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RESEARCH ARTICLE

Effects of the EU's CBAM on Eurasian Countries

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ABSTRACT
Starting from 2026, imports of certain goods to the EU will be subject to a special fee that is based on the carbon content of the imported products. Consequently, the EU's trade partners have tried to predict the possible risks of such a change in the European trade policies. Given this, the article focuses on the analysis of the impact of the EU's Carbon Border Adjustment Mechanism (CBAM) on different countries. In particular, the current research aims to assess CBAM payments for imports of products from Eurasian countries to the EU. Despite current trends in the EU's trade policy, the largest CBAM payment is estimated to be for Russia. Analysis shows that the highest share of CBAM payments in exports to the EU is estimated to be for Uzbekistan, Georgia, Tajikistan and Belarus. The biggest share of CBAM payments falls on imports of metals, fertilisers, electricity and oil. However, these results should be treated with caution since some Eurasian countries are missing high quality data on the carbon intensity of the produced goods. In this light Eurasian countries should adopt a transparent system for collecting and publishing detailed information on the embedded emissions of different products. Adoption of CBAM by the EU may lead to the implementation of the analogous mechanisms by trade partners of the Eurasian region. Therefore, the decrease of carbon intensity of products and "green" transition should be among the top priorities of the industrial and economic policies of these countries.

Keywords: Carbon border adjustment, Trade policy, Climate policy, Export, Sanctions, CBAM, EAEU
JEL Classification: F13, H23

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1. Introduction

The European Union (EU) Carbon Border Adjustment Mechanism (CBAM) is a new trade policy tool aimed at battling climate change through imposition of a "climate import duty": this mechanism is to be applied in relation to imports of certain goods based on their carbon content. This policy is intended to address the challenge of carbon leakage, where emissions are shifted from countries with strong climate policies to those with weaker policies, and to level the playing field for European businesses. The CBAM will have implications for the EU's trade partners and their ability to trade with the EU. The introduction of the CBAM marks a significant step in the EU's efforts to tackle climate change and create a greener future for all.

The key features of the EU's CBAM mechanism are being discussed by the European Commission (EC), European Parliament (EP), and the Council of the EU. As such, the EC was the first one to introduce draft CBAM parameters in July 2021. In accordance to these parameters, the EC originally planned to launch the CBAM from the beginning of 2023 as a reporting mechanism, further requiring importers to purchase CBAM certificates from 2026 (1 certificate = 1 tonne of CO2e emissions associated with the production of goods). The EC proposed to link the price of CBAM certificates to the price of emission allowances (EUA) at the EU Emissions Trading System (EU ETS). The EC suggested applying the CBAM in relation to imports of cement, electricity, fertilizers, iron, steel, and aluminum (249 HS-6 codes). The EC mentioned that CBAM payments should be calculated on the basis of direct emissions from the production of goods covered by this mechanism and direct emissions from the production of input materials used in goods covered by the CBAM. It was also clearly mentioned (by the EC and other EU institutions) that the CBAM will be acting as a replacement of free allocation at the EU ETS and therefore during 2026 – 2035 CBAM payments will be decreased to reflect free allocation in sectors that are to be covered by this mechanism (it is planned that starting from 2035 there will be no free allocation in the EU ETS). The three parties mentioned above agree on certain basic characteristics of the proposed mechanism like the price of CBAM certificates. However, until the end

of December 2022, parties had different views on certain aspects of the CBAM like products and emissions covered by the mechanism. Nevertheless, on the 13th of December 2022, the EP and the Council of the EU reached a provisional agreement on the CBAM. The CBAM characteristics mentioned in this agreement represent a trade-off between the views participants of trilogue (see table below). It should be noted that according to the provisional agreement, the CBAM is to be implemented from October 2023 (as a reporting mechanism and from 2026 as a fee for imports), that is a later date compared to the original EC proposal.

Table 1: Possible EU CBAM parameters

	EC proposal (July 2021)	**EP proposal (June 2022)**	**Council of the EU proposal (June 2022)**	**Provisional agreement (December 2022)**
Implementation period	Transition period: 2023 – 2025 (3 years) Payment obligations: from 2026	Transition period: 2023 – 2024 (2 years) Payment obligations: from 2025	Analogous to EC's position: Transition period: 2023 – 2025 (3 years) Payment obligations: from 2026	Transition period: 1 October 2023 – 2025 (ca. 2 years) Payment obligations: from 2026
Emission scope	Scope 1 and 3 (direct emissions including from input materials)	Scope 1, 2 and 3 (direct and indirect emissions)	Scope 1 and 3 (direct emissions including from input materials). Indirect emissions Scope 2 within the boundaries of the installation producing the good are defined as direct emissions	Depending on product. All emission scopes are mentioned
Goods covered	Cement, electricity, fertilisers, iron and steel, aluminium. 249 HS-6 codes	Cement, electricity, fertilisers, iron and steel, aluminium, and organic chemicals, hydrogen, polymers (plastics and products thereof). 764 HS-6 codes	Slight extension of EC proposal. CBAM payment is not imposed in case of consignment value of 150 Euro or less. 265 HS-6 codes	Applies to import consignments above 150 Euro. Cement, electricity, fertilisers, iron and steel, aluminium and hydrogen 285 HS-6 codes

