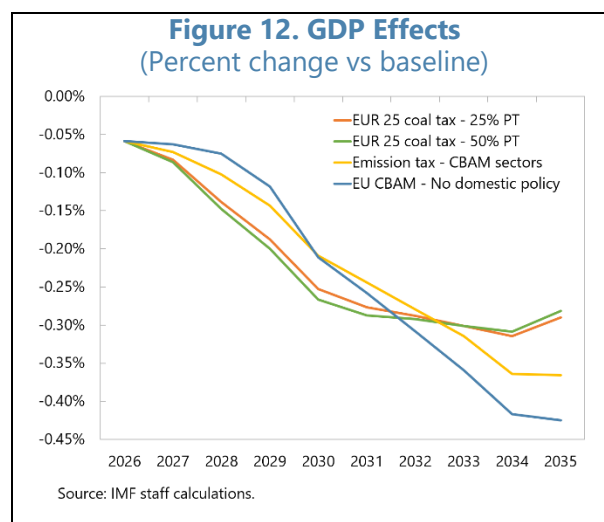
³⁹ In the FBiH, the authorities have previously reported that the average cost of supply is EUR 70-80/MWh, with household consumption (approximately 40 percent of total supply) paying an average price of approximately EUR 40/MWh. In the RS, the authorities reported the average supply cost as EUR 50-60/MWh with households consuming over half of total consumption, with an average household tariff of EUR 35/MWh, and with businesses paying approximately EUR 75/MWh. For both entities, higher prices for electricity exports also help to cross subsidize the regulated household prices.

Macro-Fiscal Impacts

39. All scenarios demonstrate that carbon taxes represent a valuable source of domestic revenues and allow part of the CBAM charge to be collected at home and offset against the CBAM payment. Extra revenues from the EUR 25 coal tax would yield an additional USD 0.29-0.32 billion in 2030 and about 0.6 billion in 2035, 0.9-1 percent of GDP in 2030 and 1.6 percent of GDP in 2035 (Figure 11). An emissions tax on CBAM sectors would yield a more modest but still significant USD 0.4 billion in 2030, or 0.13 percent of GDP, and about USD 0.1 billion in 2035 (0.3 percent of GDP).



40. The simulations suggest that, in the presence of an EU CBAM, domestic policy measures lead to better macroeconomic outcomes in the medium term. While the coal tax and emissions tax on CBAM sectors perform somewhat worse than the no-domestic-policy alternative in the early period, their GDP trajectories improve relative to inaction from 2033 onward. By 2035, the EU CBAM without a domestic policy response results in the largest GDP decline relative to baseline, at 0.43 percent (as noted in Section C), compared to approximately 0.29 and 0.37 percent under the coal tax and emissions tax scenarios respectively (Figure 12).⁴⁰ This suggests that proactive domestic policy can partially offset the macroeconomic costs of the CBAM over time. However, this is contingent on productive use of tax revenues – the scenarios assume that 20 percent of revenues collected are recycled effectively



⁴⁰ It should be noted that, while the carbon tax scenarios would affect competitiveness of exports in non-EU markets, this channel has not been modelled in the current exercise. Hence, the resulting contraction in activity from the carbon tax implementation may yield more moderate result than if this channel were factored in.

through cash transfers, 30 percent through labor tax reductions, and the remaining 50 percent through public investment.⁴¹

Price Impacts

41. A tax on coal would put significant upward pressure on coal and electricity prices

(Table 5). Coal faces the largest proportional increase in prices, with a 108 percent increase by 2030 (243 percent in 2035) in the price of coal inputs to the power sector, and a 169 percent (305 percent in 2035) price increase in coal consumed directly by industry for heat production (due to the phase-out of subsidies). For electricity, the extent of the price increase depends on the extent of the passthrough permitted to end user electricity prices – if full passthrough is permitted, electricity prices increase by 42 percent relative to the baseline in 2030, compared with a 20 percent increase if only 50 percent price passthrough is permitted (68 and 33 percent, respectively, in 2035, with full and limited pass-through).

Table 5. Bosnia and Herzegovina: Price Impacts in 2030 and 2035

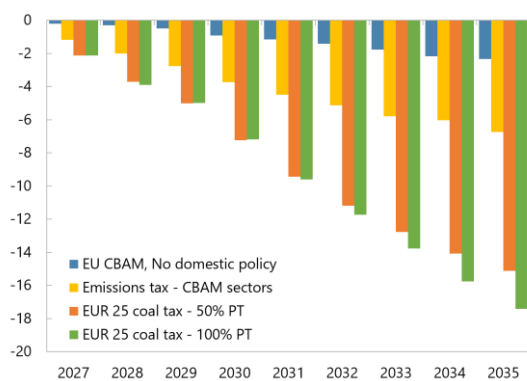
Fuel	Unit	Current (2026)	EUR 25	EUR 25	EUR 25	EUR 25
			coal tax - 50% PT (2030)	coal tax - 100% PT (2030)	coal tax - 50% PT (2035)	coal tax - 100% PT (2035)
Electricity, weighted average	EUR/kWh	0.08	0.09	0.11	0.1	0.13
Coal, power sector	EUR/GJ	2.02	4.19	4.19	6.92	6.92
Coal, industry	EUR/GJ	2.00	5.36	5.36	8.08	8.08

Source: IMF staff calculations.

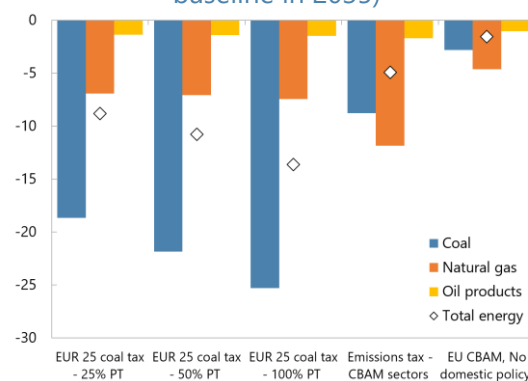
Emissions Impacts

42. The carbon tax incentivizes reduction in emissions (Figures 13 and 14). This is due to an overall decrease in energy consumption, investment in abatement technology, as well as a rapid switch away from coal towards cleaner sources in the medium term. By 2030, the coal tax leads to a decrease in CO₂ emissions by about 7 percent, while the impact from the tax on emissions in CBAM sectors is smaller—about 3.3 percent, but still higher than the application of the EU CBAM without any domestic policy (about 1 percent). This reflects the EU CBAM being applied only to exports, while the emissions tax covers all production from CBAM affected sectors. Under all scenarios, overall fossil fuel-based energy consumption decreases—under the coal tax, this decline amounts to about 11-14 percent in 2035 (6-7 percent in 2030), mostly from coal (consumption of natural gas and oil products also decline due to lower overall production). Under the emissions tax, consumption decreases across all fuel types, but to a lesser degree (3 percent in 2030 and 5 percent in 2035), given the more limited sectoral scope of the tax.

⁴¹ Of course, if the passthrough to electricity prices is limited, and if a portion of the revenues are transferred to compensate losses of the electricity SOEs, then the GDP gains from revenue recycling would be lower.

Figure 13. Impact on Emissions in 2027–2035
(Percent vs baseline)

Source: IMF staff calculations.

Figure 14. Impact on Energy Consumption in 2035
(Percent reduction against the baseline in 2035)

Source: IMF staff calculations.

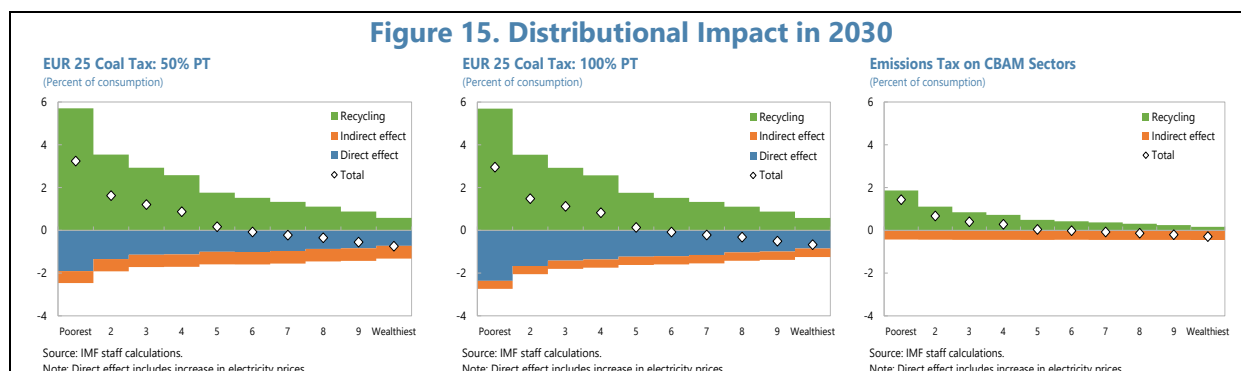
Distributional Impact

43. A carbon tax would have a negative impact on household consumption (Figure 14). On average, direct energy spending represents about 16 percent of household expenditure (including electricity, accounting for about 7 percent), with lower income households spending almost 20 percent of their total budget on energy.⁴² In the coal tax scenarios, households would see an average reduction in consumption of 1.4–2 percent relative to the baseline in 2030. The largest proportion of the absolute burden (in monetary terms) falls on higher income households, suggesting that these are the groups currently benefiting from low electricity prices. However, in relative terms (as a percent of consumption), the largest effects are borne by the poorest, as a larger share of their total expenditure is used for carbon-based energy and indirectly on carbon-intensive consumption.⁴³ In the emissions tax scenario, households are impacted through only indirect channels, since the tax is applied on emissions in only three industrial sectors: iron and steel, cement, and aluminum. In relative terms, the effect is relatively uniform across the income deciles.

44. Distributional effects could be offset by revenue recycling measures. For example, using 20 percent of revenue for targeted cash transfers to the bottom four deciles, and the remainder for labor tax reductions (30 percent) and public investment (50 percent), would make the reform more progressive (Figure 15), with poorest households benefiting from the taxation—on net, about 3.0–3.2 percent of their pre-policy consumption under the coal tax scenarios, and about 1.4 percent under the emissions tax on CBAM sectors (due to lower revenue collection). This underscores the urgent need to strengthen the social safety net to allow for targeted transfers to clearly identified and registered vulnerable households.

⁴² Based on 2015 Household Budget Survey Data

⁴³ When energy prices rise, production costs increase and are partially passed through to the prices of goods and services, generating indirect effects that also vary across the income distribution.



