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THE EU-MERCOSUR TRADE AGREEMENT
AND ITS IMPACT ON CO₂ EMISSIONS

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ABSTRACT

In 2019 the European Union (EU) and the Latin American countries that make up the Common Market of the South (Mercosur) reached a political agreement to sign, ratify and implement a trade agreement between the two blocs. This agreement is expected to bring trade and welfare benefits on both sides of the Atlantic. The impact estimated for the EU will be similar to that of other recent agreements, such as that entered into with Japan. However, the EU-Mercosur “agreement in principle” has raised concerns owing to its potential impact on the environment and climate, even though it includes strict provisions in these areas and entails very few changes to the tariff and non-tariff measures adopted for agricultural imports from Mercosur. This article focuses on a specific aspect of the EU-Mercosur agreement’s potential environmental impact, namely, the change envisaged in global CO₂ emissions. Despite the uncertainty associated with such estimations, when using a standard general equilibrium model, the increase in CO₂ emissions deriving from this agreement is found to be limited. Moreover, in certain plausible scenarios, application of the very stringent environmental standards provided for in the agreement in principle could even lower emissions in Mercosur countries.

Keywords: EU-Mercosur, trade agreement, environmental provisions, environmental effects.

JEL classification: F13, F14, F18.

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Introduction

In June 2019, after nearly 20 years of negotiations, the European Union (EU) and the Common Market of the South (Mercosur)¹ agreed to sign, ratify and implement a trade agreement between the two blocs. The “agreement in principle”² is wide-ranging and contains provisions on the reduction of tariffs for both agricultural products and manufactured goods, and ambitious proposals regarding non-tariff measures affecting the services sector, public procurement, investment, labour market regulations and environmental provisions.³

Politically and economically, the trade agreement is extremely important to both parties and represents a major step towards global economic integration, partly compensating for two decades of stagnant multilateral negotiations. For Mercosur countries, it represents an agreement with its main trading partner and investor, the EU, one of the world’s largest economic blocs which accounts for almost a quarter of global GDP (three times the sum of the GDP of Mercosur’s other trading partners). The adoption of the EU-Mercosur trade agreement is expected to lead to a significant increase in the trade flows of Mercosur countries (an average of around 15% for imports and exports) and to GDP growth in these countries of between 0.3% and 0.7% in the medium term (see Timini and Viani (2020a)).

For the EU, deeper economic integration with Latin American countries could help promote a broader agenda of trade relations with other countries and diversify its global value chains and its exposure to the external environment, harnessing the current momentum to strengthen the EU’s “strategic autonomy” (see L’Hotellerie-

1 The current members of Mercosur are: Argentina, Brazil, Paraguay and Uruguay.

2 The agreement in principle contains information on the text of the agreement and the chapters/provisions included therein. It is publicly available on the [website](#) of the Directorate General for Trade of the European Commission, according to which “the texts will be final upon signature. The agreement will become binding on the Parties under international law only after completion by each Party of its internal legal procedures necessary for the entry into force of the Agreement (or its provisional application)”. This is the latest version agreed upon by the two negotiating parties.

3 For an analysis of the lower tariffs and other non-tariff measures included in the agreement and an assessment of their economic effects on trade and welfare, see Timini and Viani (2020a) and Timini and Viani (2020b).

Fallois Armas et al. (2021)). Indeed, Latin America's strengths in the production of strategic commodities, including energy commodities, and the EU's comparative advantage in renewable energy technologies could give rise to significant synergies between the two blocs and reduce the EU's exposure to other more geopolitically unstable regions. In addition, although the estimated economic impact for EU countries is smaller than for Mercosur countries, given that the EU is a larger economy, it is not insignificant and would be approximately similar to that estimated ex ante for other major recent agreements, such as the EU-Japan Economic Partnership Agreement (see Felbermayr et al. (2019)).

However, the EU-Mercosur agreement in principle has sparked some concern on account of its possible adverse effects on the environment,⁴ despite containing extensive environmental provisions based on existing EU standards, which are more stringent than those of Mercosur and most other economies, and only including limited quotas for Mercosur agricultural products (see European Commission (2021)).

This article describes the theoretical channels through which trade integration interacts with the environment, and focuses on quantifying a specific aspect of the potential environmental and climate-related effects, namely, the CO₂ emissions generated by the increase in economic activity deriving from the EU-Mercosur agreement. First, we analyse environmental policy and available policy indicators for the EU and Mercosur, and we examine the environmental provisions included in the agreement in principle. On the basis of previous estimates of the change in trade flows brought about by the EU-Mercosur agreement, we calculate the expected increase in CO₂ emissions, also bearing in mind the diversion effects of international trade and pollution.