Table 1: Possible EU CBAM parameters

	EC proposal (July 2021)	**EP proposal (June 2022)**	**Council of the EU proposal (June 2022)**	**Provisional agreement (December 2022)**
CBAM factor (free allocation phase out)	Is equal to 100% in 2025. Evenly decreased by 10 p.p. during 2026 – 2035	Equals 100% in 2024. 0 for cement starting from 2025. For other goods it is equal to 90% in 2025, 70% in 2026, 40% in 2027 and 0% by the end of 2028	Is equal to 100% in 2025. Annual decrease by 5 p.p. during 2026 – 2028. Annual decrease by 7.5 p.p. during 2029 – 2030. Annual decrease by 10 p.p. during 2031 – 2032. Annual decrease by 15 p.p. during 2033 – 2034. 20 p.p. decrease in 2035 (in order to reach 0% by 2035)	2026 (97,5%) – 2034 (details are mentioned in the provisional agreement on the EU ETS)
Governance	Each MS has a responsible body (administration)	Single EU-wide body	As EC proposal except for centralized registry of authorized declarants and common platform for trade in CBAM certificates	Each MS has a responsible body (administration). CBAM certificates are sold on the common platform developed and administered by EC
Fines for violation	100 Euro per non-surrendered certificate	Three times the average price of CBAM certificates in the previous year (year of imports) for each CBAM certificate that the authorized declarant did not surrender	As in EC proposal: 100 Euro per non-surrendered certificate	100 Euro per non-surrendered certificate
Revenue use	–	Cover the costs of operation of single EU-wide CBAM body, financial support of the least developed countries (support in achieving climate targets)	–	–

Table 1: Possible EU CBAM parameters

	EC proposal (July 2021)	EP proposal (June 2022)	Council of the EU proposal (June 2022)	Provisional agreement (December 2022)

Source: Compiled by author on the basis of information from EC (European Commission, 2021), EP (European Parliament, 2022), Council of the EU (Council of the EU, 2022), CBAM provisional agreement (Council of the European Union, 2023).

As seen from the proposed CBAM parameters this mechanism can be thought of as a trade measure. The EU's CBAM is unique in part that no country or integration association has introduced such measure before. As a result, a lot of countries are trying to analyze the consequences of implementation of this mechanism. The current research paper is devoted to the assessment of CBAM payments for Eurasian Economic Union (EAEU) member states (Armenia, Belarus, Kazakhstan, Kyrgyz Republic, Russia), Georgia, Tajikistan and Uzbekistan. These countries were chosen due to the fact that the EU holds (data as of 2019 – 2021) a sizeable share in exports from these countries. The prominent feature of this study is that it takes into account contemporary changes in the trade policy of different countries, namely the adoption of European sanctions against Belarus and Russia. The remainder of this paper is organized as follows. In Section 2 a brief analysis of literature on the topic of regulation of greenhouse gas emissions (including trade policy measures) and its effects on different economic parameters is presented. Section 3 is devoted to the description of the data and methodology used in the current analysis. Section 4 provides CBAM payment estimates for imports from the Eurasian region countries and Section 5 concludes.

2. Literature review

Reducing greenhouse gas (GHG) emissions can be achieved through the use of various price and non-price regulatory measures (Haites, 2018). Among these groups of measures, price measures are gaining popularity due to their direct impact on the reduction of greenhouse gas emissions (Krause & Obeiter, 2015). Price measures also lead to an increase in budget revenues, which can be used for various purposes, including those aimed at battling climate change (for example, investment in new green technologies) (Kennedy, Obeiter, & Kaufman, 2015).

Carbon pricing can take one of the two forms: a carbon tax (the maximum amount of GHG emissions is not limited; the tax rate is legally fixed) or an ETS (there is a legally defined limit on GHG emissions; the price of emission allowances is determined by market). According to world Bank data (World Bank, 2022a), from 2005 to 2022, the total number of applied carbon pricing initiatives increased from 9 to 66. This increase also led to an increase in the share of global GHG emissions subject to the pricing measures: the share increased from 5% to 23% from 2005 to 2022. Carbon taxes and ETS are equally popular: out of 66 carbon pricing measures in force, 32 take the form of ETS. However, ETS cover the majority of GHG emissions: 34 carbon taxes cover about 6% of global GHG emissions, while 32 ETS cover about 17% of global GHG emissions (World Bank, 2022a).

Domestic carbon pricing leads to additional costs for domestic firms. Due to the fact that potential foreign competitors may not face the same climate costs domestic firms may start to lose competition on the domestic and export markets. Therefore, in order to avoid this competition bias domestic firms may decide to produce their goods abroad, where they will face zero (or smaller) climate costs. This situation is known as "carbon leakage". Domestic carbon pricing will lead to a decrease in the domestic emissions. However on a global scale, due to the "carbon leakage", this decrease will be compensated by the increase in GHG emissions abroad (in countries with zero or smaller climate costs) (Condon & Ignaciuk, 2013).