Support for Industrial Sectors

45. While an economy-wide coal tax and an emissions tax on (non-electricity) CBAM sectors would largely offset the CBAM payment on export to the EU, production from these industrial sectors would still be affected. Aluminum production is not significantly impacted (similar to the EU CBAM scenario) due to the low carbon intensity of production, while the iron and steel sees a modest reduction in production of up to 3 percent by 2030 and by up to 6 percent in 2035. The cement sector sees the highest impact (up to 24 percent by 2030 and 42 percent by 2035), given the high emissions intensity and relatively few possibilities to abate the emissions inherent in the calcination process.⁴⁴

46. Carbon tax revenues could be recycled to support industrial sectors by financing targeted subsidies or investment tax credits linked to investment in energy efficiency and decarbonization. For a technology-neutral subsidy or tax credit, efficiency is maximized by linking support directly to verified emissions reductions—for example, through a payment per tonne of CO₂ abated (as in the Netherlands)—or by conditioning eligibility on achieving a specified reduction outcome (as in Finland). Abatement options vary significantly by technology and capital intensity. In steel, emissions reductions can be achieved by shifting from coal-based blast furnaces to electric arc furnaces, contingent on access to low-carbon electricity. In cement, mitigation options include reducing the clinker-to-cement ratio through blending (e.g., with fly ash or slag), improving energy efficiency, and fuel switching; carbon capture and storage (CCS) remains a technical option but is currently cost-intensive and not widely deployed in the region. The feasibility of these transitions in BiH depends on infrastructure, input availability, and investment constraints. Beyond incentives to improve industrial energy efficiency, incentives could also be targeted to further encourage renewable energy investment and to promote overall decarbonization of the energy mix, helping to lower Scope 2 industrial emissions and electricity costs, and also improve the CBAM-competitiveness of BiH electricity exports.

⁴⁴ A large proportion of cement emissions are inherent to the process - CO₂ emissions are released when limestone is chemically decomposed during clinker production (calcination), which generates CO₂ as a byproduct of converting calcium carbonate into lime.

47. BiH should also invest in building robust monitoring, reporting, and verification (MRV) systems. Strengthening MRV infrastructure enables more accurate measurement of emissions across sectors, including industrial process emissions, supporting BiH exporters in demonstrating their actual emissions for the determination of CBAM, and for taxing industrial emissions (if this option is chosen). While it is understood that this is part of BiH's current plan in developing an ETS and should be expedited given the large positive economic impact of lowering CBAM charges through the use of actual emissions factors in the near term.

48. Significant structural barriers will need to be overcome for meaningful decarbonization of the power sector. While there has been significant growth in renewable energy—according to SERC (2025), generation from solar and wind has almost tripled over the 2021-25 period, comprising 8 percent of the energy generation mix—significant barriers to further expansion remain. New investment in generation infrastructure remains limited due to low domestic tariffs, limited transmission capacity, and potential land use constraints. In 2024, the BiH Constitutional Court ruled in two cases that state-owned land cannot be repurposed or disposed of by the entities, which may present legal obstacles to the construction of new generation, transmission and distribution energy infrastructure. Looking ahead, the Southern Gas Interconnection with Croatia could modestly diversify the energy mix by enabling greater use of gas, a lower-carbon transition fuel.

49. The economic and social impacts of a shift away from coal are likely to be disproportionately concentrated in coal-dependent regions, calling for policies to mitigate these effects. Coal mining and

associated thermal power generation in BiH is concentrated in Tuzla and Zenica (FBiH) and in Ugljevik and Gacko (RS), with localized industrial clusters in these areas. In addition to the broader macroeconomic impacts shown above, for coal dependent regions, there is a risk of job losses and potentially declining municipal and cantonal revenues. Modeling analysis—under simplifying assumptions of no population growth, constant labor productivity and a sector-specific linear

relation between output and labor demand—suggests that by 2035 a total number of around 3,850 jobs could be affected as a result of the export contraction, a 0.20 percent reduction of full-time-equivalent jobs versus baseline projections under the CBAM scenario with no domestic policy (Table 6). These impacts are reduced when considering the effects of increased demand and output that introducing domestic policies accompanied by revenue recycling measures would have. The coal tax, in particular, could lead to much lower job losses than under the scenario with no domestic policy, ranging between 1,400 and 1,900 depending on the passthrough coefficient

Table 6. Bosnia and Herzegovina: Simulated Impacts in Full-Time-Equivalent Jobs for 2035

Scenario	Variable	Impact
EUR 25 coal tax - 50% PT	Total	-1,719
	% of BAU	-0.09%
EUR 25 coal tax - 100% PT	Total	-1,402
	% of BAU	-0.07%
Emission tax - CBAM sectors	Total	-3,012
	% of BAU	-0.16%
EU CBAM - No domestic policy	Total	-3,845
	% of BAU	-0.20%

Source: Authors.

simulated. Policies to mitigate these effects include active labor market policies to support affected workers, including support in reskilling and reallocating displaced workers. Initiatives to diversify and direct new investment into these regions should be prioritized.

E. Conclusion

50. Overall, the macroeconomic impact of CBAM on Bosnia and Herzegovina is significant and warrants a domestic carbon pricing policy response to offset its effects. A carbon tax on coal would involve a simple extension of the existing excise collection infrastructure, providing a valuable source of domestic revenues and incentivizing decarbonization away from coal to cleaner sources in industry and electricity generation. Productive spending of the tax revenues could also partially offset the GDP impact of CBAM over time. An alternative option would be to tax emissions from the CBAM industrial sectors to collect revenues domestically. However, the narrower scope implies a lower revenue base and more limited decarbonization incentives. Implementing such a tax may be legally, institutionally and administratively more challenging.

51. Support to industries, households and coal-dependent regions in adjusting to this transition should be considered. Under the coal tax, higher coal and electricity prices would place pressure on energy-intensive industries and have adverse distributional effects on households. Support to firms in adjusting to the transition could be achieved through fiscal incentives for investment in energy efficiency and equipment modernization, as well as promoting decarbonization of the overall energy generation mix. Price impacts on households could be mitigated through targeted support, underscoring the importance of developing a robust social safety net. For coal regions, active labor market policies should be prioritized to support affected workers in reskilling and job search, along with initiatives to boost new investment into these regions. In all scenarios, BiH should invest in robust MRV systems to demonstrate actual emissions and reduce any remaining CBAM-related costs over time.

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Annex I. Quantitative Methodology

A. Impact of CBAM on EU Prices

CBAM will affect the price of exports of CBAM-covered goods that go to the EU.

In the industrial sectors (i.e., iron and steel, cement and aluminum), during the phase-in period, since the additional CBAM price faced by importers is the same as the additional EU ETS price faced by domestic exporters, it is assumed that the overall market price in these sectors faced by price-takers exporting to the EU increases.⁴⁵

The consumer price in the EU after CBAM is calculated as:

Equation 1
$$p_t^M = \bar{p}_t^M + \alpha^F * \{CBAM_t^{av}\}$$

$\bar{p}_t^M$ = regional market price of aluminum, in USD/t

α^F = fraction of CBAM price that is passed forward to EU consumers (see below)

$CBAM_t^{av}$ = average CBAM (ETS) payment imposed by the EU on all producers of CBAM covered goods, in USD/t.

Average CBAM (ETS) payment is calculated as:

Equation 2
$$CBAM_t^{av} = ETS_t^{EU} * (1 - \epsilon_t^{ind}) * EF_t^{av} + \beta_i * ETS_t^{EU} * \theta_t^{av} * PEF_t^{av}$$

ETS_t^{EU} = EU ETS permit price in year t, in USD/tCO₂

ϵ_t^{ind} = share of free allowances for industries in year t

EF_t^{av} = weighted average direct CO₂ emissions factor of demand for CBAM-covered goods in the EU, in tCO₂/t.

β_i = a coefficient indicating if indirect emissions are covered by CBAM. It is 0 for aluminum and hydrogen, 1 for cement and fertilizers, and $0 \leq \beta_i \leq 1$ for iron and steel (HS code 260112 is not exempt from indirect emissions payments)

θ_t^{av} = weighted average electricity input per unit of production, in kWh/t

PEF_t^{av} = weighted average emissions factor of power generation, in tCO₂/kWh

This new regional market price is assumed to be the same for all trade into and within the EU, and as a monetary value is calculated based on the average emissions intensity of EU imports and production in each sector.

⁴⁵ The model assumes a competitive market for CBAM commodities.

Passthrough Coefficients to EU Consumers

The extent of this price increase, i.e., the passthrough to EU buyers, is calculated as a function of (1) price elasticity of demand of EU consumers, (2) price elasticity of non-EU supply⁴⁶, and (3) price elasticity of EU supply. In general, the share of costs that can be passed into higher consumer prices increases with supply elasticity and decreases with demand elasticity. The remainder of the CBAM price will be absorbed by the exporters, which implies that exporters with higher emissions factors (dirtier production) will have to absorb higher shares of the CBAM payments. The methodology for calculating this passthrough coefficient is based on Parry et al (2025).

The passthrough coefficient (i.e., fraction of CBAM payment that is passed forward to domestic consumers in the EU) is calculated based on the following formula:

Equation 3

$$\alpha^F = \frac{\varepsilon_f * \frac{\varepsilon_f}{\varepsilon_d + \varepsilon_f}}{\varepsilon_f + |\eta|}$$

ε_f = price elasticity of foreign supply

ε_d = price elasticity of domestic supply (in the EU)

η = price elasticity of domestic demand (in the EU)

In the case of electricity, since the EU ETS already applies to EU electricity producers, it is assumed that the introduction of the CBAM does not lead to an increase in prices and is entirely borne by third country electricity producers.

Part of these costs can be passed forward into higher price for consumers in the EU (decreasing demand for aluminum inside the EU), and part of these costs will go into lowering export/production prices thus lowering production. These changes in export volumes are calculated based on assumed elasticities of EU demand and elasticity of supply of BiH exporters (see later section).

B. Impact of CBAM on BiH Exporters

The per tonne CBAM payment on BiH exports will be based on the projected ETS price.

Equation 4: $CBAM_t^{BiH} = (ETS_t^{EU} * (1 - \epsilon_t^{ind}) - \tau_t^{BiH}) * EF_t^{BiH} + \beta_i * (ETS_t^{EU} - \tau_t^{BiH}) * \theta_t^{BiH} * PEF_t^{BiH}$

ETS_t^{EU} = EU ETS permit price in year t, in USD/tCO₂

τ_t^{BiH} = explicit domestic carbon price (tax or ETS) in year t, in USD/tCO₂

ϵ_t^{ind} = share of free allowances allocation for industrial installations in the EU in year t

⁴⁶ This depends on international mobility of products and openness of the economy to global trade.

