



# Non-Tariff Measures in Mercosur: Deepening Regional Integration and Looking Beyond





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## FOREWORD

While tariffs are widely eliminated in regional trade agreements, genuine market integration requires addressing non-tariff measures (NTMs). This implies both the elimination of outright non-tariff barriers such as quotas and non-automatic licences, and the advancement of regulatory collaboration and convergence. In the twenty-first century, the latter is particularly crucial, as the impact of regulatory measures has grown to outweigh traditional trade barriers.

The Treaty of Asunción of 1991 conceives the Southern Common Market (MERCOSUR) as a progressive and ambitious project that would go all the way to eliminate tariffs and non-tariff barriers, and harmonize technical, sanitary and phytosanitary regulations. Institutional and methodological approaches, including a dispute settlement mechanism, were developed to increase competitiveness and build regional value chains among the members. The number of restrictive non-tariff measures still increased over time, and the internalization of regional decisions into the national legal frameworks remained fragmentary. This has undermined MERCOSUR ambitions and economic development.

These internal discontents now seem to spur renewed political will to invigorate the MERCOSUR internal market. Furthermore, competitive pressure is arising from the risk of being left out of “deep” trade agreements that are thriving across the globe. MERCOSUR members are therefore also looking beyond intraregional integration and towards agreements with other big markets such as the European Union.

In this context, a perfect moment seems to have come for a fresh look at non-tariff measures in MERCOSUR.

This publication by the UNCTAD secretariat goes a long way in analysing the current state, recent developments and impact of non-tariff regulation in MERCOSUR. It evaluates the potential welfare benefits of deeper integration within MERCOSUR, a possible trade agreement with the European Union and the increased adoption of international standards.

The analysis showcases the power of UNCTAD’s new tool, the Regional Non-Tariff Measures Integration Review: it pairs sound data with innovative methods of evaluating the impact of non-tariff measures and regulatory convergence. It builds upon comprehensive non-tariff measures data that was collected in a collaborative effort between UNCTAD and the secretariat of the Latin American Integration Association (Asociación Latinoamericana de Integración, (ALADI)).

I am confident that this balanced and fact-based report will assist member States in advancing regional integration and revitalizing the founding spirit of MERCOSUR.

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in Goods and Services, and Commodities

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The non-tariff measures data used in this report was collected in collaboration between UNCTAD and the ALADI secretariat.

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## ABBREVIATIONS

ALADI	Asociación Latinoamericana de Integración / Latin American Integration Association
ASEAN	Association of Southeast Asian Nations
AVEs	Ad valorem equivalents
CGE	Computable general equilibrium
DJAI	Declaración Jurada Anticipada de Importación
FAO	Food and Agriculture Organization
GDP	Gross domestic product
GTAP	Global Trade Analysis Project
ITC	International Trade Centre
MAST	Multi-agency support team
MERCOSUR	Mercado Común del Sur / Southern Common Market
NAFTA	North American Free Trade Agreement
NTBs	Non-tariff barriers
NTMs	Non-tariff measures
OECD	Organization for Economic Co-operation and Development
SPS	Sanitary and phytosanitary
TBT	Technical barriers to trade
TRAINS	Trade Analysis Information System
UNCTAD	United Nations Conference on Trade and Development
UNIDO	United Nations Industrial Development Organization
WITS	World Integrated Trade Solution
WTO	World Trade Organization

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## EXECUTIVE SUMMARY

This report systematically analyses non-tariff measures (NTMs) regulating trade in goods in MERCOSUR. UNCTAD's newly collected data (in collaboration with the ALADI secretariat) and innovative methodologies allow an assessment of recent developments and current impact of traditional non-tariff barriers, sanitary, phytosanitary and technical measures, and regulatory convergence in the region. The study also estimates the potential welfare benefits of deeper integration within the region, and a possible trade agreement with the European Union.

### Falling tariffs shift the focus of attention to non-tariff barriers and regulatory measures

Tariffs have been reduced substantially at the global level and specifically in MERCOSUR. Trade is mostly duty free in the region, with few but notable sectoral exceptions. However, mere tariff elimination turned out to be insufficient for genuine economic integration. To advance deeper regional integration, addressing NTMs is crucial. On aggregate, their impact is about two to four times larger than tariffs.

NTMs can be distinguished into two groups: (a) traditional trade policy instruments, such as quotas or price controls, which are often termed non-tariff barriers (NTBs); and (b) regulatory and technical measures that stem from important non-trade objectives related to health and environmental protection (sanitary and phytosanitary (SPS) measures and technical barriers to trade (TBT)). In the twenty-first century, technical measures have taken the centre stage and have a bigger impact on trade than traditional barriers.

### Deep regional integration can still be advanced substantially in MERCOSUR

NTMs were addressed in MERCOSUR since its establishment. The elimination of quotas and non-automatic licences was scheduled; and technical standards and SPS measures were to be harmonized. Today, much still needs to be done. Many barriers still exist and regulatory policies diverge. The share of intraregional trade has barely increased since the establishment of MERCOSUR. Also globally, Brazil, Argentina and the Bolivarian Republic of Venezuela<sup>1</sup> are among countries with the lowest trade-to-GDP ratios. Uruguay and Paraguay are more integrated into regional and international trade, but face trade deficits.