The existence of the effect of "carbon leakage" is a debatable topic. For example, in (Venmans, Ellis, & Nachtigall, 2019) it is noted that many studies come to the conclusion that carbon pricing does not affect (or only slightly affects) the competitiveness of domestic firms and, consequently, does not lead to "carbon leakage". However, the authors also point out to the fact that these findings may be the result of carbon pricing exemptions. For example, under EU ETS, authorities provide free allowances to the European participants of this cap-and-trade system. In the absence of such benefits carbon pricing may lead to a significant "carbon leakage" effect. At the same time (Misch & Wingender, 2021) argue that "no carbon leakage" conclusions may be the result of data and methodological limitations of different papers. To support their idea authors use their own

methodology and statistical data and find statistically significant (and robust) relationship between carbon pricing and "carbon leakage".

"Carbon leakage" can be reduced (or eliminated to a certain extent) by the implementation of Border Carbon Adjustments (BCAs). Under these mechanisms countries with domestic carbon pricing impose a fee based on the carbon intensity of the imported goods. In addition to achieving climate-related goals BCAs help to prevent the decrease of budget revenues of countries implementing domestic carbon pricing initiatives (e.g. by preventing a tax income decrease as a result of production offshoring). In a way, BCAs are a theoretical concept because no country in the world has adopted such a mechanism. As a result, an analysis of the effects of the application of BCAs is sensitive to the underlying assumptions of the research papers devoted to this topic.

In Weitzel, Hübler, & Peterson (2012), the authors list two terms that influence the carbon tariff rate (i.e. the BCA rate): strategic term that influences the terms of trade in the favor of domestic companies (the higher the rate the better off are domestic firms) and environmental term that internalizes negative climate externality tied to the production abroad (the higher the market power and carbon tariff rate imposed by the importing country the bigger is the emission reduction by exporters). Using multi-regional[1] and multi-sectoral[2] Computable General Equilibrium (CGE) model the authors of the paper concluded that BCAs can reduce carbon leakage, but the reduction will be smaller the more grows the BCA rate (diminishing marginal effect). According to the research results, there is a risk that countries that have sizeable market power on international markets will try to manipulate terms of trade when setting the BCA rate (i.e. strategic term dominates over environmental term).

The impact of BCAs on carbon leakage was also assessed in Dong & Whalley (2009). The authors concentrated on the analysis of the effects of BCA adoption

[1] 9 regions including Russia, US, EU and EFTA countries, China, India, Mexico.

[2] 9 sectors including refined oil products, coal, natural gas, crude oil, electricity, chemical products.

in the US and EU using a two-sector CGE model. The model demonstrated that BCAs help to decrease the carbon leakage effect. At the same time these border instruments tend to have small effects on trade and welfare. The efficiency of BCAs application in terms of their impact on carbon leakage reduction was also demonstrated in Böhringer, Balistreri, & Rutherford (2012). Authors analyzed the results of 12 CGE models that assessed the effects of BCA application in different countries. Researchers reached the conclusion that BCAs are mainly adopted due to an incentive to shift the burden of emission reduction costs to countries with no (or liberal) climate regulations. Similar conclusions were made in Kuik & Hofkes (2010) and Zachmann & McWilliams (2020). These studies also noted that BCAs act as an instrument to support the competitiveness of domestic firms. In other words, strategic term (affecting terms of trade in the favor of domestic firms) is the key incentive for the elaboration and adoption of BCAs.

European lawmakers also highlight the fact that the CBAM is a tool "to level the playing field" between European companies and foreign competitors. The key CBAM feature is that it is the first BCA to be adopted in the world. As a result, EU's trade partners question whether this mechanism corresponds to the international trade rules and WTO norms[3]. In addition, as mentioned earlier, these countries have tried to assess the economic effects of the application of this mechanism. Due to the fact that until recently CBAM parameters were unknown many quantitative research papers devoted to the analysis of the economic effects of the EU's CBAM application are based on the possible CBAM parameters that are slightly different from those that were proposed by the EC, the EP and the Council of the EU. For example, Kuusi, et al. (2020) estimated a gravity model in order to analyze the effects of the CBAM on the imports of goods to the EU. Authors analyzed different possible CBAM parameters[4] and concluded that CBAM will decrease imports to the EU by 2.7% – 4.8% depending on the final CBAM parameters. A sizeable decrease in imports due to the CBAM will be for chemical products, iron and steel products. In a later work, Kaitila, Kuusela, Kuusi,

[3] Correspondence of EU's CBAM to the WTO rules and norm is not a subject of current research paper.

[4] In a way they correspond to current CBAM proposals. For example, in a basic scenario authors assumed that CBAM will cover imports of cement, aluminium, iron and steel.

Pohjola, & Soimakallio (2022), the authors used the EC CBAM proposal to estimate the effects of this mechanism on imports of goods to Finland. Using a gravity model the authors concluded that imports of goods subject to CBAM from third (non-EU) countries will drop by 25%. In addition to this, using CGE modelling techniques the authors noted that European sectors producing CBAM goods will be the key beneficiaries of the CBAM application. At the same time the CBAM will have no significant effects on other European sectors.