The estimates made indicate that the increase in CO₂ emissions associated with the EU-Mercosur agreement is probably very small (equivalent to less than 0.02% of global emissions) and would mostly affect the EU, not Mercosur countries. Indeed, depending on how stringent the environmental provisions are, net emissions may not increase at all in Mercosur countries.

Trade integration and the environment

International trade and trade policy affect the environment through multiple channels which can operate in different directions. Grossman and Krueger (1991) and also Antweiler et al. (2001) describe the three main channels. First, the liberalisation of trade boosts economic activity which, *ceteris paribus*, generates more pollution due

4 See Harris et al. (2019) for more details about these risks.

to the so-called “scale effect”. Second, the trade liberalisation increases international competition and promotes the transfer of technology. These processes spur firms to adopt more modern and more efficient technologies and, on a level playing field, tend to reduce pollution. This is known as the “technique effect”. Third, trade liberalisation alters the basket of goods that each country exports and imports depending on its sources of comparative advantage, which include factor endowment (land, capital, work) and institutions, including environmental regulations (see Baghdadi et al. (2013)). The resulting relocation of production may increase or reduce the level of global pollution depending on whether the production of “dirty” goods is taken to countries with fairly stringent environmental regulations. This is known as the “composition effect”.

Another environmental effect of international trade (not fully captured in the three aforementioned categories) is the change in land use brought about by the geographical expansion of economic activity. This channel mainly affects agricultural production and is particularly difficult to quantify. However, the limited tariff and non-tariff quotas for Mercosur agricultural exports included in the agreement largely reduce the importance of this channel when analysing the agreement’s environmental impact in quantitative terms.

In short, the relationship between international trade and environmental impact depends on the direction and strength of the aforementioned channels which, in turn, are sensitive to the presence of regulatory frameworks that internalise environmental costs, as argued by Bellman et al. (2019).

Environmental policy and performance in the EU and Mercosur

According to a range of environmental performance and policy indicators, the EU’s environmental standards and regulations are far more stringent than those of Mercosur, although the difference is relatively smaller when analysing CO₂ emissions. The EU has more stringent energy efficiency and renewable energy regulations, according to metrics produced by the World Economic Forum (2019), and has ratified and implemented a greater number of multilateral environmental treaties (see Chart 1.1). These results are confirmed when a broader concept of environmental performance is used, such as that included in the Environmental Performance Index (EPI), which provides a data-driven summary consisting of 32 performance indicators relating to environmental health and ecosystem vitality (see Chart 1.2).⁵ When compared with other potential partners with which Mercosur might enter into similar trade agreements (such as China or the United States), the EU also performs better overall across all the selected indicators.

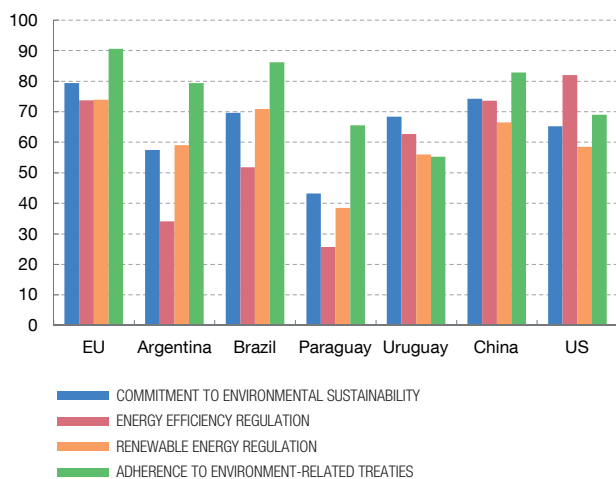
⁵ For more details, see <https://epi.yale.edu/>.

Chart 1

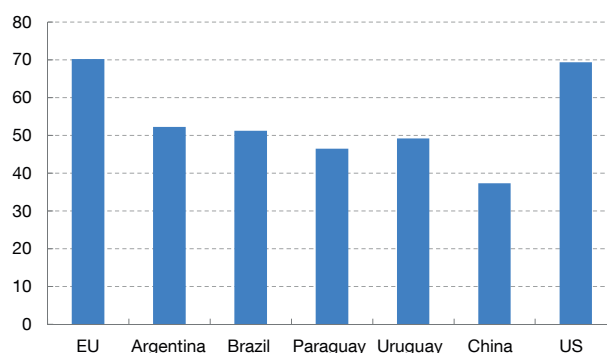
ENVIRONMENTAL PERFORMANCE AND REGULATION INDICATORS OF MERCOSUR, THE EUROPEAN UNION AND OTHER TRADING PARTNERS

Environmental standards and regulations are consistently more stringent in the EU than in Mercosur. The EU outstrips Mercosur according to a variety of environmental policy and performance indicators, although the difference is relatively smaller when considering CO₂ emissions per unit of gross domestic product.