EF_t^{BiH} = BiH direct CO₂ emissions factor, tCO₂/t of aluminum

β_i = a coefficient indicating if indirect emissions are covered by CBAM. It is 0 for aluminum and hydrogen, 1 for cement and fertilizers, and $0 \leq \beta_i \leq 1$ for iron and steel (HS code 260112 is not exempt from indirect emissions payments)

θ_t^{BiH} = electricity input per unit of production in BiH, in kWh/t

PEF_t^{BiH} = emissions factor of power generation in BiH, in tCO₂/kWh

CBAM and domestic mitigation policies (if applicable) will affect domestic supply price, export price, and profits of BiH exporters.

Domestic supply price (p_t^S), net of costs of mitigation policy (including as a response to CBAM) is determined as:

Equation 5
$$p_t^S = p_t^M - (1 - \alpha) * Z_t$$

p_t^M = regional market price;

$0 \leq \alpha \leq 1$ = the fraction of domestic mitigation costs that are passed forward in higher domestic consumer prices and $1 - \alpha$ is the fraction that is passed backwards in lower domestic producer prices;

Z_t = domestic mitigation costs per unit of production.

Due to lack of firm-level data on production costs, **domestic production costs** in the policy scenario are calculated as a difference between regional market price and domestic mitigation costs:

Equation 6
$$p_t^P = p_t^M + Z_t$$

Domestic mitigation costs per unit of production are calculated as:

Equation 7
$$Z_t = \left\{ \tau_t * EF_t * \frac{\Delta e_t}{2} \right\} + \{ \tau_t * EF_t \} + \{ \theta_t^E * \Delta p_t^E \}$$

τ_t = explicit price on CO₂ emissions (domestic mitigation policy, if applicable), in USD/tCO₂

EF_t = CO₂ emission factor (emissions per unit of output) from direct use of fuels or processes, in tCO₂/t

Δe_t = proportionate change in emissions intensity of production induced by domestic mitigation policy relative to baseline intensity

θ_t^E = electricity input per unit of domestic production, in kWh/t

Δp_t^E = proportionate increase in (domestic industrial) electricity prices caused by mitigation policies in the power sector, in USD/kWh

Import price to the EU, as discussed above, will be the same for all exporters, depending on the amount of CBAM/ETS permit prices that can be passed forward to EU consumers, and is derived in Equation 1.

Finally, the **impact on profits per unit of production** for BiH exporters is calculated as a difference between an average CBAM payment that can be passed forward to EU consumers (regardless of the source of supply) and actual CBAM payment that BiH exporters should pay, depending on their emissions intensity of production:

Equation 8
$$\pi_t^{BiH} = \alpha^F * CBAM_t^{av} - CBAM_t^{BiH}$$

Previous equation determines the exporters' prices as a sum between domestic production costs and impact on profits per unit of production:

Equation 9
$$p_t^{XEU} = p_t^P + \pi_t^{BiH}$$

Export quantities to the EU from BiH then will be determined by the change in domestic prices and price elasticity of EU consumers from one side, and by the change in exporters' prices (driven by change in profits) and the price elasticity of production:

Equation 10
$$XEU_t^{BiH} = XEU_0^{BiH} * \left(\frac{p_t^M}{p_0^M}\right)^\eta * \left(\frac{p_t^{XEU}}{p_0^{XEU}}\right)^{\varepsilon_d}$$

Volumes of exports from BiH to EU are calculated by multiplying export quantities and import prices in the EU.

C. Parameterization

Parameterization of the model draws from Parry et al (2025).

Demand and Supply Elasticities

We adopt a demand elasticity η for steel, aluminum, and chemicals of -0.5 and for cement (where substitutes for the product are more limited) -0.2. The domestic supply elasticity is assumed to be unitary.

Foreign supply elasticities depend on (i) the international mobility of products (foreign supply elasticities are greater for steel and chemicals than for cement as the former have lower transport costs relative to value per tonne shipped product); and (ii) openness (foreign supply elasticities are greater for countries with higher trade shares due, for example, to closer proximity to international markets). Foreign supply elasticities are therefore based on a benchmark value for each industry, and a multiplier reflecting the relative size of trade. For steel and chemicals (where international markets are reasonably well integrated) the benchmark value is assumed to be 3 and for cement 1.

The multipliers are 50, 66 or 100 percent for cases where trade is less than 40 percent, 40-70 percent, and 70—200 percent of domestic production. If trade is more than 200 percent of domestic production, the multiplier is 150 percent.

Emissions Factors, Electricity Usage, and MAC Curves

For cement, aluminum, and ammonia, baseline emissions factors $\bar{\beta}_t$ mainly come from Climate Trace datasets (other sources include IPCC (2006), default CBAM values from the European Commission (2023), and IEA (2021), based on averaging over emissions factor data at the plant level by country.

For steel, baseline emissions factors are obtained by the respective technology (blast furnaces and electric arc furnaces) and by the respective steel output for these technologies. The autonomous rate of reduction in emissions factor δ is taken to be 0.2 for steel, and none for cement and chemicals, based on historical data.⁴⁷

Weighted average emissions factors for EU demand were calculated based on emissions factors of EU producers and EU imports and weighted by quantities of production/imports.

Electricity parameters: The ratio of electricity inputs to production θ_t^E is obtained from several sources and depends on the technological processes in each industry. Electricity consumption data for steel and aluminum comes from Climate Trace datasets based on plant-level data. For cement, the main source is IEA (2018), which provides country-specific and regional per unit electricity consumption. For ammonia, per-unit electricity consumption was chosen based on default values for different types of production processes from IEA (2021). Electricity inputs are assumed to change if there is a shift in technology over time. The proportionate increase in electricity prices Δp_t^E is calculated endogenously in CPAT under carbon pricing scenarios.

Parameters of emissions/price relation: For each industry, marginal abatement cost curve scalar and concavity (Γ and γ) are chosen based on the abatement costs and abatement potential of available and possible technologies, parameterized to Blok et al. (2021), Scott et al. (2023), McKinsey (2013), and Woodall et al (2022).

⁴⁷ See IEA: <https://www.iea.org/energy-system/industry>

NON-FINANCIAL CORPORATE VULNERABILITIES AND BANK LINKAGES IN BOSNIA AND HERZEGOVINA¹

This paper examines vulnerabilities in Bosnia and Herzegovina's non-financial corporate (NFC) sector and their implications for the capital adequacy of the banking sector. It uses aggregate business statistics and detailed firm-level balance sheet data to describe key features of the NFC sector's evolution over the past 15 years, assess its resilience to a severe macro-financial shock, and the possible spillovers to the banking sector. BiH's NFCs appear to have become more resilient over time, according to a range of financial indicators of liquidity, indebtedness, profitability, and capacity to service debt. The general improvement in the financial health of the NFC sector, especially regarding the continuous reduction of the stock of debt-at-risk, combined with BiH banks' high capital adequacy ratios, are likely able to limit the adverse effects of macro-financial spillovers to the banking sector.

A. Introduction

1. Non-Financial corporations (NFCs) play a central role in Bosnia and Herzegovina's economy. This paper analyzes firm-level balance sheet data to assess the resilience of the corporate sector following recent global shocks and to evaluate the extent to which corporate vulnerabilities could generate macro-financial risks. It examines developments in leverage, profitability, and debt-servicing capacity, and maps their linkages to the banking sector, which remains the primary source of corporate financing. While aggregate indicators point to moderate leverage and improved creditworthiness, vulnerabilities are uneven across firms and sectors, and strong bank–corporate linkages imply that adverse shocks could propagate through higher credit risk and tighter financial conditions.

2. The paper is organized as follows. Section B describes the economic significance, recent performance, and sectoral composition for BiH's NFC sector, while section C considers developments in balance sheets, including leverage, profitability, and liquidity buffers. Section D reviews corporate linkages with the banking sector in BiH. Section E presents stress testing results based on adverse shocks to firms' earnings and financing conditions. While the focus of this paper is on balance sheet vulnerabilities of NFCs, a complementary analysis examines competitiveness dynamics and structural impediments at the macro level (Annex IV of the Staff Report).

B. Background

3. NFCs are a key driver of BiH's economy, accounting for a rising share of output and employment over the past decade with activities concentrated in trade, manufacturing, and services. Business statistics indicate that NFC-related value added at factor cost (VAFC) rose from KM 12.0 billion in 2012 to KM 30.8 billion in 2024, increasing its share of GDP from 45.6 percent to 57.4 percent. NFCs also account for a large and rising share of total employment, increasing from

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about 58.6 percent in 2012 to around 72.2 percent in 2024, while consistently remaining above 70 percent in recent years.

4. NFCs are concentrated in the trade, manufacturing, and services sectors. Wholesale and retail trade lead the number of registered companies, accounting for about 28 percent of total NFC firms in 2024, followed by manufacturing (14 percent) and professional services (9 percent). Manufacturing is the largest employer, with about 27 percent of NFC jobs, followed by trade (26 percent) and transportation and construction (6–7 percent each). Trade also accounts for about 27 percent of value added, underscoring its dominant role in income generation and intermediation, while manufacturing ranks second. Services sectors such as information and communication, and professional activities, also contribute a higher share of value added relative to their size, pointing to higher productivity (Table 1).

Table 1. Bosnia and Herzegovina: Sectoral Composition of NFCs in BiH

(Percentage share)

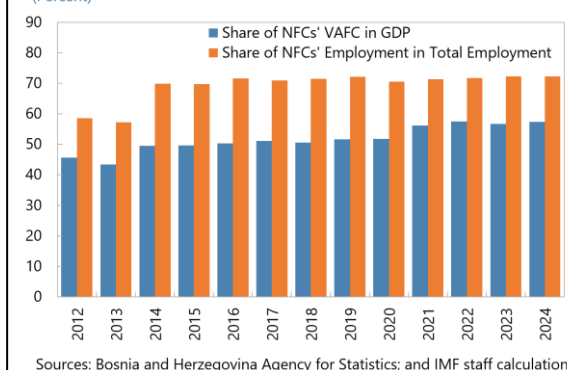
	Number of enterprises/ entrepreneurs	Number of persons employed	Turnover	Personnel costs	Value added at factor costs
Mining and quarrying	0.3	2.4	1.1	3.8	2.4
Manufacturing	14.3	27.2	21.7	26.9	23.7
Electricity, gas, steam, and air conditioning supply	0.7	2.9	4.8	5.4	4.8
Water supply; sewerage, waste management, and remediation activities	0.5	2.2	1.0	2.7	1.6
Construction	7.5	6.8	6.5	5.9	8.3
Wholesale and retail trade; repair of motor vehicles and motorcycles	27.8	26.0	48.3	24.0	27.1
Transportation and storage	8.5	6.5	3.8	6.1	5.9
Accommodation and food service activities	11.3	6.3	2.0	3.6	3.3
Information and communication	4.1	5.0	3.8	8.2	8.7
Real estate activities	1.5	0.6	0.6	0.6	1.2
Professional, scientific, and technical activities	9.2	4.3	2.6	4.6	5.2
Administrative and support service activities	2.4	3.1	1.0	3.2	2.4
Education	1.3	1.0	0.3	0.9	0.6
Human health and social work activities	2.1	2.0	0.7	1.9	1.5
Arts, entertainment, and recreation	0.7	1.6	1.1	1.5	2.2
Other service activities	7.9	1.8	0.7	0.6	1.1

Sources: BHAS; and IMF staff calculations.