UNCTAD (Durant et al., 2021) also used CGE modelling to assess the effects of CBAM adoption on international trade, GHG emissions, income and employment in different countries. Researchers stated that adoption of the CBAM will decrease global GHG emissions, but the decrease will be small: 0.10% – 0.17% of global GHG emissions (carbon leakage is reduced from 13.3% – 15.1% to 5.2% – 6.9%[5] depending on the analyzed scenario). The CBAM will negatively affect exports from developing countries: a relatively high carbon intensity of supplied goods from developing countries will result in the EU shifting to more efficient "green" sources of supply located in developed countries. Due to this effect, exports of energy goods from Russia will decrease by 4.27% – 7.69% (however European sanctions against Russia are not included in the analysis).

3. Data and methodology

The CBAM payment is a dynamic variable that varies on an annual basis due to changes in several factors like the CBAM rate and value (volume) of imports of products to the EU. Overall, the CBAM payment in year *t* can be defined as:

$$CBAM_{i,t}^{c} = ne_{i,t}^{c} \times \tau_t \times imp_{i,t}^{c} = (e_i^c - \alpha_t b_i) \times \tau_t \times imp_{i,t}^{c} \qquad (1)$$

where $CBAM_{i,t}^{c}$ being the CBAM payment in year *t* for imports of product *i* from a Eurasian country *c* to the EU, $ne_{i,t}^{c}$ representing net embedded emissions in product *i* of the Eurasian country *c* in year *t* (that is imported to the EU), τ_t being

[5] Is estimated as the change in GHG emissions outside EU to the change in GHG emissions in EU.

CBAM rate in year *t*, $imp_{i,t}^{c}$ representing volumes of imports of product *i* from the Eurasian country *c* to the EU, e_i^c being embedded emissions of good *i* in the Eurasian country *c*, α_t being the CBAM factor (decrease factor for free allocation) in year *t* and b_i GHG emission benchmark for product *i* used in the calculation of the free allocation of allowances in the EU ETS.

County-specific data on embedded emissions of certain goods (CO2e per tonne of good produced) is not always available or published. As a result, the collection of these data can be quite a challenging task. For example, in the case of Russia, data on embedded emissions were taken from private sector reports, academic literature and from inventory of GHG emissions (Roshydromet, 2021). An analogous approach in terms of sources of information on embedded emissions was used in case of other Eurasian countries analyzed.

At the same time in most of the cases, high-quality data on embedded emissions in products of other Eurasian countries (i.e. except Russia) were missing. In order to overcome this issue, it was decided to use the data on embedded emissions in Russian products[6]. In the case of EAEU countries this is more or less a stable assumption since the countries have common borders and close economic ties between each other. For other countries this assumption may be weak. Future research on this topic suggests that Eurasian countries start to collect and publish information on embedded emissions in products they make. Under this assumption equation (1) takes the following form:

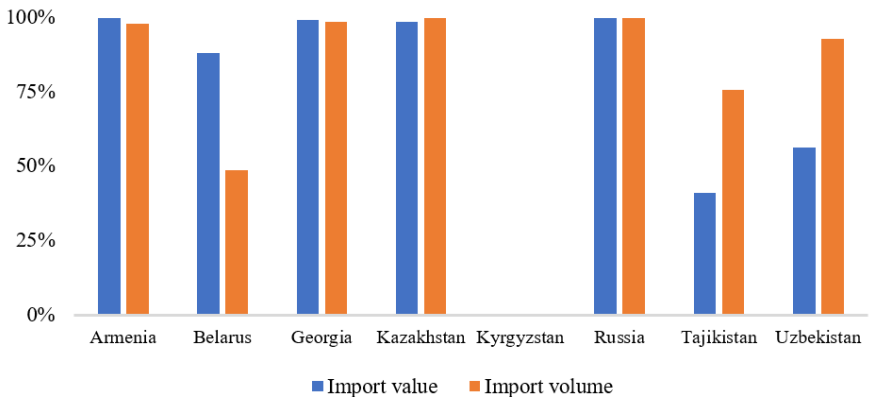
$$\begin{cases} CBAM_{i,t}^{c} = ne_{i,t}^{c} \times \tau_t \times imp_{i,t}^{c} = (e_i^{rus} - \alpha_t b_i) \times \tau_t \times imp_{i,t}^{c} \\ e_i^{rus} = e_i^{c} \end{cases} \quad (2)$$

where e_i^{rus} represents embedded emissions in Russian product .

[6] Carbon intensity of product manufactured in different countries is likely to differ due to difference in manufacturing technologies that are used in production process. It can be assumed that more efficient ("green") technologies are used in those countries where there is a stable and positive dynamics of capital investments.