As "deep" regional and mega-regional trade agreements thrive across the globe, there also seems to be political will to revitalize the MERCOSUR project. But policymakers are also looking beyond the strengthening of the internal market towards trade agreements with major trading partners, particularly with the European Union. This study estimates the potential benefits of fulfilling old commitments and moving beyond.

### Traditional non-tariff barriers remain relatively common in MERCOSUR

Compared with other regions in the world, MERCOSUR still applies a significant number of quotas and non-automatic licences. Product-specific barriers affect more than 40 per cent of Brazilian imports, 27 per cent of Uruguayan imports and 19 per cent of Paraguayan imports. In Argentina, the horizontally applied Advance Sworn Import Declaration (DJAI, Declaración Jurada Anticipada de Importación) has caused controversy and was disputed at the World Trade Organization (WTO). Combined with foreign exchange controls, the DJAI was seen as a major hurdle to trade. During the drafting of this report, Argentina's new Government terminated the DJAI and introduced a new import monitoring system. The Bolivarian Republic of Venezuela applies a licensing scheme for a wide range of products that require a certificate that attests no or insufficient domestic production. Controls of foreign currency outflows and multiple exchange rates are connected to this licensing procedure. Furthermore, reference prices and price bands regulate imports of several products.

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<sup>1</sup> The Bolivarian Republic of Venezuela has a trade-to-GDP ratio that fluctuates substantially depending on global oil prices. In the current situation of very low prices, the trade-to-GDP ratio is below 25 per cent.

## **The impact of traditional non-tariff barriers is significant**

The estimated impact of these barriers is particularly high in manufacturing sectors, including the crucial vehicles and machinery sectors. Where applied, these NTBs cause price increases (of traded goods) of 3 to 4 per cent. These estimates, due to the applied methodology, are likely to be on the conservative side and are potentially significantly larger. Still, the removal of licensing schemes and NTBs in key sectors can facilitate trade and reduce prices considerably.

## **Technical and regulatory measures are more costly than outright barriers. They are the next policy frontier.**

Numerous technical and regulatory measures are especially applied in food and agricultural sectors. Also the use of discretionary authorizations and registration requirements is widespread and deserves scrutiny.

The overall impact of technical NTMs by far exceeds that of traditional NTBs. SPS and TBT measures have price-increasing effects (ad valorem equivalents, AVEs) of 10 to 15 per cent in Argentina and Brazil, and between 5 and 10 per cent in Paraguay, Uruguay and the Bolivarian Republic of Venezuela. Apart from trade effects, these price increases impact on the whole population as food consumers.

In manufacturing, technical measures have a lower relevance than outright barriers and do not appear particularly restrictive in the analysis.

## **Regulatory convergence, not elimination, can reduce the impact of regulatory measures**

Regulatory measures are necessary and fulfil important public policy objectives, such as the protection of human, animal and plant health, as well as the environment. Thus, they cannot be eliminated. Instead, regulatory convergence can reduce costs while maintaining the regulatory benefits of these measures.

An innovative estimation method in this report shows that the actual burden of technical measures is substantially reduced by regulatory convergence. Higher levels of domestic market regulation and regulatory similarity with the destination market increase the ability to comply with foreign requirements. In fact, when exporting to MERCOSUR partners, Argentina, Brazil and Uruguay therefore see the actual cost impact of technical measures reduced by 30 to 50 per cent. Exporters from Paraguay and the Bolivarian Republic of Venezuela face higher de facto costs of compliance with the same NTMs in MERCOSUR partners.

There remains much potential for deeper regulatory integration in MERCOSUR. Technical measures diverge significantly between the more regulated markets, Brazil and Argentina, and with the other MERCOSUR members. Uruguay is catching up with these more regulated markets, but converges more with Argentina than Brazil. With increasing levels of overall development, Paraguay and the Bolivarian Republic of Venezuela are likely to also increase levels of market regulation. Regulatory cooperation is crucial to avoid increasing trade costs and product prices.

## **Eliminating NTBs and regulatory convergence entail significant welfare gains**

Using a computable general equilibrium model (CGE), this study explored the potential welfare effects of different scenarios of "deeper" regional integration. Even with the conservative estimates employed in this study, significant welfare, trade and employment gains were found for all of these scenarios. Eliminating NTBs and increasing regulatory convergence among MERCOSUR members is predicted to raise regional welfare by US\$ 2 billion. At the national level, Argentina could gain US\$ 585 million, Brazil US\$ 1'109 million, Paraguay US\$ 63 million, Uruguay US\$ 145 million and the Bolivarian Republic of Venezuela US\$ 97 million. These figures are based on the assumption that NTBs generated government revenue, such as licensing fees or quota auction revenue. If no revenue was made and eliminating NTBs therefore does not imply losses, welfare gains are almost twice as high for the Bolivarian Republic of Venezuela, Argentina and Brazil.

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The largest welfare gains, however, result from addressing technical measures like SPS and TBT through regulatory convergence. Going beyond the mere elimination of outright non-tariff barriers, like quotas and non-automatic licensing, is therefore essential. In fact, ending efforts after the elimination of NTBs may even cause welfare losses for the Bolivarian Republic of Venezuela.