5. The large and rising shares of NFC output and employment give corporate vulnerabilities a macro-financial critical role in BiH. With NFCs generating well over half of BiH's VAFC in 2024, unfavorable shocks to corporate cash flows—through softer demand, higher input costs, tighter financial conditions, or payment disruptions—can quickly spill over to output, employment, and fiscal outcomes. Economic and financial stress, even if localized in highly leveraged or weakly profitable firms, are likely to have economy-wide effects through lower investment, job losses, and spillovers to the financial system and public finances. Given NFC's large employment footprint, such shocks would also quickly affect wages, household income, and domestic demand.

Economic Significance of NFCs in BiH

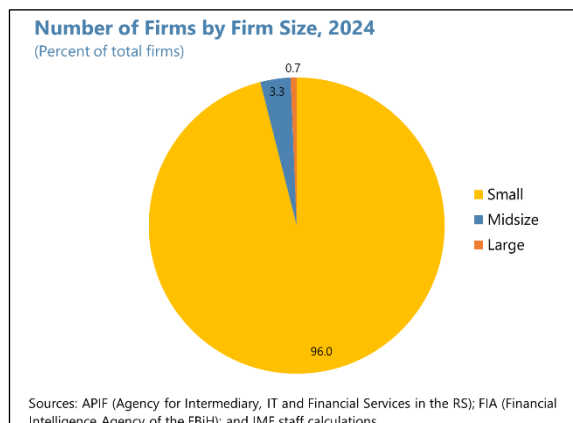
(Percent)



C. Analyzing NFC Balance Sheet Structure

6. To assess the vulnerabilities of the NFC sector, staff used firm-level data collected by FIA and APIF², covering both entities for the period 2011–2024. After cleaning and validation to remove outliers, and ensure consistency and comparability over time, the working dataset includes 384,202 firm-year observations (about 27,400 firms per year on average) of detailed balance sheet and income statement information.³

7. The data distribution is heavily skewed toward small firms,⁴ which account for about 94–96 percent of total firm-year observations over the sample period. Medium-sized firms represent about 4–5 percent, and large firms less than 1 percent. Table 2 displays a high-level summary description of the dataset for 2024, the last available data point. The typical small firm employs on average 6 people and holds 1.3 and 0.8 KM million in assets and liabilities, respectively, while large firms' figures are over 100 larger. In aggregate, however, the cross-firm sum of employees, assets, and liabilities among both small and large firms are in the same order of magnitude (Figure 1 and Table 2).



8. By sector, firms are concentrated in services and trade, followed by manufacturing, while agriculture, mining, and utilities account for relatively small shares. Firms in the mining and electricity and gas sectors not only employ most people, but also have larger assets, liabilities, and debt, on average (Figures 1-3).

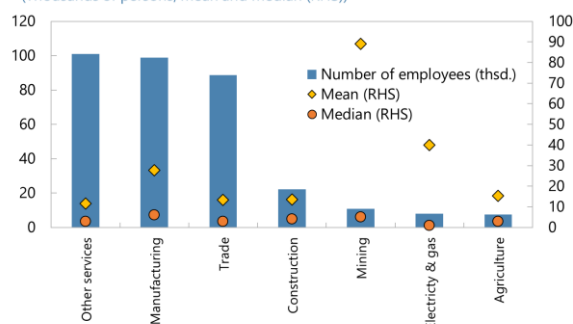
² FIA (Financial Intelligence Agency of the FBiH) and APIF (Agency for Intermediary, IT and Financial Services in the RS) are the two primary government-authorized financial and information agencies. The data in this section is not directly comparable to the business statistics used in Section B, but the distributions are similar (e.g., the highest number of employees are in the trade and manufacturing sectors).

³ The data was treated to address measurement errors and extreme values. Observations with inconsistent entries—such as negative values for series that should be strictly positive (employment or revenues) or non-negative (equity) for operating firms—were removed. Outliers were filtered using year-specific interquartile range criteria and trimmed at extreme quantiles (below the 0.25th percentile and above the 99.75th), with safeguards for ratio variables to limit distortions from very small denominators. Firms are classified into eight broad sectors based on NACE codes and three firm-size groups (small: ≤49 employees; medium: 50–249; large: ≥250). The final sample also excludes firms in government-dominated activities (public administration, health, education) and observations from residual “other” sectors.

⁴ The distribution of firms in the working sample, as displayed in Figure 1, differs from that of Table 1 in that it refers to the dataset after the adjustments mentioned in footnote 3, while the former relies on the raw, unfiltered data.

Figure 1. Aggregated Firm Balance Sheet Information by Sector**Total Employment by Sector, 2024**

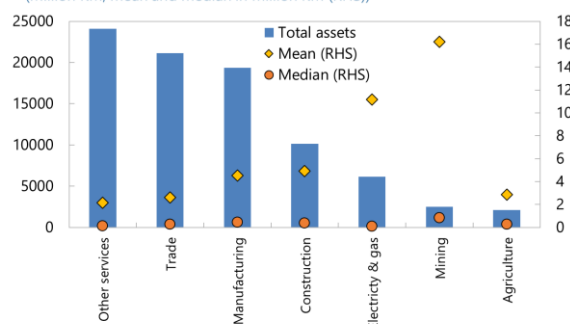
(Thousands of persons; mean and median (RHS))



Sources: APIF (Agency for Intermediary, IT and Financial Services in the RS); FIA (Financial Intelligence Agency of the FBiH); and IMF staff calculations.

Total Assets by Sector, 2024

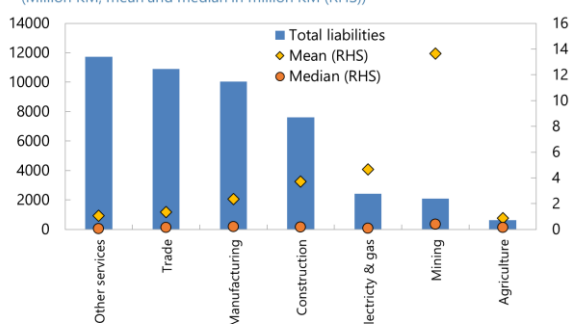
(Million KM; mean and median in million KM (RHS))



Sources: APIF (Agency for Intermediary, IT and Financial Services in the RS); FIA (Financial Intelligence Agency of the FBiH); and IMF staff calculations.

Total Liabilities by Sector, 2024

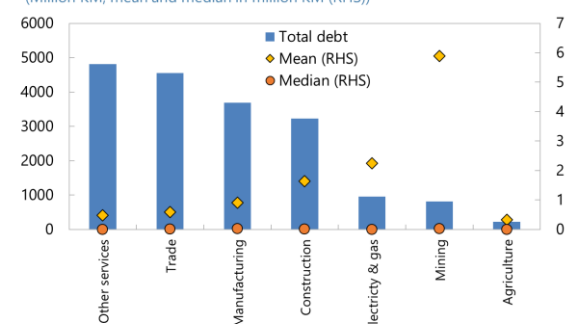
(Million KM; mean and median in million KM (RHS))



Sources: APIF (Agency for Intermediary, IT and Financial Services in the RS); FIA (Financial Intelligence Agency of the FBiH); and IMF staff calculations.

Total Debt by Sector, 2024

(Million KM; mean and median in million KM (RHS))



Sources: APIF (Agency for Intermediary, IT and Financial Services in the RS); FIA (Financial Intelligence Agency of the FBiH); and IMF staff calculations.

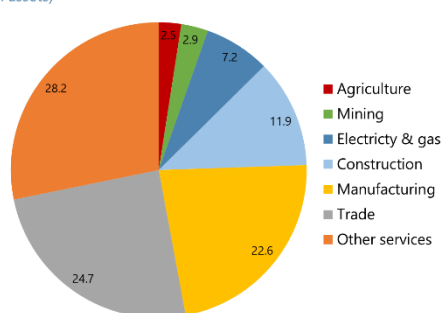
Table 2. Bosnia and Herzegovina: Aggregated Firm Balance Sheet Information by Firm Size, 2024

	Employees (Persons)				Total Assets (Million KM)			Total Liabilities (Million KM)			Total Debt (Million KM)		
	Number of firms	Total	Mean	Median	Total	Mean	Median	Total	Mean	Median	Total	Mean	Median
Small	26,072	125,914	6	3	34,851.1	1.3	0.2	21,140.5	0.8	0.1	7,882.9	0.3	0.0
Midsized	897	90,481	101	85	19,561.9	21.8	10.9	8,608.2	9.6	4.4	3,798.7	4.3	1.2
Large	178	120,249	676	451	31,066.5	174.5	60.7	15,669.5	88.0	26.3	6,589.0	37.7	7.8
All firms	27,147	336,644	16	3	85,479.4	3.1	0.2	45,418.1	1.7	0.1	18,270.7	0.7	0.0

Sources: APIF (Agency for Intermediary, IT and Financial Services in the RS); FIA (Financial Intelligence Agency of the FBiH); and IMF staff calculations.

Figure 2. Composition of Corporate Assets by Sector and Firm Size**Total Assets by Sector, 2024**

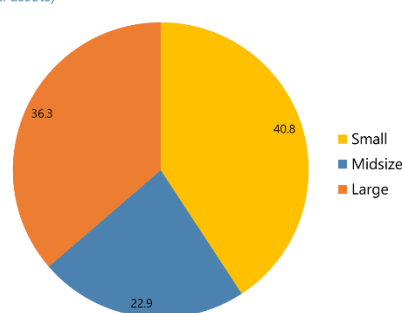
(Percent of total assets)



Sources: APIF (Agency for Intermediary, IT and Financial Services in the RS); FIA (Financial Intelligence Agency of the FBiH); and IMF staff calculations.