Russian data use partially solves the data issue for other Eurasian countries: for example, for products of the cotton sector, statistics on embedded emissions were not found either in Russian nor in national data of other Eurasian countries. Products with missing data on embedded emissions were not included in CBAM payment calculations. Therefore, for countries like Uzbekistan and Tajikistan, CBAM payment estimates will be biased (lower) – see figure 1.

Figure 1. Carbon intensity coverage for CBAM import flows from Eurasian countries to EU *, based on 2021 data

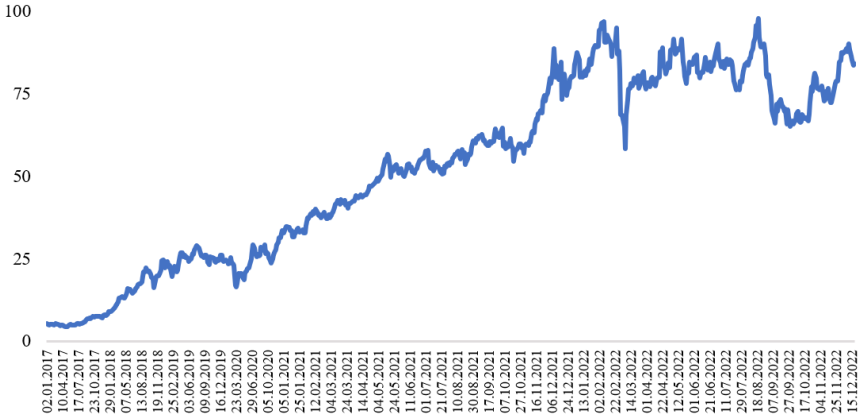


Notes: Information for Kyrgyz was not analyzed due to the fact the imports from Kyrgyz Republic does not fall under the CBAM (see below).
Source: Author's calculations.

Calculation of net embedded emission requires information on product benchmarks. Product benchmarks are used in the EU ETS in order to identify the volume of free allocation of emission allowances. Product benchmarks are listed in Commission Delegated Regulation (EU) 2019/331 (Eur-Lex, 2021).

As mentioned earlier the CBAM rate (price of CBAM certificates) will be tied to the price of emission allowances (EUA) in the EU ETS. Until 2021 EUA prices did not exceed EUR 25-30 per tonne of CO2e (see figure 2). However, since the end of 2021, the prices have skyrocketed. Such sharp EUA price growth was also driven by the tightening of EU climate policy and the expectations of further climate policy tightening. EAU prices were also affected by rising natural gas prices in the EU (not subject to EU ETS) that led to an increase in demand for coal (which is subject to the EU ETS).

Figure 2. Example of daily EUA prices, 2010 – 2022, Euro per tonne of CO2e



Source: Ember climate (Ember-climate, 2022).

In order to calculate CBAM payments the following assumptions are made in terms of the changes to the CBAM rate:

1. Average EUA price was 80 Euro per tonne of CO2e in December 2021. This price level will be used as a base level for the CBAM rate estimation until 2035 (period of analysis[7]).
2. The EUA price will grow with a constant rate to reach 170 Euro per tonne of CO2e in 2030. This price level is thought to be necessary to achieve the EU's 2030 climate goals (reduce GHG emissions by 55% by 2030 compared to 1990) (Butterworth, 2021).
3. According to (Pietzcker, Osorio, & Rodrigues, 2021) the EU needs the EUA price to be 350 Euro per tonne of CO2e in 2050 in order to reach climate neutrality by this time. Accordingly, after 2030 EUA prices will grow with a constant rate so that they reach 350 Euro per tonne of CO2e by 2050.

Data on imports from Eurasian countries to the EU was taken from the UN Comtrade database through the World Integrated Trade Solution (World Bank,

[7] Period of analysis is limited to medium term from 2026 to 2035. As mentioned below longer term analysis requires making specific assumptions on the embedded emissions in different products exported to EU. However, embedded emissions can be affected by various exogenous factors.

2022b) and from the International Trade Center (ITC, 2022). To model changes in European imports of products subject to the CBAM, information on import elasticities from (Grübler, Ghodsi, & Stehrer, 2021) was used. Imports to the EU is also subject to some kind of natural growth levels (i.e. growth levels in case of no additional trade measures). In the case of Russia these growth levels are published by the Ministry of Economic Development in the form of projections of price and quantity growth indices of exports until 2035 (Ministry of Economic Development, 2018)[8]. Same detailed projections to 2035 for other Eurasian countries are unavailable. Therefore, Russian data is used.

In the case of Russia and Belarus, it is important to include sanction measures in the assessment of CBAM payments. Calculations include sanctions adopted by mid-summer of 2022 (i.e. six packages of sanctions against Russia). The full list of products from Russia that are subject to EU's import sanctions (prohibitions) is published in Council Regulation (EU) No 833/2014 of 31 July 2014 (Eur-lex, 2014). Belarus' sanctioned products are listed in Council Regulation (EC) No 765/2006 of 18 May 2006 (Eur-Lex, 2006). The idea behind the inclusion of sanctions in calculations is that there are no imports of products that are simultaneously under the EU's sanctions (i.e. EU import prohibitions) and fall under the scope of the CBAM to the EU. At the same time this is not true in the case of Russian oil and oil products that fall under sanctions but with certain exemptions. According to expert estimates (European Commission, 2022) sanctions on Russian oil and oil products will result in a 90% decrease of imports of these products from Russia to the EU. Therefore, the import volume of oil and oil product from Russia is set to 10% of 2021 levels for the whole period of analysis.