### **A "deep" trade agreement with the European Union and the adoption of international standards would increase welfare gains two- to three-fold**

Eliminating NTBs and advancing regulatory convergence with the European Union would double or triple welfare gains, compared with intraregional integration alone.

Adopting strict technical requirements of the European Union, however, runs the risk of locking in exports at the expense of South–South trade and higher domestic prices. Therefore, international standards should serve as the benchmark. The national adoption of international standards has beneficial trade effects for South–North and South–South trade.

The results in this report indicate that a MERCOSUR–European Union trade agreement with the adoption of international standards could increase welfare in MERCOSUR by almost US\$ 6 billion. This translates into simultaneous increases of (low-skilled) wages and employment of 0.1 to 0.2 per cent in Argentina, Brazil and the Bolivarian Republic of Venezuela, and even 0.3 to 0.4 per cent in Paraguay and Uruguay.

### **While eliminating NTBs only requires the implementation of decade-old commitments, advancing regulatory convergence calls for long-lasting political will**

To advance regulatory convergence, the work of regional working groups and committees needs to be reignited at the political and technical level. When food safety, health and environmental objectives overlap, the mechanisms of implementation should be harmonized. Discretionary NTMs should be replaced by clear-cut technical criteria and the most cost-effective conformity assessment methods. International standards should serve as strong guiding principles when harmonizing regulation in MERCOSUR and beyond. Furthermore, transparency of NTMs can still be improved. The less regulated markets, particularly Paraguay and the Bolivarian Republic of Venezuela, may also need to upgrade technical regulation to align with the more developed markets. But this has to be done carefully in order to avoid domestic price increases.



## 1. INTRODUCTION

Tariffs on regional trade are generally low, as they have been progressively liberalized in the context of multilateral, regional and bilateral trade agreements. Within MERCOSUR, the focus of this report, most trade is duty free with the exception of a few, yet notable, sectors. The fact that tariff liberalization alone has generally proven insufficient in providing genuine regional economic integration has drawn further attention to NTMs. They are seen as major determinants for economic growth, industrialization, and the integration into regional as well as global value chains.

NTMs are neutrally defined as policy measures, other than ordinary customs tariffs, that can have an economic effect on international trade (UNCTAD, 2010). NTMs thus include a wide array of policies. On the one hand, this includes traditional instruments of trade policy, such as quotas or price controls, which are often termed non-tariff barriers (NTBs). On the other hand, NTMs also comprises sanitary and phytosanitary (SPS) measures and technical barriers to trade (TBT) that stem from important non-trade objectives related to health and environmental protection.

For middle- to high income countries, it is estimated that the overall impact of NTMs is about two to three times more restrictive than customs tariffs (UNCTAD, 2013). More disaggregated estimates for Latin America show that technical measures (SPS and TBT) account for about 60 per cent of NTM restrictiveness. Traditional trade policy instruments, particularly quantitative restrictions, therefore only represent about 40 per cent of overall NTM restrictiveness, but are more prevalent than in other world regions (Cadot et al, 2015).

Coordinating non-tariff policy regimes, including behind-the-border SPS measures and TBT, on a regional level is a permanent challenge. Nevertheless, regional initiatives can be a more flexible tool than multilateral negotiations to lead to mutually beneficial deep economic integration.

The NTM problematic was addressed in MERCOSUR from its very inception.<sup>2</sup> The regional

integration project was particularly active in identifying barriers to regional trade that needed to be dismantled *pari passu* with the tariff elimination calendar. Institutional and methodological approaches were agreed to deal with public policies that could distort competitiveness among the members, including a dispute-settlement mechanism and institutional frameworks to harmonize technical standards and SPS measures.

Notwithstanding these arrangements, the number of NTMs and NTBs increased over time, with a possible negative impact on trade, investment and the development of regional value chains. The regional and institutional approach to address NTMs seems to have been gradually substituted by *ad hoc* or bilateral channels with less than optimal results, as extensive literature on this issue reflects. Also the non-internalization of regional decisions into the national legislation has undermined the credibility and enforceability of the MERCOSUR normative.

This situation seems to be at the core of present-day political will to revitalize the MERCOSUR project. With renewed interest in strengthening the MERCOSUR internal market, this paper provides a fresh look at the NTMs present in MERCOSUR, assesses their costs and implications, and explores the opportunities of correctly tackling them.

Section 2 of this paper briefly presents the classification and collection of the hard data around which this paper is built. The authors use a unique time series dataset (2011–2014) of all NTMs in MERCOSUR and Latin America that has never been used before.

Section 3 provides a descriptive analysis of the recent trends and current status of NTBs and NTMs applied in MERCOSUR. A subsection specifically looks at the important motor vehicles sector.

In section 4, recognizing that SPS measures and TBT cannot simply be eliminated, the perspective of regulatory convergence and harmonization is elaborated. A recently developed measure of distance in regulatory structures is introduced and illustrated with respect to MERCOSUR and some important trading partners.

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<sup>2</sup> The elimination of non-tariff barriers and the harmonization of technical measures were already explicitly mentioned

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and agreed in the Treaty of Asunción of 1991. Available at [http://www.sice.oas.org/trade/MRCSRS/treatyasun\\_s.asp](http://www.sice.oas.org/trade/MRCSRS/treatyasun_s.asp) (accessed 10 May 2016).