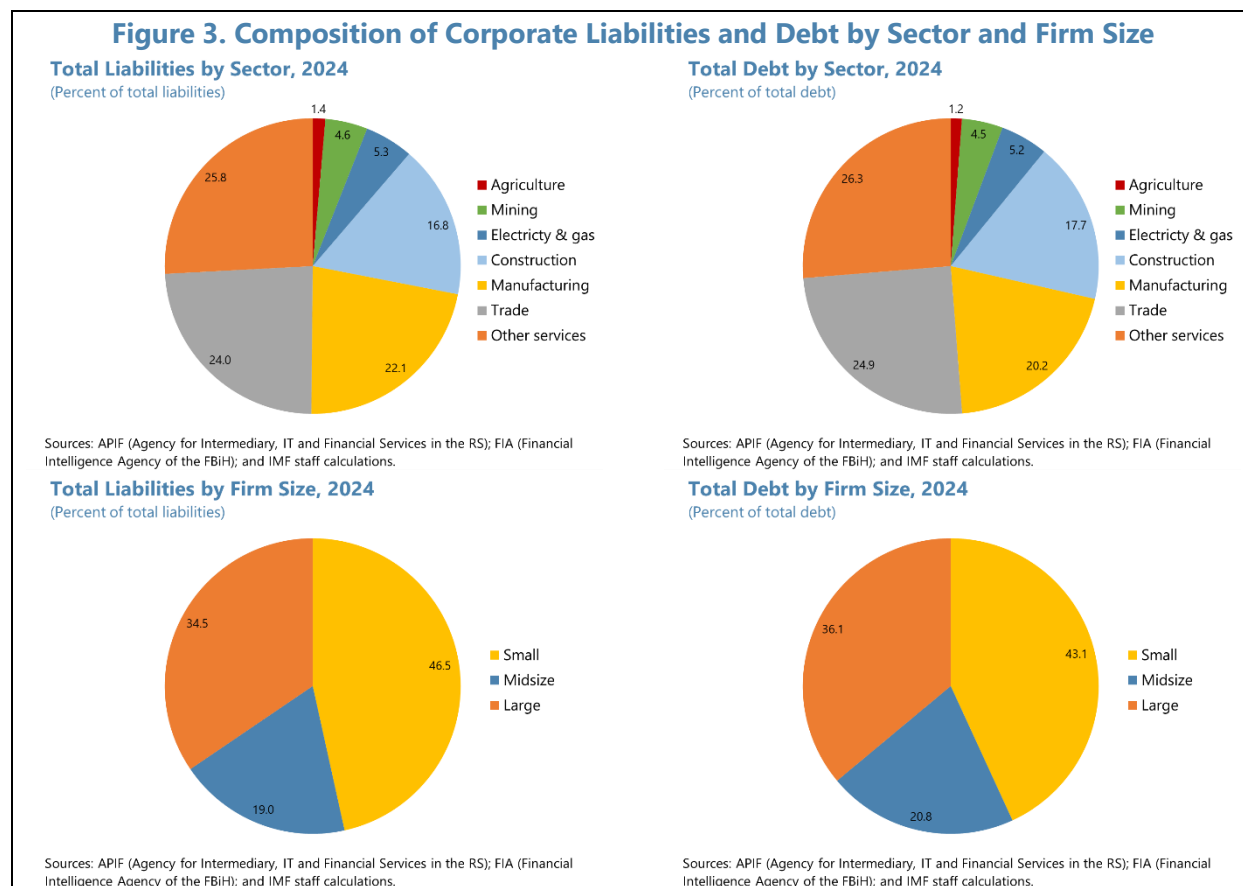
Total Assets by Firm Size, 2024

(Percent of total assets)



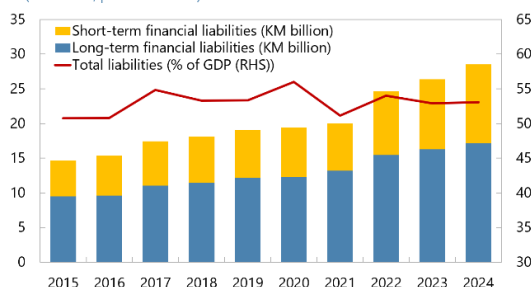
Sources: APIF (Agency for Intermediary, IT and Financial Services in the RS); FIA (Financial Intelligence Agency of the FBiH); and IMF staff calculations.

9. BiH corporate sector has remained moderately leveraged over the past decade, while creditworthiness has improved. The gross debt remained broadly stable relative to GDP, reaching 53.1 percent in 2024 after peaking at 56.0 percent at the start of the pandemic. Liabilities shifted toward shorter maturities, with short-term financial liabilities rising from 35.5 percent of the total in 2015 to 39.8 percent in 2024. This greater reliance on short-term funding increases rollover needs and sensitivity to tighter financing conditions, amplifying macro-financial risks in BiH's bank-dominated financial system. As in many peer European economies, BiH firms rely mainly on bank loans rather than debt securities, which remain scarcely used.



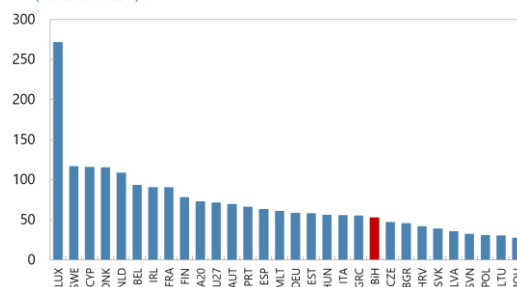
10. Aggregate corporate indebtedness in BiH, as a share of the GDP, does not seem excessive by European standards. It is well below the EU-27 average and the euro area average, and slightly below the median EU country. Importantly, BiH's corporate debt as share of GDP is broadly stable and comfortably below the indicative threshold of 85 percent for NFC debt.⁵ Relative to the EU, BiH's corporate debt is positioned between lower-leveraged Central and Eastern European peers and more highly indebted euro area economies, but far below that of jurisdictions with very high corporate leverage such as Luxembourg, Sweden, and Cyprus (Figure 4).

⁵ This threshold is commonly used as a benchmark to flag elevated macro-financial risks under the EU Macroeconomic Imbalance Procedure (MIP)

Figure 4. Non-Financial Corporate Debt in BiH**Gross Debt of Non-Financial Corporations in BiH**
(KM billion; percent of GDP)

Sources: APIF (Agency for Intermediary, IT and Financial Services in the RS); FIA (Financial Intelligence Agency of the FBiH); and IMF staff calculations.

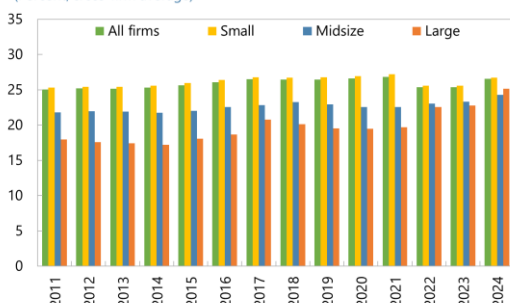
Note: The number of corporates included in the analysis has increased by ~10 percent in 2022.

Gross Debt of Non-Financial Corporations, 2024
(Percent of GDP)

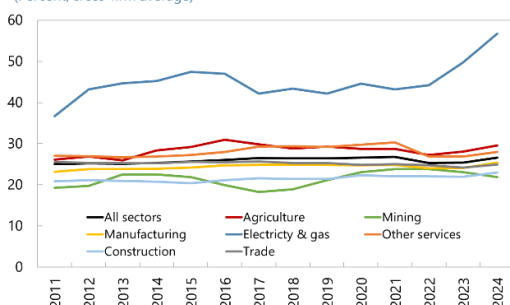
Sources: APIF (Agency for Intermediary, IT and Financial Services in the RS); FIA (Financial Intelligence Agency of the FBiH); and IMF staff calculations.

Note: The number of corporates included in the analysis has increased by ~10 percent in 2022.

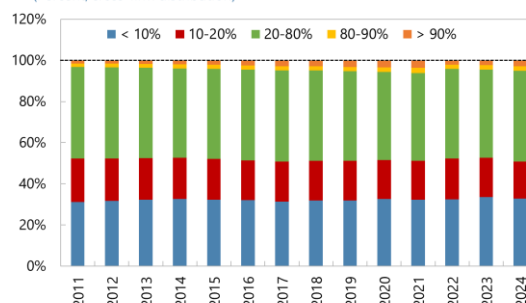
11. Relative to both total NFC assets and equity, BiH corporate debt has been stable since 2011 and concentrated in firms with debt-to-asset (DTA) ratios in 20-80 percent range. The cross-firm average DTA ratio has been consistently hovering around 26 percent, mostly driven by the indebtedness of small firms, since both mid-sized and large firms' DTA ratio have been consistently increasing, although from lower ratios (Figure 5, top-left). Tail risks are low: in 2024, only 5 percent of firms had DTA above 80 percent (Figure 5, top-right). DTA stability is also observed across almost all sectors, with stable ratios between 20 and 30 percent since 2011 depending on the sector. The notable exception is the electricity and gas sector, with higher (between 36 and 57 percent, over the sample) and rising DTA in recent years (Figure 5, bottom-left). Debt-to-equity (DTE) measures produce broadly similar results, including the higher and rising debt of the electricity and gas sector, with the mining sector having historically the lowest DTE (Figure 5, bottom-right).

Figure 5. NFC Indebtedness Indicators**Debt-to-Assets Ratio by Firm Size**
(Percent; cross-firm average)

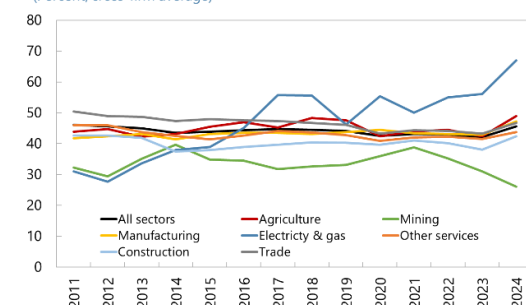
Sources: APIF (Agency for Intermediary, IT and Financial Services in the RS); FIA (Financial Intelligence Agency of the FBiH); and IMF staff calculations.

Debt-to-Assets Ratio by Sector
(Percent; cross-firm average)

Sources: APIF (Agency for Intermediary, IT and Financial Services in the RS); FIA (Financial Intelligence Agency of the FBiH); and IMF staff calculations.