The period of analysis is limited to 2026 – 2035. Longer term analysis requires making assumptions about embedded emissions in Eurasian products. However, embedded emissions are affected by a lot of exogenous factors that are

[8] It should be noted that these projections were published before EU adopted sanctions against Russia in 2022. Therefore, these projections may be biased upwards. The EU also plans to stop imports of electricity and energy products from Russia. However, in this work it is assumed that the EU will continue importing these products (taking into account sanction measures that are already implemented by mid-July 2022).

problematic to predict. It is also assumed that during 2026 – 2035 the CBAM parameters will change 2 times in 2029 and 2032:

1. During 2026 – 2028 the CBAM parameters will be the same as in the EC proposal. The CBAM will cover imports of cement, electricity, fertilisers, iron and steel, aluminium. The mechanism will cover direct emissions from products and input materials (scope 1 and part of scope 3).
2. Starting from 2029 the CBAM will start to be applied in relation to imports of oil products, chemicals and polymers. The emission scope will be extended to indirect emissions (scope 2).
3. Starting from 2032 the CBAM will be applied to imports of all products that are produced in carbon leakage sectors and natural gas. Natural gas does not belong to products produced in sectors deemed to be at risk of carbon leakage. Its inclusion in the analysis is necessary to analyze the worst possible CBAM consequences. However, it should be noted that at the moment EU authorities view natural gas as an environmentally sustainable economic activity and therefore its inclusion under the CBAM is improbable.

4. Payment estimates

The CBAM payments for imports from different countries depends on the trade relations of these countries with the EU. According to 2019 – 2021 data, the EU was one of the key export destinations for Armenia, Georgia, Kazakhstan and Russia (see table 2). Based on the mean trade values for the period of 2019 – 2021, the CBAM will cover quite a significant share of imports from Armenia, Belarus and Tajikistan (see table 3). In a situation when the CBAM affects all goods produced in sectors deemed to be at risk of carbon leakage and natural gas, it will mainly cover imports from Kazakhstan, Russia, Tajikistan and Armenia. For Kyrgyzstan, the EU is not a key export destination (EU imports small amount of goods from Kyrgyzstan). In addition to this, the CBAM will cover only 1.5% of imports from Kyrgyzstan to the EU under the worst-case scenarios. In other scenarios the CBAM will not affect imports from Kyrgyzstan to the EU. Therefore, the CBAM payments for imports from Kyrgyzstan to the EU will not be analyzed.

Table 2: Exports from countries of Eurasian region to EU, share as of all respective exports, 2019 – 2021

Exporter	Total exports, bln Dollars			Exports to EU, bln Dollars			EU share in total exports, %		
	2019	2020	2021	2019	2020	2021	2019	2020	2021
Armenia	2.6	2.5	3.0	0.6	0.4	0.7	22.1	17.1	22.1
Belarus	33.0	29.2	39.9	6.0	5.4	5.4	18.1	18.5	13.6
Georgia	2.7	2.6	3.3	0.8	0.7	0.7	28.0	26.0	20.2
Kazakhstan	57.7	46.9	-	24.2	17.7	-	42.0	37.6	-
Kyrgyzstan	2.0	2.0	1.7	0.1	0.1	0.0	2.6	2.6	2.9
Russia	422.8	337.1	492.3	176.0	113.8	188.1	41.6	33.8	38.2
Tajikistan	1.1	1.3	1.8	0.1	0.1	0.1	4.8	5.0	6.5
Uzbekistan	14.3	13.1	14.0	0.2	0.2	0.4	1.2	1.6	2.8

Notes: "-" – not available.
Source: Based on ITC's data (ITC, 2022).

Table 3: Imports to EU subject to CBAM, mean share for 2019 – 2021, %

Trade partner	Trade flows without sanctions				Trade flows with sanctions			
	EC proposal	EP proposal	Council proposal	Worst-case scenario	EC proposal	EP proposal	Council proposal	Worst-case scenario
Armenia	15.7	15.8	15.7	68.5	-			
Belarus	20.2	23.7	21.0	52.9	8.4	13.9	9.6	25.4
Georgia	7.1	7.9	7.2	66.8	-			
Kazakhstan	1.2	1.3	1.2	95.9	-			
Kyrgyzstan	0.0	0.0	0.0	1.5	-			
Russia	7.7	9.5	7.8	87.3	13.3	16.3	13.5	75.4
Tajikistan	25.2	25.2	25.2	73.4	-			
Uzbekistan	3.6	11.4	4.1	44.0	-			

Notes: Inclusion of sanctions meant the decrease of import flows by total imports of sanctioned goods.
Source: Based on UN data (World Bank, 2022b).