Section 5 analyses the impact of NTBs, technical regulations and regulatory overlap, a measure of regulatory convergence. Quantifying the ad valorem equivalents of different types of NTMs, as well as the respective impact of regulatory convergence, is at the core of this exercise.

Section 6 uses the estimates from the previous section and simulates the potential macroeconomic impact of eliminating barriers and harmonizing NTMs in several scenarios: only within MERCOSUR, in a potential trade agreement with the European Union, and including the adoption of international standards. The respective potentials for deep regional and global integration will be expressed in terms of trade gains, GDP growth and employment creation.

Section 7 concludes with policy recommendations.

## 2. NON-TARIFF MEASURES DATA CLASSIFICATION AND COLLECTION

### 2.1. A COMMON LANGUAGE: THE UNCTAD-MAST NTM CLASSIFICATION

Recognizing the proliferation and increasing importance of NTMs, UNCTAD has actively worked on the topic since the early 1980s. Given the scarcity of available information, UNCTAD began to identify and classify NTMs in 1994. In 2006, UNCTAD established the group of eminent persons and a multi-agency support team (MAST)<sup>3</sup> to thoroughly revise the data collection approach in order to reflect the growing complexity of NTMs. An essential step was the development of an internationally agreed and recognized classification for NTMs. This common language facilitates the collection, analysis and dissemination of data on NTMs, the final objective being to increase transparency and understanding about NTMs (UNCTAD, 2014).

The UNCTAD-MAST (2013) classification of NTMs has 16 chapters of different measure categories (table 1, left). Chapters A to O refer to import-related NTMs, whereas chapter P covers measures that

countries impose on their own exports. Another essential distinction is made between technical measures (chapters A, B and C) and non-technical measures (chapters D to O).

Technical measures comprise SPS and TBT measures and related pre-shipment requirements. These measures are imposed for objectives that are not primarily trade-related: for example, human, plant and animal health, and the protection of the environment. Even if equally applied to domestic producers, they nevertheless regulate international trade and are thus considered NTMs. This does not, however, imply any a priori judgment about their impact and legitimacy.

Non-technical measures cover a wide array of policies, including traditional trade policies such as quotas, licences (chapter E), price controls and para-tariff measures (chapter F). The full list is presented in table 1. As most non-technical measures have objectives and mechanisms that discriminate against foreign producers, this report refers to them as non-tariff barriers (NTBs).

Each chapter is further broken down into more detailed measures types (example of SPS measures, table 1, right). The tree structure allows for a fine-grained classification of measures. For example, the SPS chapter (A) consists of 34 NTM codes at the finest level of detail. In total, the UNCTAD-MAST classification has 178 disaggregated codes.

### 2.2 COLLECTED DATA IN MERCOSUR AND THE REST OF THE WORLD

On the basis of this classification, UNCTAD leads an international effort to collect comprehensive data on NTMs. Country coverage and data quality are rapidly increasing, particularly after further improving the data-collection approach in 2011/2012 and expanding collaboration with many international, regional and national partners.

Due to a productive partnership between UNCTAD and the ALADI secretariat, data coverage and quality is already excellent for Latin America. Consistent and comparable data are available for most ALADI member States for the period 2011–2014, including all MERCOSUR members. These data are the basis for the following analysis in this paper.<sup>4</sup>

<sup>3</sup> The team is composed of FAO, ITC, OECD, UNCTAD, UNIDO, the World Bank and WTO.

<sup>4</sup> The analysis and estimations use data for the period 2011–2014.



Table 1. UNCTAD–MAST classification of non-tariff measures

		Technical measures	
Import-related measures	Technical measures	A	Sanitary and phytosanitary (SPS) measures
		B	Technical barriers to trade (TBT)
		C	Pre-shipment inspections and other formalities
	Non-technical measures	D	Contingent trade-protective measures
		E	Non-automatic licensing, quotas, prohibitions and quantity-control measures
		F	Price-control measures, including additional taxes and charges
		G	Finance measures
		H	Measures affecting competition
		I	Trade-related investment measures
		J	Distribution restrictions
		K	Restrictions on post-sales services
		L	Subsidies (excluding export subsidies)
		M	Government procurement restrictions
		N	Intellectual property
		O	Rules of origin
Export-related measures	P	Export-related measures	

Tree structure, for example:  
A Sanitary and phytosanitary (SPS) measures

A1 Prohibitions/restrictions of imports for SPS reasons  
A11 Temporary geographic prohibition  
(...)

A2 Tolerance limits for residues and restricted use of substances  
(...)

A3 Labelling, marking, packaging requirements  
(..)

A4 Hygienic requirements  
(...)

A5 Treatment for the elimination of pests and diseases  
A51 Cold/heat treatment  
A52 Irradiation  
(...)

A6 Requirements on production/post-production processes  
(...)

A8 Conformity assessment  
A81 Product registration  
A82 Testing requirement  
A83 Certification requirement  
A84 Inspection requirement  
A85 Traceability requirement  
A851 Origin of materials and parts  
A852 Processing history  
(...)

A86 Quarantine requirement  
A89 Other conformity assessments

Source: Authors' illustration based on UNCTAD–MAST (2013).

Data also already exist for a number of developing countries. Furthermore, data collection efforts in 2014/2015 focus on many large developed and emerging markets as well as the Association of Southeast Asian Nations (ASEAN) region, reaching coverage of over 80 per cent of world trade at the end of 2016.