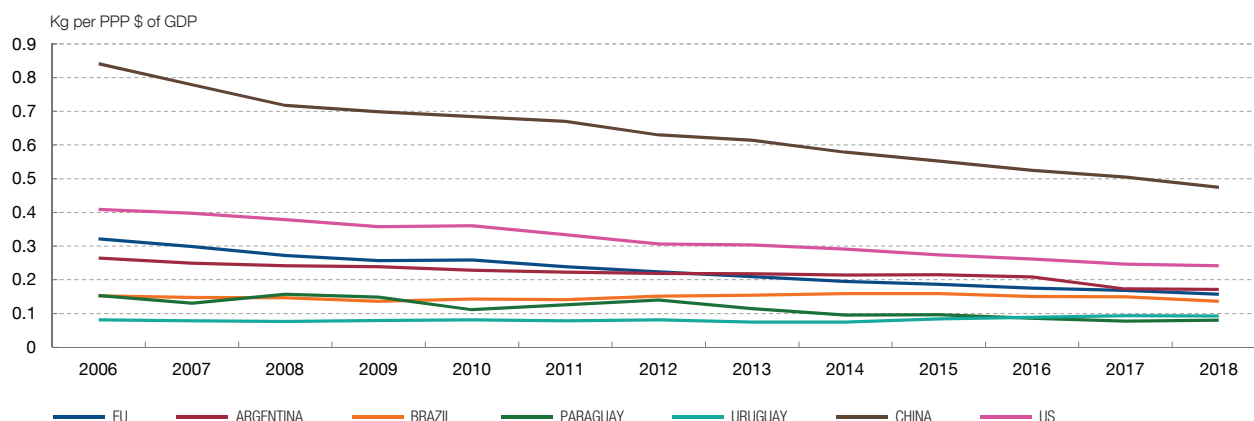
1 ENVIRONMENTAL REGULATION INDICATORS (2019)



2 2020 ENVIRONMENTAL PERFORMANCE INDEX (a)



3 CO₂ EMISSIONS PER UNIT OF GROSS DOMESTIC PRODUCT



SOURCES: *The Global Competitiveness Report 2019* (World Economic Forum), Yale Center for Environmental Law & Policy and World Bank.

a The Environmental Performance Index measures a country's environmental performance based on its results in several areas and categories, such as water resources, biodiversity and habitat, waste management, air quality, climate change, fisheries and agriculture.



The most widely used quantitative pollution indicator is CO₂ emissions, since they account for approximately three-quarters of all greenhouse gas emissions (see Metcalf (2019)). A comparison of CO₂ emissions in the EU and Mercosur shows that the differences are less pronounced than might be expected, given the disparities in the other policy indicators discussed so far. As shown in Chart 1.3, CO₂ intensity (CO₂ emissions per dollar of GDP) in Mercosur countries is close to or below the

Table 1

COMPREHENSIVENESS OF THE ENVIRONMENTAL PROVISIONS UNDER THE EU-MERCOSUR AGREEMENT

Dimension	Included in the agreement in principle (yes: ✓/no: X)	Chapter/Article of the agreement in principle
Reference to environmental goals in the preamble or other chapters	✓	Several references throughout the text
A GATT Article XX-type environmental exception (the actions "necessary to protect human, animal or plant life or health" are not inconsistent with the trade-related obligations of the treaty)	✓	Chapter 3: "Common provisions", Art. 13(2)(a)
References to multilateral environmental agreements	✓	Chapter 3: "Common provisions", Art. 13(2)(a) and Chapter 14: "Trade and Sustainable Development", Art. 1 and Art. 5, among others
Inclusion of a whole chapter on environment or sustainable development	✓	Chapter 14: "Trade and Sustainable Development"
Obligations to uphold environmental law	✓	Chapter 14: "Trade and Sustainable Development", Art. 1(4)(b) and Art. 2, among others
Incorporation of the right to regulate in environmental matters	✓	Chapter 14: "Trade and Sustainable Development", Art. 2
Cooperation in environmental matters	✓	Chapter 14: "Trade and Sustainable Development", Art. 1(4)(c) and Art. 5(5), among others
Transparency in environmental matters	✓	Chapter 14: "Trade and Sustainable Development", Art. 3
Public participation in environmental matters	✓	Chapter 14: "Trade and Sustainable Development", Art. 3

SOURCE: Devised by authors.