As mentioned above, in the case of Russia and Belarus it is crucial to include sanction measures in the analysis. Correction for EU import prohibitions (sanctions) on average decreases 2019 – 2021 imports from Russia to the EU by 60%. The same correction for Belarus decreases imports from this country to the EU by 37% on average in the period 2019 – 2021. When correcting for sanctions adopted by July 2022, it can be seen that in the case of adoption of the CBAM in accordance to the EC, EP or Council of the EU, the proposed share of imports from Russia affected by the CBAM is bigger compared to the situation of no

sanctions. In the case of Belarus, the situation is opposite: the share of imports from Belarus covered by the CBAM (the EC, EP and Council of the EU proposals) is smaller in case when import trade flows are corrected for sanctions.

One of the key elements affecting the dynamics of CBAM payments is the CBAM pass-through rate (i.e. portion of CBAM payments transferred to the final prices in the EU). The higher the rate, the lower the payments. This can be explained by the fact that significant price growth for imported products (ceteris paribus) leads to a sizeable decrease in imports and, therefore, a decrease in CBAM payments. The current research concentrates on the analysis of 2 extreme cases: 0 (CBAM payments are borne by exporters[9]) and 1 (CBAM payments are borne by EU consumers) pass-through rate. In this framework the smallest total CBAM payment during 2026 – 2035 will be for imports from Armenia to the EU (see table 4). It is equal to 95.8 mln Euros under single CBAM pass-through rate. The biggest total payment during 2026 – 2035 is for imports from Russia. It is equal 97 bln Euros when only exporters bear the costs of the CBAM. The CBAM payment holds a significant share in exports of Uzbekistan, Georgia, Tajikistan and Belarus to the EU (see table 5).

Table 4: CBAM payments, 2026 – 2035, mln Euro

Exporter	Pass through	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Armenia	0	1.6	2.5	3.5	5.6	7.3	8.8	14.4	17.0	19.8	22.9
	1	1.6	2.4	3.4	5.4	6.8	8.2	13.4	15.7	18.1	20.8
Belarus	0	253.4	286.9	325.6	523.2	601.7	659.1	952.8	1050.6	1159.3	1279.1
	1	63.9	67.0	70.5	169.7	188.2	205.1	367.8	403.8	443.3	486.2
Georgia	0	33.8	44.4	57.8	81.3	102.9	123.6	166.2	196.0	231.9	273.9
	1	29.2	37.4	47.3	64.5	79.2	93.0	121.1	140.0	162.6	188.2
Kazakhstan	0	13.3	16.6	20.6	45.1	53.9	61.2	2173.1	2272.6	2378.6	2491.0
	1	11.9	14.8	18.3	38.0	45.0	50.9	1893.5	1968.7	2048.1	2130.5

[9] Additional assumption of this paper is that EU importers (and other organizations along the supply chain) have a bargaining power over the exporters. As a result, all CBAM-related costs are borne by either exporters or EU consumers (or both).

Table 4: CBAM payments, 2026 – 2035, mln Euro

Exporter	Pass through	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Russia	0	2436.3	2881.5	3411.3	5658.0	6698.2	7557.4	14531.6	16141.8	17923.4	19876.6
	1	1089.8	1243.9	1413.2	2711.8	3090.5	3425.4	7879.6	8535.9	9217.8	9924.0
Tajikistan	0	2.9	4.0	5.2	7.7	9.6	11.3	13.2	15.3	17.6	20.1
	1	2.9	3.9	5.1	7.4	9.1	10.7	12.4	14.3	16.3	18.4
Uzbekistan	0	10.8	14.2	18.5	48.5	59.4	69.2	107.5	122.0	138.5	156.8
	1	9.9	12.8	16.3	41.8	50.3	58.0	86.8	97.6	109.5	122.7

Source: Compiled by author.

Table 5: Mean CBAM payments as a share of 2021 exports from Eurasian region countries to EU, %

Exporter	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Armenia	0.3	0.4	0.6	1.0	1.3	1.5	2.5	2.9	3.4	3.9
Belarus	3.4	3.8	4.3	7.4	8.5	9.3	14.2	15.6	17.2	18.9
Georgia	5.5	7.2	9.2	12.8	15.9	18.9	25.1	29.4	34.5	40.4
Kazakhstan (2019)	0.1	0.1	0.1	0.2	0.2	0.3	9.8	10.2	10.6	11.1
Russia	1.1	1.3	1.5	2.6	3.0	3.4	6.9	7.6	8.4	9.2
Tajikistan	2.9	3.9	5.1	7.5	9.3	11.0	12.8	14.7	16.9	19.2
Uzbekistan	3.1	4.1	5.2	13.5	16.5	19.1	29.2	32.9	37.2	41.9

Notes: Later data for Kazakhstan is not available (and 2020 was affected by the effects of COVID-19). Exchange rate used for calculations:0.86 Euro per dollar.
Source: Compiled by author.