All data are published online and are accessible free of charge through several web-portals.<sup>5</sup> The

<sup>5</sup> The UNCTAD TRAINS portal at [trains.unctad.org](http://trains.unctad.org); the World Bank WITS platform at [wits.worldbank.org](http://wits.worldbank.org); and the ITC MACMap at [www.macmap.org](http://www.macmap.org); the ALADI secretariat also maintains an importers' guide and a repository with access to all trade regulations applied by its members: [http://www.aladi.org/nsfaladi/arquitec.nsf/VSTITIOWEB/guias\\_de\\_importacion](http://www.aladi.org/nsfaladi/arquitec.nsf/VSTITIOWEB/guias_de_importacion) and [http://consultawebv2.aladi.org/sicoexV2/jsf/mna\\_normasReguladoras.seam](http://consultawebv2.aladi.org/sicoexV2/jsf/mna_normasReguladoras.seam) (accessed 28 October 2015).

database also allows quick access to full-text regulations of many countries.

Data on "official" NTMs are collected by extensively reading and analysing national legislative documents, such as laws, decrees or directives. As mentioned before, this even includes behind-the-border technical regulations that apply to domestic as well as foreign products. Once a relevant regulation is identified, each specific provision is classified into one of the 178 detailed NTM codes. One regulation can bear several different measures, for example, a required maximum residual limit of pesticides as well as a respective inspection requirement. For each measure, the affected products are also classified in detail.<sup>6</sup>

<sup>6</sup> Product classification is done at the national tariff line level or at 6-digits of the Harmonized System, which distinguishes about 5,200 different products.

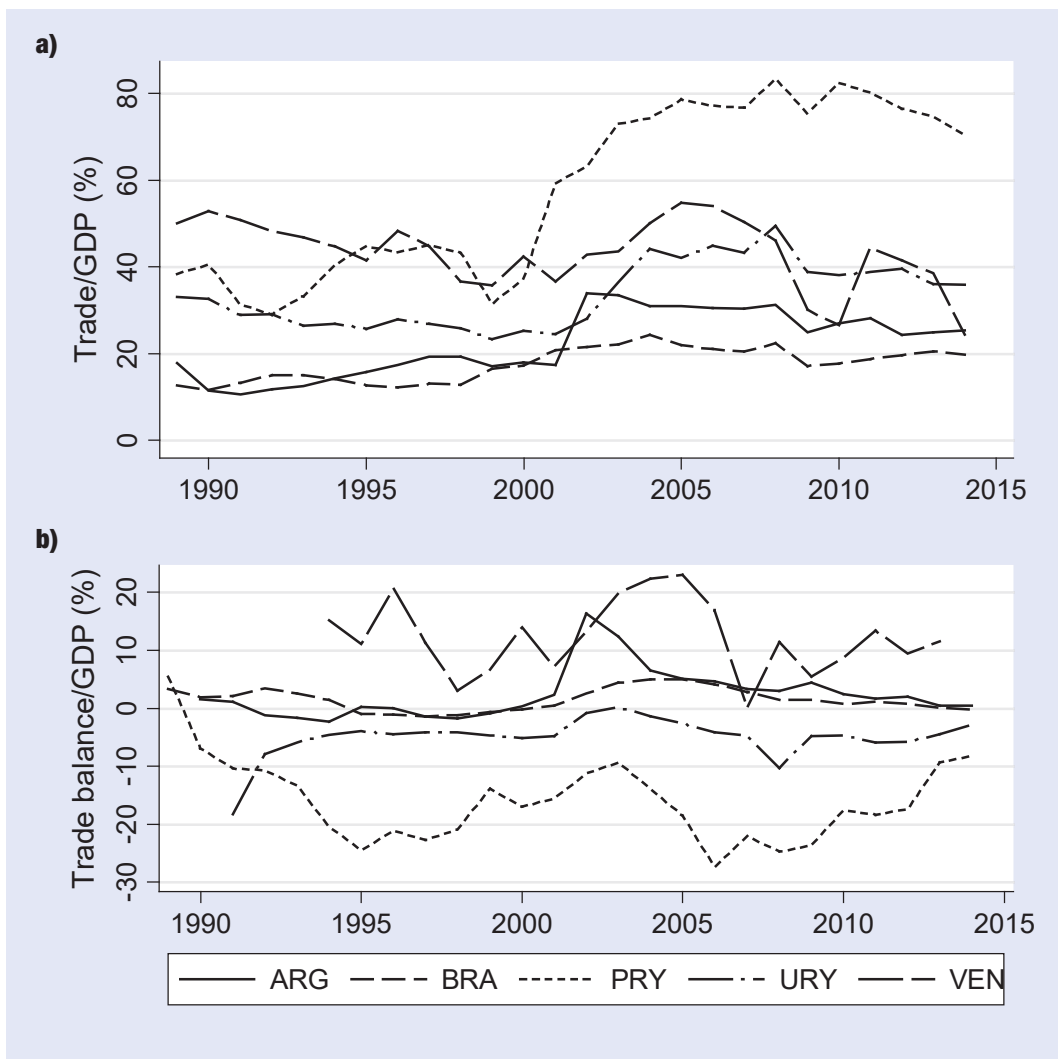
Even with 178 distinct types of measure, data analysis remains a slight generalization of the sheer limitless complexity of NTMs, particularly SPS measures and TBT. For product-specific trade negotiations and export decisions, an in-depth review of full-text regulatory documents is inevitable. However, the classification of measures and respective affected products provides an essential entry point for a wider assessment of the prevalence and impact of NTMs. It allows for a comparative perspective across countries and sectors, and helps narrow down priorities.