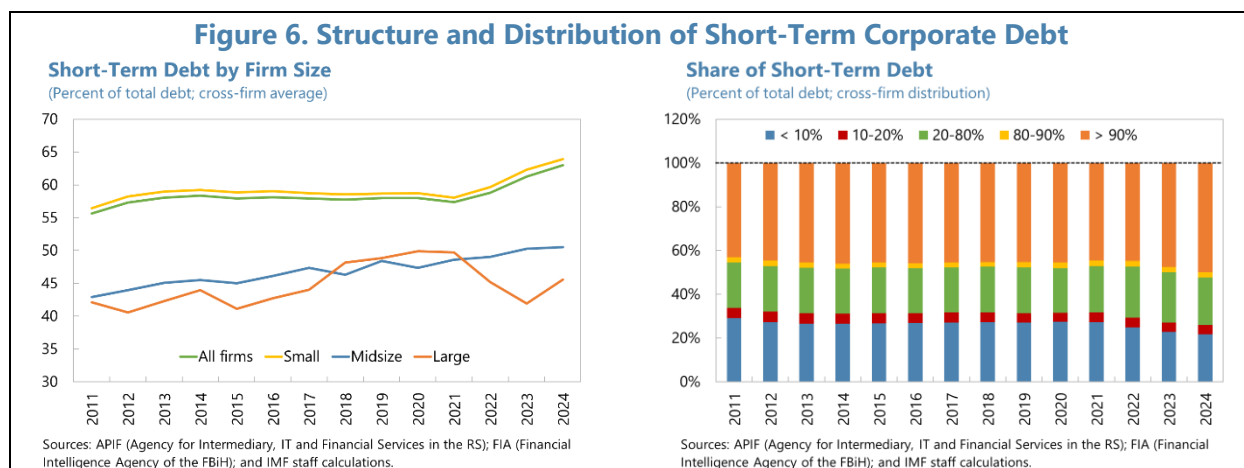
Share of Debt-to-Assets Ratio
(Percent; cross-firm distribution)

Sources: APIF (Agency for Intermediary, IT and Financial Services in the RS); FIA (Financial Intelligence Agency of the FBiH); and IMF staff calculations.

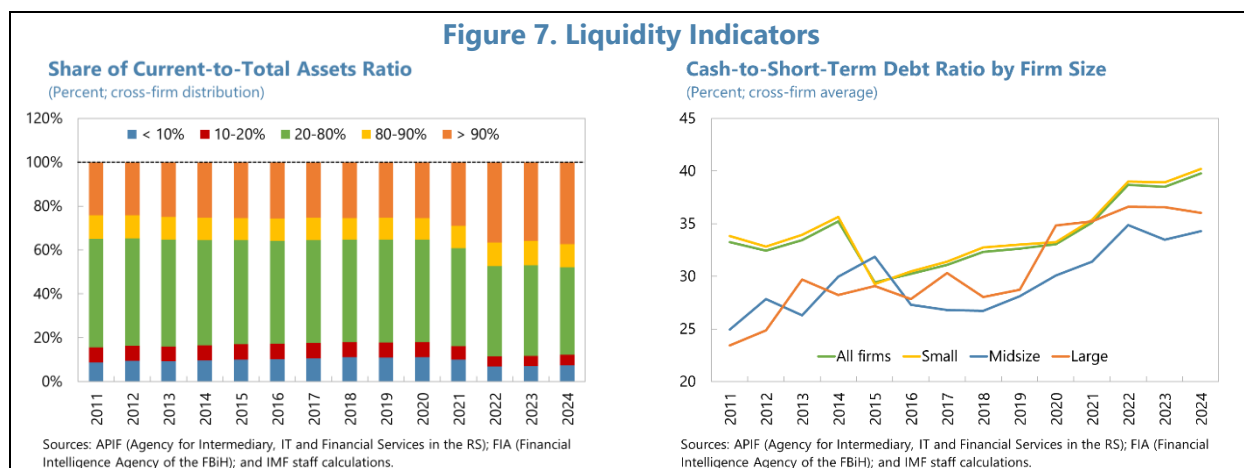
Debt-to-Equity Ratio by Sector
(Percent; cross-firm average)

Sources: APIF (Agency for Intermediary, IT and Financial Services in the RS); FIA (Financial Intelligence Agency of the FBiH); and IMF staff calculations.

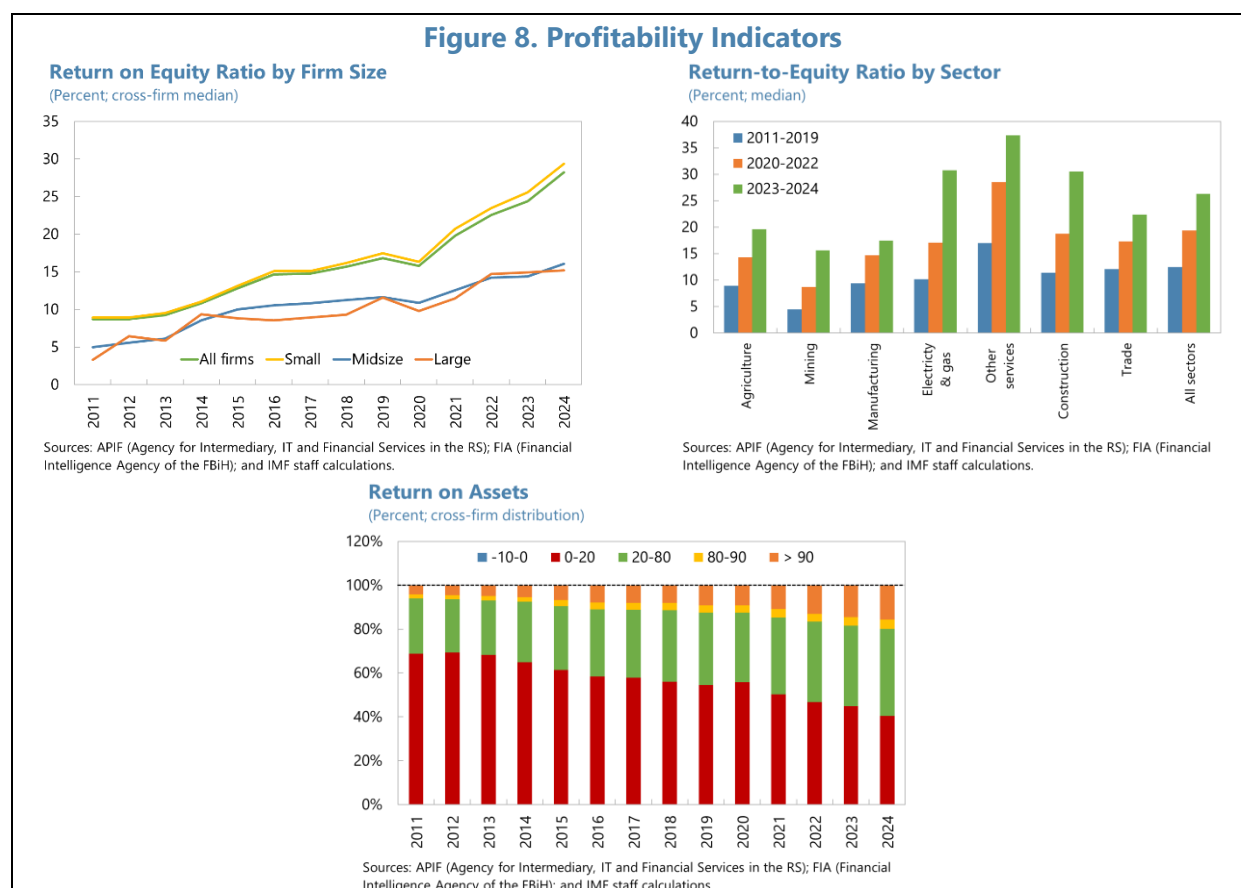
12. The share of short-term to total debt is highest for small NFC firms and increasing across firms of all sizes. Figure 6 (left) shows that the short-term indebtedness ratio of small firms drives the overall NFC sector average, both at around 60 percent for most of the sample period, increasing to 64 percent in 2024. At the same time, the share of firms with short-term-to-total debt ratio above 90 percent is increasing, raising the vulnerability of the NFC sector to adverse shocks. A mitigating factor is that liquidity is also increasing.



13. The liquidity position of the NFC sector has been gradually improving over time. The cross-firm average ratio of current (i.e., liquid) assets to total assets (CAR) had been stable at around 60 percent of total assets between 2011 and 2022, but increased to 68 percent in 2023-2024, as its distribution is becoming increasingly skewed towards more liquid firms (Figure 7, left). While this trend points to decreasing short-term liquidity risks, it also means that NFC fixed assets, including physical capital, represent less than 2/3 of liquid assets and are on a declining relative path which could have adverse implications for potential growth. Tail liquidity risks—NFCs with CAR less than 20 percent—are restricted to about 12 percent of firms by 2024. Increasing cash-to-short term debt (CTD_{st}) ratios across all firm-sizes also indicates a decreasing average liquidity risk in BiH's NFCs (Figure 7, right).



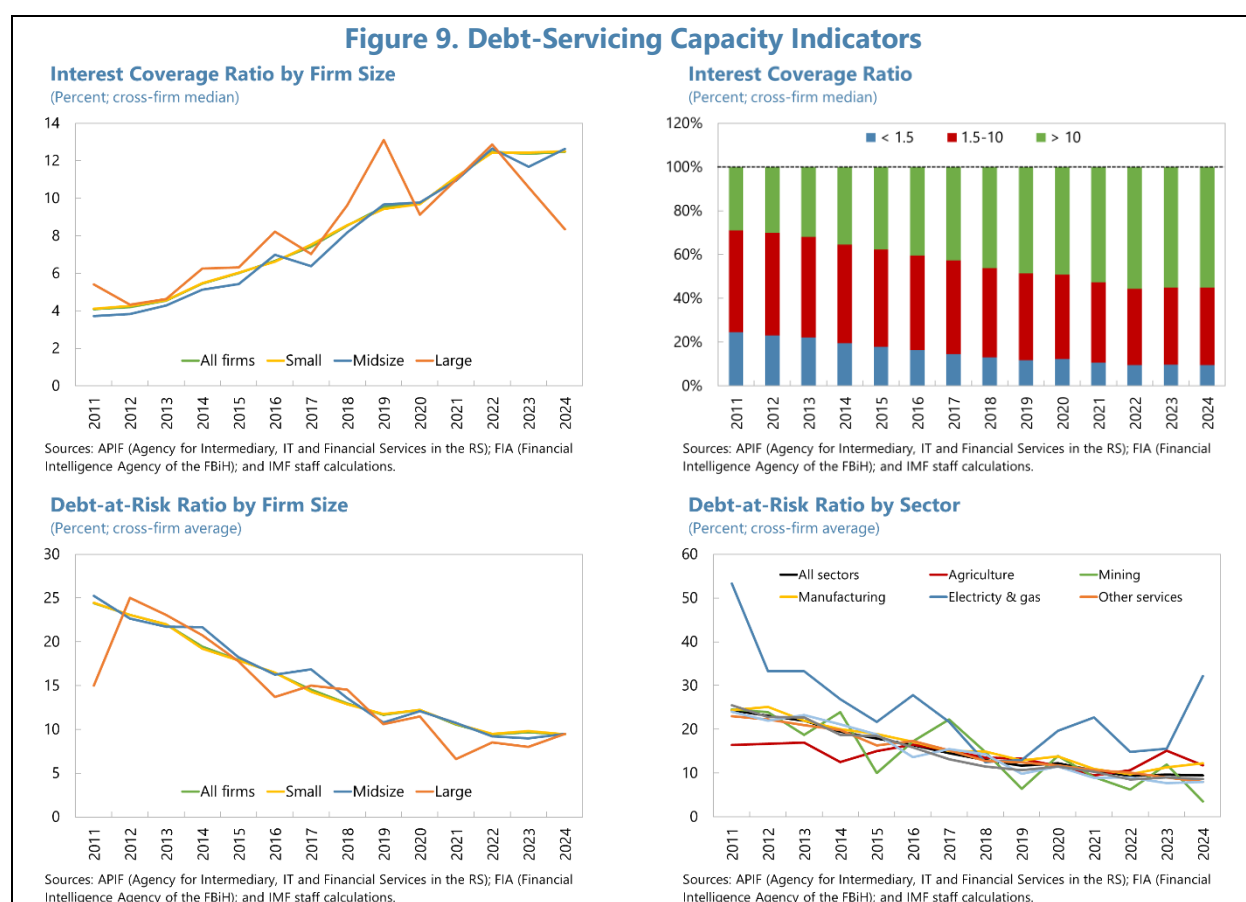
14. Profitability of the NFC sector has been increasing over time, across all sectors and firm sizes. The median return on assets (ROA) rose from 9 percent to 29 percent over the sample period. Small companies are historically the most profitable, holding little equity and assets,⁶ while the profitability of both medium and large firms evolves similarly but at a lower level and slower pace. Return on assets (ROA) shows similar trends (Figure 8, left). The typical firm in all sectors have experienced increasing profitability since 2011, especially in “Other services,” electricity and gas, and construction (Figure 8, right). The increase in median profitability is pervasive, reflected in a growing share of high-ROE firms and declining share of low-ROE firms (Figure 8, bottom).