According to estimates, the biggest share of payments falls on metals, fertilisers, electricity and oil (see table 6). Nevertheless, for some countries in the sample product-level, the CBAM payments analysis is limited due to carbon intensity data issues. For example, during 2026 – 2035, the total CBAM payment for imports from Tajikistan to the EU equals the sum of payments for imports of HS "760110" (aluminium, not alloyed) and HS "390290" (other polymers of propylene)[10]. In 2021, the share of imports of these products from Tajikistan to the EU in total imports from Tajikistan to the EU was 35.7%. At the same time the CBAM will cover HS "811010" (Unwrought antimony; powders). In 2021 share of imports of this product from Tajikistan to the EU in total imports from Tajikistan to

[10] Under current assumptions this product falls under CBAM starting from 2029.

the EU was 51.3%. Data on embedded emissions in unwrought antimony (powders) is unavailable. Therefore, payments for Tajikistan are probably downward biased. This limitation prevents the correct identification of goods that have the biggest share in CBAM payments for Tajikistan.

Table 6: Products with the biggest share of CBAM payments

Exporters	HS-6			Total share in CBAM payment, 2026 – 2035	Total share in imports to EU, 2021
Armenia	Aluminium foil	Ferro-molybdenum	Copper ores	99.8%	65,1%
Belarus	Electrical energy	Urea	Urea resins; thiourea resins	53.9%	13,0%*
Georgia	Ammonium nitrate	Urea	Methanol	97.0%	14,7%
Kazakhstan	Petroleum oils	Cathodes and sections of cathodes (Refined copper and copper alloys, unwrought)	Aluminium, not alloyed	93.3%	92,5%
Russia	Semi-finished products of iron or non-alloy steel	Mineral or chemical fertilisers, nitrogenous	Natural gas in gaseous state	33.5%	26,7%*
Tajikistan	Aluminium, not alloyed	Other polymers of propylene		100.0%	35.7%
Uzbekistan	Polyethylene	Ammonium nitrate		86.3%	23.7%

Notes: "*" –trade flows were corrected for EU sanctions adopted by mid-July 2022.
Source: Compiled by author.

Despite the above limitations, the estimates indicate that for certain industries from the analyzed countries of the Eurasian region, the CBAM may pose a significant risk. For example, for Armenia, about 80% of the total payment falls on rolled aluminum foil not further worked. For Georgia, the biggest share of payment falls on fertilizers, for Kazakhstan – on oil, for Uzbekistan – on fertilizers and polyethylene. In case of Belarus and Russia when adjusting trade flows for EU sanctions measures it can be seen that CBAM payments are relatively evenly distributed among all goods imported from these countries to the EU that are also subject to this BCA. However, in relation to these countries, the EU is radically

changing its trade policy in terms of reducing imports. Accordingly, it can be assumed that in reality for Belarus and Russia, CBAM payments will be lower than the above estimates.

5. Conclusion

Climate becomes one of the pillars of economic growth of different countries and integration blocs. Border carbon adjustments are gaining popularity in the world since they help to achieve climate goals and level the playing field between domestic and foreign companies in countries with strict climate regulations. The EU is a pioneer in adopting its own carbon border adjustment mechanism. This paper concentrated on the analysis of direct CBAM effects: namely the amount of payments for imports of products from Eurasian countries to the EU. The analysis showed that the biggest total CBAM payment during 2026 – 2035 falls on the imports of products from Russia, Kazakhstan and Belarus to the EU. The smallest CBAM payment is estimated to be for imports of products from Armenia to the EU. The CBAM will not affect imports from Kyrgyzstan to the EU. In general, during the analyzed period, annual CBAM payments for each analyzed country tend to grow due to a number of factors: extension of CBAM product coverage, increase in CBAM rate, elimination of free allocation in EU ETS (which is mirrored within CBAM).

In the case of Belarus and Russia, the EU's tightening of sanctions regime will lead to a further decrease of CBAM payments. As a result, possible CBAM effects on the economy of these countries will be smaller. At the same time the CBAM may lead to the adoption of the analogous mechanisms by other trade partners of Eurasian countries that are actively developing and implementing their own "green agenda" (Votinov, Lazaryan, Radionov, & Sudakov, 2021; Yakovlev, Kabir & Nikulina, 2022). In this light export commodities of Eurasian countries may partly lose competitiveness on a global scale. Therefore, a decrease in carbon intensity of products and acceleration of "green" transition in Eurasian countries should be one of the priorities of the industrial and economic policies of these countries.

Despite the country of analysis, most CBAM payments fall on imports of metals, fertilisers, electricity and oil. This conclusion should be taken with a grain of salt because of the lack of quality data on the carbon intensity of products made in Eurasian countries is not always available. Consequently, Eurasian countries should adopt a transparent system for collecting and publishing high-quality and detailed information on embedded emissions of different products. At the same time, country-specific CBAM payments are concentrated in certain sectors and products: for Armenia it is aluminium, for Georgia it is fertilizers, for Kazakhstan it is oil, for Uzbekistan payments mainly fall on imports of fertilizers and polyethylene to the EU. In the case of Belarus and Russia, payments are evenly distributed among imported products to the EU, but the conclusion is sensitive to the further developments in the EU's sanction policy.

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