### 3. DESCRIPTIVE ANALYSIS OF TRADE AND NTMs IN MERCOSUR

#### 3.1 TRADE TRENDS IN MERCOSUR

Before analysing recent trends and the current state of non-tariff trade policy, a long-term view on trade developments in the regions provides a useful background.

Figure 1. Overall trade and trade balance development as a share of GDP, by country



Source: UNCTAD calculations based on COMTRADE data and World Development Indicators (2015).

Note: Trade in the upper graph refers to the sum of exports and imports.

Abbreviations: ARG, Argentina; BRA, Brazil; PRY, Paraguay; URY, Uruguay; VEN, Bolivarian Republic of Venezuela.

## International trade

The overall importance of international trade varies substantially across MERCOSUR member States. Figure 1(a) shows the share of merchandise trade (exports plus imports) over GDP, which is commonly used to measure a country's integration into and dependence on global goods trade. Figure 1(b) illustrates the development of trade balances in relation to the size of GDP.

As large economies with substantial domestic market sizes, Brazil and Argentina generally depend less on trade. Brazil's trade-to-GDP ratio remains among the very lowest in the world, but has slowly increased from 12 to 20 per cent over the last 25 years. After small trade deficits in the late 1990s, a surplus of 5 per cent of GDP was reached in the mid-2000s after the macroeconomic and currency crisis in the region. However, Brazil's trade balance has since then decreased to practically zero nowadays.

Similarly, Argentina's involvement in trade is relatively low. The trade-to-GDP ratio jumped from 17 to 34 per cent in the aftermath of the 2001/2002 default, but has again shrunk to 25 per cent today. The drastic currency devaluation at the end of 2001 reduced nominal GDP and made Argentinian products cheap to import for the rest of the world. Consequently, Argentina's trade balance peaked at a surplus of 16 per cent of GDP in 2002. Since then, however, the trade surplus has declined to less than 1 per cent of GDP.

Uruguay's dependence on trade ranges between that of the large MERCOSUR members and Paraguay. While being naturally more trade dependent as a small economy, Uruguay boasts a large service industry that reduces the relative importance of trade in goods, and the respective trade deficit. The trade-to-GDP ratio fell slowly to under 30 per cent in the 1990s, but then rose to 40 and 50 per cent in the 2000s following currency devaluations. After the global financial crisis and recession, however, the share declined again to 36 per cent, where it stands today. Uruguay has had a substantial trade balance deficit over the last decades. From the highest deficit of 10 per cent relative to GDP in 2008, the economy recovered to a deficit equivalent to less than 3 per cent of GDP in 2014.

Paraguay, as a small landlocked country with relatively large agriculture and industry sectors, is

highly dependent on merchandise trade. With rapidly expanding soy production and after allowing the currency to float, trade-GDP ratio soared from 30 to 40 per cent in the 1990s to 70 to 80 per cent in the 2000s. In recent years, the ratio has declined slightly, but remains at 70 per cent. Paraguay's trade balance has been strongly negative since the early 1990s. In 2006–2009, the trade deficit was as large as 23 to 27 per cent of GDP. In the 2010s, the deficit diminished to about 8 per cent in 2014.