15. The debt-servicing capacity of firms is a critical indicator of vulnerabilities of the NFC sector to economic and financial shocks. We use the Interest Coverage Ratio[6] (ICR)—the ratio of earnings before interest expenses and taxes (EBIT), proxied by operating income (i.e., revenues minus operating costs), to interest expenses—as the main indicator. According to the ICR, BiH firms have become less exposed to debt-servicing risk. Across small and mid-size firms, the median ICR has increased three-fold since 2011, while large-firm ICR increased by about 50 percent (Figure 9,

⁶ In 2024, the average large, medium, and small firms had about KM1 million, KM1.7 million, and KM340 thousand in equity, respectively. Regarding assets (Table 2), these figures are KM174 million, KM22 million, and KM1.3 million, respectively.

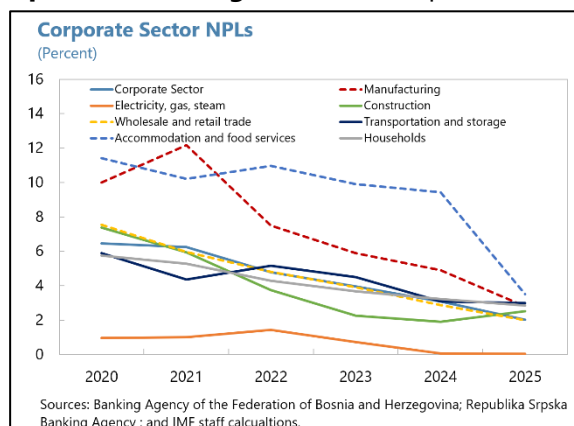
top-left).⁷ Considering the standard threshold of debt-at-risk (DAR) for firms with ICR lower than 1.5, the share of firms facing debt-servicing risk has continuously declined in BiH, from about a quarter of all firms in 2011 to 9 percent in 2024 (Figure 9, top-right). Correspondingly, the cross-firm average ratio of debt-at-risk to total debt has declined for firms of all sizes, from about 15 percent in large firms and 25 percent in both small and medium firms, respectively, to about 10 percent by 2024 (Figure 9, bottom-left). Despite the continuous reduction in DAR across sectors, some sectoral vulnerability remains in the electricity and gas sectors, which historically have the lowest ICR and highest DAR (Figure 9, bottom-right). By 2024, about half of the DAR stock is held by small (36 percent, divided amongst 7 thousand firms) and midsize (14.6 percent; 666 firms) firms, while the manufacturing and trade sectors combined hold about 2/3 of the DAR stock. Of the total stock of debt-at-risk, between 80 and 90 percent has been historically held by firms with less than KM10 thousand.



⁷ There are anecdotal suggestions of underreporting of operational costs—especially labor costs—by BiH NFCs, which would imply overestimation of operational income, EBIT, and ICD. However, there are also suggestions that operation revenues and net profits could also be underreported, which would imply the opposite. Stakeholders in BiH broadly agreed that the trends displayed by the estimated ICR are plausible.

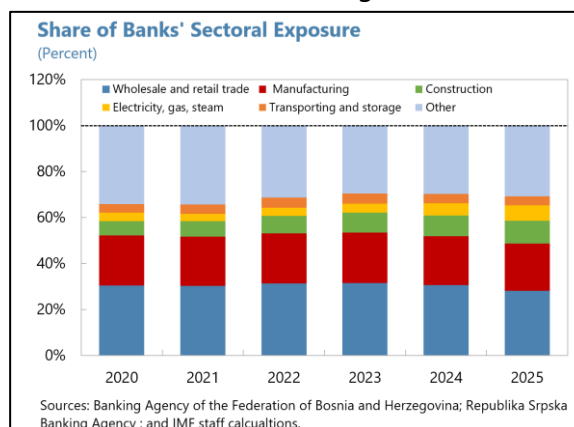
D. NFC and Banking Sector Interlinkages

16. The banking sector is the main source of corporate financing in BiH. In the post-pandemic period, bank lending accounted for about 45 percent of corporate debt. Exposure of banking sector to non-financial companies in BiH, at current prices, has risen by about 50 percent over the past decade, and accelerated more recently after more moderate expansion before and during the pandemic. However, bank exposure to corporates as a share of GDP fell, from about 25 percent to 20 percent over the same period. Corporates have also increasingly relied on external borrowing, including trade credit and intercompany loans from abroad. Overall, bank exposure has broadly kept pace with total corporate liabilities, pointing to a stable but significant linkage between corporates and the banking system. As a result, corporate sector developments are a key driver of bank asset quality and profitability.

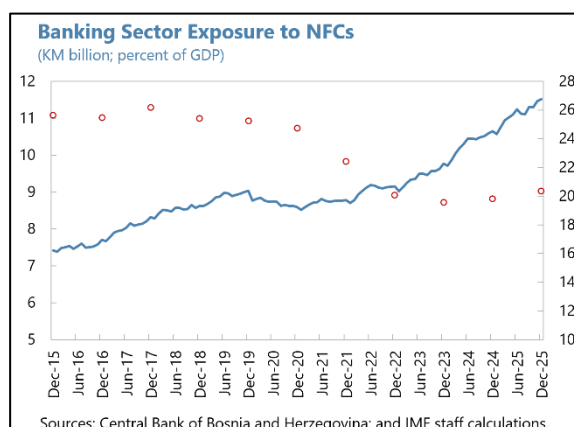


17. Bank exposure to corporates in BiH is highly concentrated by sector and broadly mirrors the economy's structure. Wholesale and retail trade accounts for the largest share of

corporate credit, at about 30 percent, followed by manufacturing at around 21 percent. Other notable sectors are construction, whose share rose from about 6 percent in 2020 to nearly 10 percent in 2025, electricity, gas, steam, and air conditioning supply, which increased from about 4 percent to nearly 7 percent, and transportation and storage, which remained around 4 percent. This pattern is consistent with BiH's economic structure, where trade dominates turnover and value added, while manufacturing remains central to employment and exports. It suggests banks are mainly financing the core drivers of domestic demand and tradable production.



18. Sectoral credit risk broadly aligns with the previously identified economic and corporate structure in BiH, underscoring strong bank–corporate linkages. High exposure to trade increases banks' sensitivity to domestic demand, while lending to manufacturing raises vulnerability to external demand shocks, competitiveness pressures, and energy costs. Rising exposure to construction adds cyclical risk tied to investment

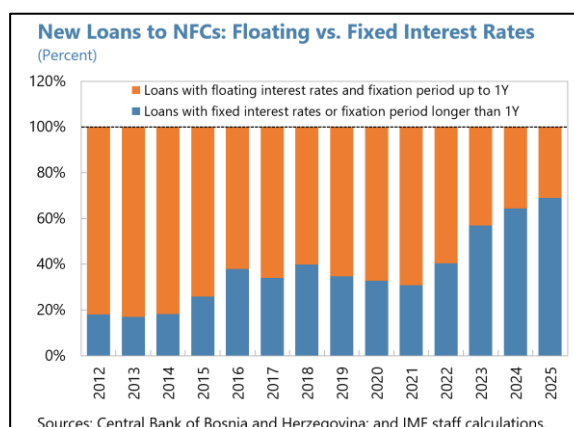


downturns, and greater lending to electricity could increase indirect exposure to carbon-transition risks, including from the EU's CBAM. Smaller exposures to information and communication, professional services, and accommodation and food services offer limited diversification. Overall, concentration in a few key sectors could lead to correlated increases in credit risk and nonperforming loans.

19. Corporate credit risk in BiH has declined since 2020 but remains uneven across sectors, reflecting structural vulnerabilities. Stage 3 corporate exposures fell from about KM 703 million in 2020 to around KM 294 million in 2025, pointing to improved asset quality amid the post-pandemic recovery and favorable macroeconomic conditions. Still, vulnerabilities persist in accommodation and food services, transportation, and trade-related activities, which show relatively high Stage 2 and Stage 3 exposures and remain sensitive to demand shocks, cost pressures, and rising wages. By contrast, the electricity sector has low Stage 3 exposures, though its rapidly rising credit share and emerging transition risks could create new vulnerabilities over time. Manufacturing, despite its large exposure, has seen a gradual decline in Stage 3 loans, though it remains vulnerable to weaker external demand and competitiveness pressures. Headline gains mask sectoral risks and concentrated exposures that could still weaken asset quality, warranting granular monitoring.