NOTE: Classification based on Berger et al. (2020).

average for the EU,⁶ declining over time in both cases.⁷ This suggests that additional economic growth has not been achieved through the use of dirtier technologies. In the United States and China, the level of CO₂ emissions per dollar of GDP is higher than in the EU and Mercosur, particularly in the case of China, where emission intensity is more than twice the EU average.

Environmental provisions under the EU-Mercosur agreement

Historically, the inclusion of environmental provisions in trade agreements has been successful in promoting more stringent environmental regulations in the countries that have entered into them (see Brandi et al. (2019)), in reducing overall emissions

6 Emission levels in the EU vary significantly across countries, with low values in countries such as Sweden and a worse performance in others, such as Estonia, Bulgaria and Poland.

7 In the past, the academic literature (for example, Dasgupta et al. (2002)) argued the existence of an Environmental Kuznets Curve (EKC), that is, an inverted U-shape relationship between emissions and the level of income. The fall in emission intensities would therefore indicate that countries are on the downward slope of the curve. More recently, the EKC has been criticised for establishing a weak empirical relationship (for example, Stern (2004)).

(see Baghdadi et al. (2013) and Martínez-Zarzoso (2017)) and the share of “dirtier” trade (Brandi et al. (2020)) and in increasing the share of “green” exports, i.e. goods that lower the environmental impact. The agreement in principle between the EU and Mercosur contains all the dimensions proposed by Berger et al. (2020) to analyse environmental provisions (see Table 1). It is therefore more stringent than the average trade agreement and has a similar level of environmental standards to the other agreements recently negotiated by the EU, such as those with Mexico and Japan.

Quantifying the increase in CO₂ emissions

Scale effect

To quantify the scale effect of the EU-Mercosur agreement, we begin with the general equilibrium trade impact estimated previously by Timini and Viani (2020b) and impute the CO₂ emissions embodied in the trade flows using OECD data for 2015.⁸ This database records the emissions embodied in the bilateral trade flows for a large number of countries and enables the allocation of emissions between production-based and consumption-based carbon emissions.⁹

Timini and Viani (2020b) quantify the expected ex ante change in aggregate trade flows triggered by the signed EU-Mercosur agreement using a standard general equilibrium model that predicts how much bilateral trade flows will change in response to changes in trade costs. Using the changes in trade flows estimated by Timini and Viani (2020b) and imputing the CO₂ embodied in those trade flows on the basis of the OECD data, the increase in global trade due to the EU-Mercosur agreement will raise global CO₂ emissions by 5.4 million tonnes per year owing to this scale effect.¹⁰ The scale effects of this agreement are therefore small, since they are equal to a long-term increase of 0.15% in the two blocs’ total annual CO₂ emissions, and of less than 0.02% in global emissions.¹¹ The size and direction of these impacts are consistent with the estimations made by Latorre et al. (2021), who also used a general equilibrium model.

Chart 2.1 depicts the geographical breakdown of the emissions, from both a production-based and consumption-based perspective. This breakdown shows that

8 For further details, see Yamano and Guilhoto (2020).

9 The OECD database includes data on 64 countries, including all OECD countries, the 27 EU Member States and seven Latin American countries (Argentina, Brazil, Chile, Colombia, Costa Rica, Mexico and Peru). The two Mercosur members included in the database are Brazil and Argentina, whose emissions account for most of the common market’s emissions.

10 It is hard to compare these figures with other agreements because a distinction is not always drawn between scale, technique and composition effects. Analyses of the agreement between the EU and Japan report a net increase of 1.5 million tonnes of CO₂ after considering the three channels (see European Parliament (2018)).

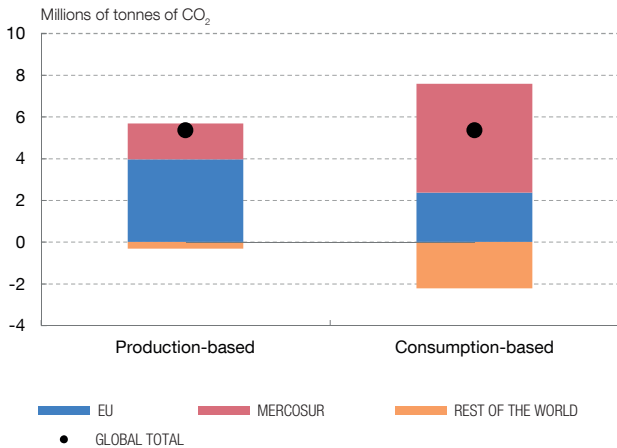
11 To put this figure into context, 5.4 million tonnes of CO₂ is approximately equal to the annual energy use of 650,000 US households, according to the United States Environmental Protection Agency’s greenhouse gas equivalencies calculator: <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>.