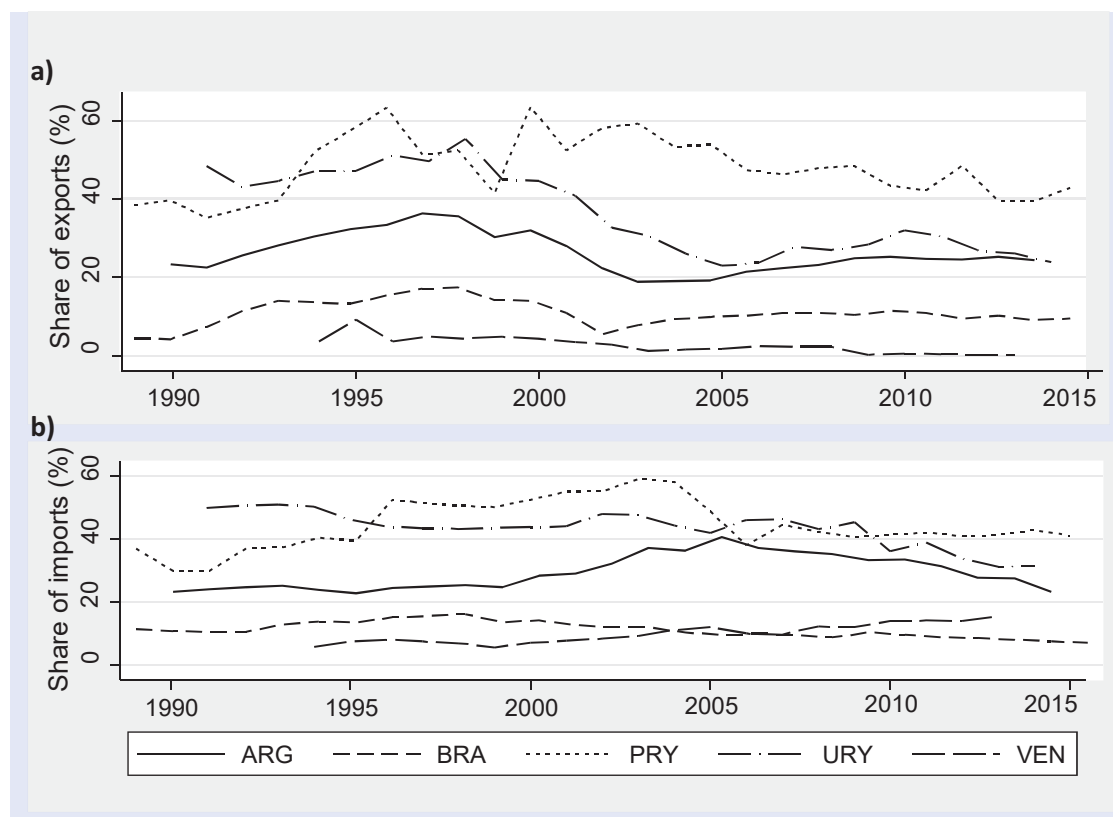
The trade-to-GDP ratio of the Bolivarian Republic of Venezuela has fluctuated between 25 and 55 per cent over the last two decades. A major factor are petroleum exports that represent over 90 per cent of total exports. Both the trade-to-GDP ratio and the trade balance depend heavily on international demand and prices of petroleum. While the Bolivarian Republic of Venezuela has maintained substantial trade surpluses over the last decades, the current low prices and demand for petroleum have diminished surpluses dramatically.

## Intra-MERCOSUR trade

Figure 2(a) illustrates the long-term development of intraregional exports, while figure 2(b) shows imports as shares of total exports/imports. Paraguay is the most dependent on regional exports (41 per cent of total exports in 2014) and imports (43 per cent). Argentina and Uruguay equally export about 24 per cent of total exports to MERCOSUR partners. On the import side, Uruguay relies more on regional products (31 per cent) than Argentina (23 per cent). Brazil generally trades least within MERCOSUR, with regional exports and imports only accounting for 9 and 8 per cent of the total, respectively. These figures result in marginally positive intraregional trade balances for Argentina and Brazil. Uruguay's and Paraguay's overall trade deficits are also reflected in intraregional trade. Intraregional exports from the Bolivarian Republic of Venezuela are marginal, as petroleum is mostly destined to the United States of America, the Caribbean and increasingly, Asia. On the import side, however, about 18 per cent of total inflows come from MERCOSUR partners.

Historically, the years after the establishment of MERCOSUR in 1991/1994 saw strongly increasing shares of intraregional

Figure 2. Development of intraregional exports and imports, by country



Source: UNCTAD calculations based on COMTRADE data and UNCTAD South–South database.  
Abbreviations: ARG, Argentina; BRA, Brazil; PRY, Paraguay; URY, Uruguay; VEN, Bolivarian Republic of Venezuela.

exports in all four original member States.<sup>7</sup> The eve and aftermath of the debt and currency crisis in the region, however, resulted in a strong rise of extraregional exports. The main cause was the diminished regional purchasing power relative to the rest of the world. This development is pronounced in Argentina, Uruguay and Brazil, whereas Paraguay's rising electricity exports to Argentina and Brazil defied the trend. Shares of regional exports partly recovered until 2010, but still remain far below their peak in the late 1990s. In most recent years, regional export shares have again declined in most MERCOSUR members. A large influence in these falling shares of intraregional exports is the massive increase of soy production in all member States that is exported to the rest of the world. Irrespective of the road to accession of the Bolivarian Republic of Venezuela to

MERCOSUR, intraregional exports of petroleum have decreased.

On the import side, the original establishment of MERCOSUR was followed by relative increases of intraregional trade by Paraguay and to a lesser extent by Brazil. No apparent boost to intraregional imports is visible for Argentina and Uruguay. The post-crisis era and declining purchasing power for products from the rest of the world saw Argentina import much more from MERCOSUR partners, reaching about 40 per cent of total imports in 2005. Since then, however, regional imports have continuously declined to 23 per cent in 2014. Brazil's imports from the region have steadily fallen since the late 1990s, particularly due to the rapid rise of mineral fuel imports from the rest of the world. Uruguay's rapidly growing imports from China have crowded out regional products since the mid-2000s. Paraguay, however, has maintained a steady level of regional imports over the last 10 years, mostly owing to fuel and chemical imports from Brazil and Argentina. Imports of the Bolivarian Republic of Venezuela from

<sup>7</sup> The years of the MERCOSUR establishment refer to the Treaty of Asunción (1991) and the Protocol of Ouro Preto (1994).

MERCOSUR increased from 10 per cent in 2006, the year of the Protocol of Accession, to 14 per cent in 2012, when full MERCOSUR membership was achieved, and to 16 per cent in 2013.