20. Financing conditions for NFCs have become more favorable in recent years. In

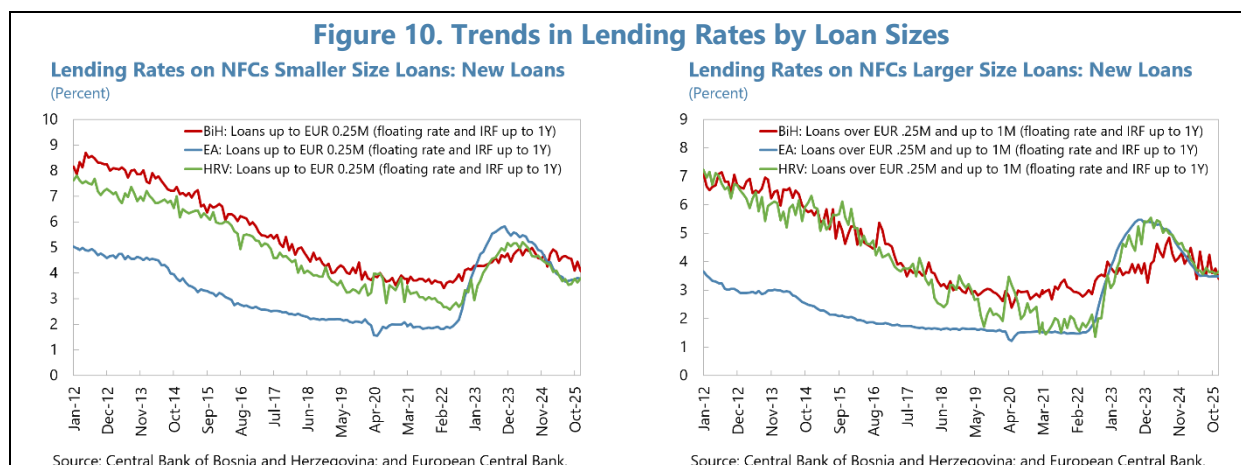
particular, the composition of new lending has changed markedly, with fixed-rate borrowing becoming increasingly prevalent. While lending to NFCs was predominantly conducted at floating rates a decade ago, this trend reversed following the pandemic. Fixed-rate loans have since gained prominence, accounting for about 70 percent of new NFC lending in 2025, thereby reducing borrowers' exposure to interest rate volatility. At the same time, lending rates for NFCs in BiH have exhibited limited passthrough from the most recent ECB tightening cycle. While lending rates in the euro area increased rapidly in response to higher policy rates, the adjustment in BiH has been more moderate. As a result, lending rates for NFCs in BiH have at times remained below comparable euro area rates. Despite tighter external conditions, corporate financing in BiH has remained relatively accommodative, supporting credit growth and limiting near-term refinancing risks.



E. Sensitivity and Stress Analysis

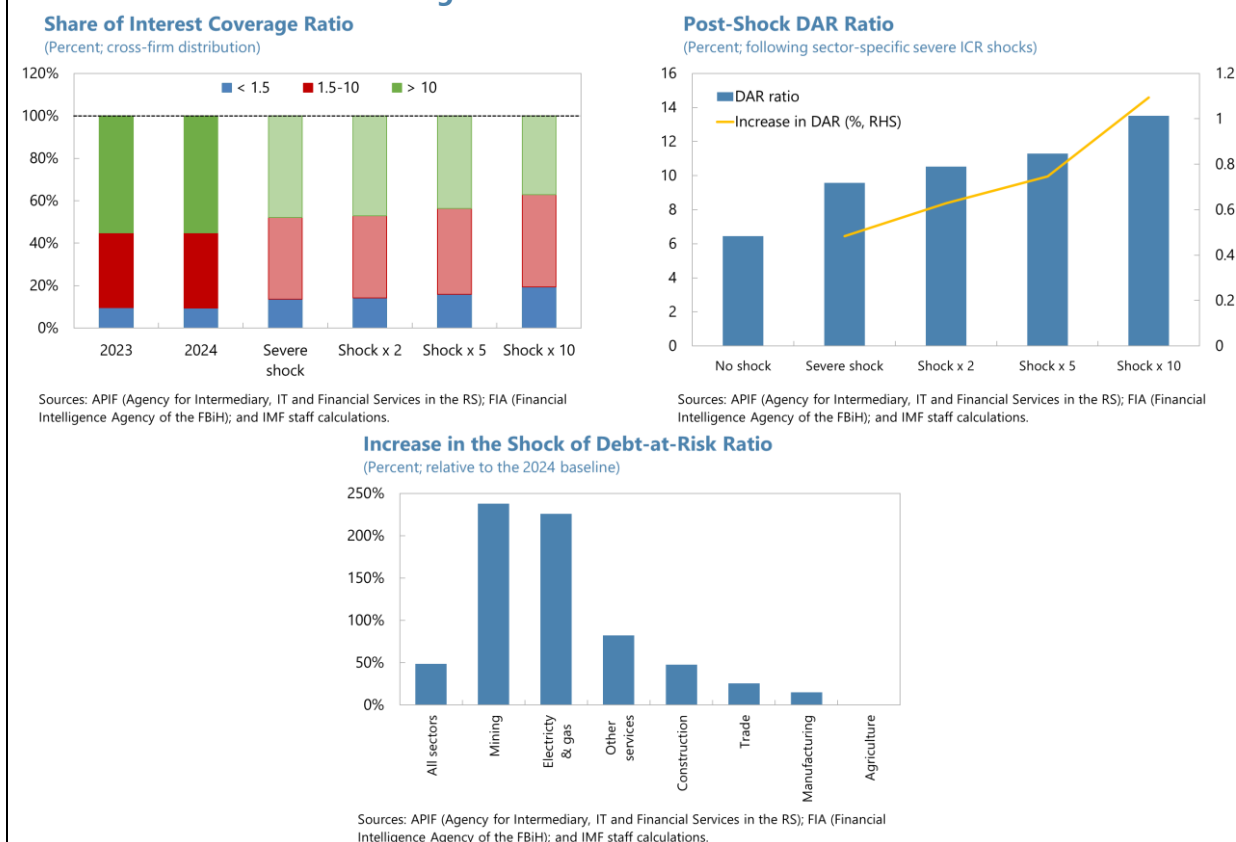
21. Strong bank-corporate linkages make corporate vulnerabilities an important source of financial stability risk in BiH. NFCs' large and rising macroeconomic footprint means that weaker profitability—driven by higher costs or softer demand—could quickly undermine debt-servicing capacity and raise delinquencies and nonperforming loans. Risks are amplified by the concentration of corporate activity and bank credit in trade, manufacturing, and construction, where sector-specific shocks could lead to clustered losses. Because NFCs are also central to employment and income

generation, corporate stress could weaken labor markets and domestic demand, further eroding firms' revenues, and bank asset quality. Overall, shocks to corporate profitability or liquidity could spill over rapidly through weaker loan quality, slower credit growth, and adverse bank-corporate feedback loops, underscoring the need for close monitoring of corporate balance-sheet resilience.



22. A stress test framework is used to assess the effect of spillovers to the NFC sector from a severe macro-financial scenario on BiH's banking sector. The analysis simulates sector-specific shocks to both the numerator (EBIT) and denominator (interest expenditures) components of ICR. For each sector, the shock to EBIT was calibrated to reflect the magnitude of the decline observed in EBIT during the 2020 pandemic plus an additional factor to account for the 0.6 percentage point difference in 2026 GDP growth projections under a baseline and a severe macroeconomic scenario (See Policy Note). Given the estimated elasticity ($\xi=6$) of EBIT to total Gross Value Added (GVA), an additional $0.6 \times \xi = 3.6$ percentage points was subtracted from the sectoral (negative) EBIT growth rates observed during the pandemic. We then increased interest payments to reflect a 0.7 percentage point higher lending rate (the largest annual increase observed in BiH since 2012) applied on the stock of NFC debt in 2024. The combination of lower EBIT and higher interest payments result in lower ICRs across sectors.

23. Under the ICR resulting from the shock, firms are reclassified into distress categories based on the 1.5 threshold. The (lower) post-shock ICR produces a higher stock of DAR across sectors, for bringing some firms with ICR above but close to 1.5 into the debt-at-risk category. Figure 11 shows the impact of the shock on 2024 ICRs. The share of firms with debt-at-risk, which was on a downward trend to 9 percent by 2024, would have been reverted to 13.6 percent (Figure 11, top-left). Shocks two, five, and ten times more severe would move even more firms into potential debt-servicing distress. Relative to the 2024 baseline, the counterfactual shock scenario would have moved the DAR ratio to total debt from 6.5 percent to 9.6 percent and increase the DAR stock by about 50 percent (Figure 11, top-right). The effect of the shock would be asymmetric across sectors with the DAR stock increasing more than three-fold in the mining and electricity and gas sectors, while the impact on agriculture and mining (already low median ICR and low DAR) would be almost null.

Figure 11. Post-Shock Outcomes

24. The increase in the stock of DAR is subsequently mapped into an increase in non-performing loans (NPLs), using the observed ratio of NPLs to DAR in 2024, and into losses using assumptions about probabilities of default and loss-given-default. The impact on the banking system's resilience is assessed by translating the losses into changes in the capital adequacy ratio (CAR), considering existing capital buffers and provisions.

25. While the impact of a severe downside scenario is substantial, the banking sector is well protected against shocks. The results indicate that, under the severe shock, debt-at-risk in the corporate sector could increase significantly—by 48 percentage points—reflecting a broad-based weakening in firms' repayment capacity. If non-performing loans (NPLs) were to increase by the same amount, the resulting spillovers to the banking sector would be large, with the CAR declining by 1.5 percentage points. The impact, however, is cushioned by the BiH banking sector's high CAR, which was above 18 percent in 2024 (Table 3).

Table 3. Bosnia and Herzegovina: Bank Capital Impact, 2024

	KM (millions)
Tier 1 capital (1)	4,790
Stock of provisions (2)	653
Existing NPL stock (3)	813
Risk-Weighted Assets	25,596
Capital before shock (1+2-3)	4,629
Capital after shock	4,236
Capital Adequacy Ratio before shock	18.1%
Capital Adequacy Ratio after shock	16.5%

Sources: CBBH; and IMF staff calculations.

F. Conclusion

26. Overall, the evidence suggests that BiH's NFC sector has strengthened over time, with improved profitability, moderate leverage, and declining debt-at-risk supporting greater resilience to shocks, while strong bank capitalization helps contain macro-financial spillovers.

However, vulnerabilities remain uneven across firms and sectors, and the high concentration of corporate activity and bank exposures—particularly in trade, manufacturing, and construction—leaves the system exposed to adverse shocks. These findings underscore the importance of continued close monitoring of corporate balance sheets, granular risk assessment, and policies aimed at strengthening firm resilience and diversifying the sources of growth and financing.