Chart 2

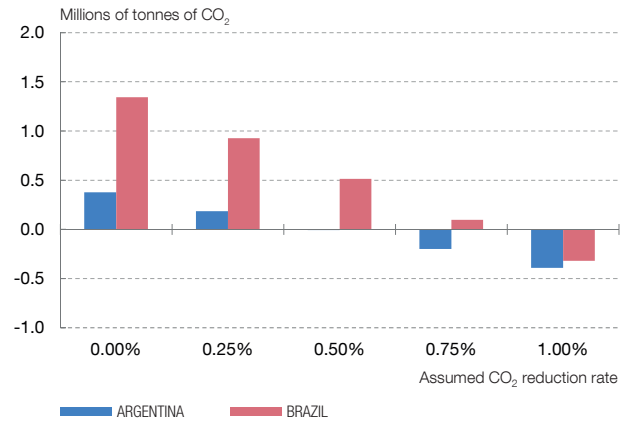
SIMULATIONS OF THE INCREASE IN CO₂ EMISSIONS AS A RESULT OF THE EU-MERCOSUR TRADE AGREEMENT

The EU-Mercosur trade agreement will add 5.4 million tonnes of CO₂ to global emissions, most of which would be produced in the EU and, to a lesser degree, in the Mercosur countries. Meanwhile, emissions in other regions will fall. Most of the additional emissions will relate to products exported from the EU to Mercosur. Also, the agreement's environmental provisions could lower, or even eliminate, the net impact on Mercosur countries' emissions.

1 PRODUCTION AND CONSUMPTION-BASED CO₂ EMISSIONS DUE TO THE INCREASE IN THE SCALE OF TRADE



2 IMPACT OF THE ENVIRONMENTAL PROVISIONS ON TOTAL PRODUCTION OF CO₂ IN MERCOSUR COUNTRIES



SOURCE: Own calculations drawing on data from the OECD and Timini and Viani (2020b).

the increase in emissions is due to higher emissions in the EU and in the Mercosur countries. It also shows that the production and consumption-based emissions in the rest of the world fall, which is to be expected given the shift in global trade to the countries benefitting from the trade agreement. In addition, the main increase in emissions (4.0 million tonnes of CO₂) will foreseeably occur in the EU, due to greater growth in production in that region.

Technique and composition effects

The technique and composition effects of the EU-Mercosur agreement are harder to predict. The academic literature has found that modern trade agreements containing environmental provisions reduce total emissions in the most polluting countries. On the available empirical evidence, the formalisation of a trade agreement containing environmental provisions lowers emissions in the most polluting countries by between 0.3% and 0.6% on average (see Baghdadi et al. (2013) and Martínez-Zarzoso (2017)).¹² As discussed in the previous section, the environmental provisions

¹² Given that the empirical set-up controls the proxies for scale effect (trade openness, GDP), these results are better interpreted as net of the scale effect. In this section we interpret them as the overall impact of the technique and composition effects.

under the EU-Mercosur agreement set higher standards than an average agreement. Accordingly, the effect is likely to be greater still.

Under the framework of the simulation model used, we can quantify the thresholds at which the technique and composition effects offset the higher estimated emissions due to the scale effect. Chart 2.2 depicts the simulated impact on production-based emissions in the two biggest Mercosur economies (Brazil and Argentina), on the basis of assumed CO₂ reduction rates, which range from 0% to 1% and, therefore, are consistent with the range estimated by Baghdadi et al. (2013) and Martínez-Zarzoso (2017). Due to data limitations, a similar exercise cannot be performed for the other two Mercosur countries (Paraguay and Uruguay).

For Brazil and Argentina, the thresholds at which the technique and composition effects offset the increase in CO₂ caused by the scale effect fall within the 0-1% range identified by academic research. Indeed, were the environmental provisions to yield a reduction rate of 0.5%, then the overall effect of the EU-Mercosur agreement would be neutral for Argentina, and in the event of a reduction rate of 0.71%, then the overall effect for Brazil and Argentina would be zero. Therefore, since the environmental provisions under the EU-Mercosur agreement set higher standards than other agreements, it seems likely that the overall effect of the EU-Mercosur agreement will be close to neutral for the emissions caused by the growth in economic activity in the Mercosur countries.

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