### Main products

Argentina's predominant exports are soy and soy products followed by motor vehicles, which are the main intraregional export. Other important export sectors are minerals and petrochemicals, grains and meat. The largest import sector is machinery and electronics, followed by vehicles. Imports of motor vehicles from the rest of the world make Argentina an overall net importer in the sector, but a net exporter in intra-MERCOSUR trade (2014). Other significant import sectors are minerals and chemicals.

Brazil's main exports are metals, crude petroleum, soy and soy products, meat, vehicles and machinery. Brazil's relatively small intraregional exports are concentrated in the vehicles sector. Despite significant exports, Brazil is a net importer of machinery and vehicles. Large imports of refined petroleum and other mineral fuels also make Brazil a net importer in the sector. Other large import sectors are chemicals, consumer electronics and metal manufactures.

Paraguay's exports are highly concentrated on soy, soy products, electrical energy from the Itaipu dam and meat products. Their energy exports dominate intraregional exports, supplying almost exclusively Brazil and Argentina. The largest import sectors are petroleum, electrical equipment and machinery, motor vehicles and chemicals.

Uruguay also mainly exports meat, soy and other grains to the world, followed by dairy products and wood. Intraregionally, dairy products, vehicles and grains are leading exports. Mineral fuels account for the largest share of imports, followed by machinery and electrical equipment. Furthermore, imports of vehicles and parts from the region and the rest of the world result in a negative trade balance in the sector.

While exports from the Bolivarian Republic of Venezuela are dominated by petroleum, imports span across many sectors. In particular, machinery and other capital goods, followed by pharmaceutical and some food products, are imported. Exports to MERCOSUR partners mainly consist of fertilizers, organic chemicals and metals. Most intraregional imports are food products, machinery and pharmaceuticals.

A detailed graph illustrating sector-specific exports and imports, as well as the respective shares of intra-MERCOSUR trade, can be found in the annex, figure 28.

## 3.2 NON-TARIFF BARRIERS IN MERCOSUR

The aim of the following subsections is to give an overview of the prevalence of NTMs in MERCOSUR. An attempt to evaluate the impact of these measures follows in sections 5 and 6.

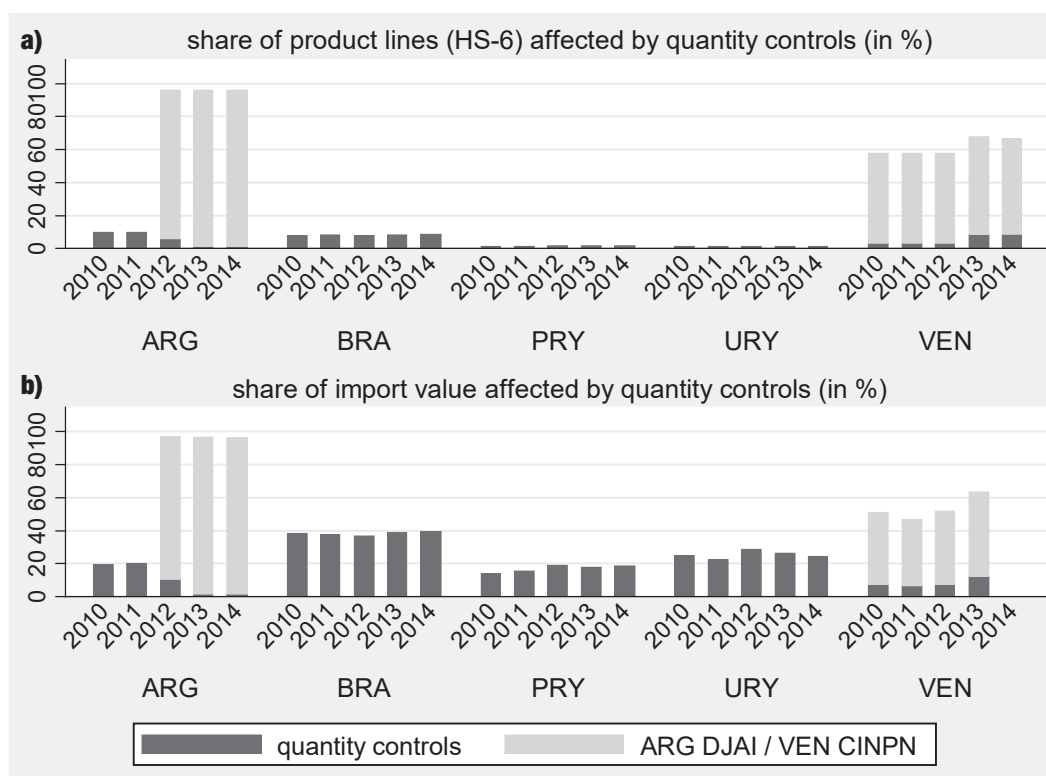
Section 2 introduced the UNCTAD–MAST classification and pointed out the key difference between technical measures (SPS measures and TBT) and non-technical measures (or barriers). Since the main objectives and mechanisms of these wider groups of measures are fundamentally different, the following discussion clearly separates the two. This first subsection elaborates on non-technical barriers, whereas the second looks at technical measures.

Even within the group of barriers there is a variety of types of measure. Quantitative restrictions such as non-automatic licences and quotas are the most common barriers in MERCOSUR. The dark grey bars in figure 3 illustrate the prevalence of quantity controls. The upper panel shows the simple share of affected product lines;<sup>8</sup> the lower pane expresses the importance of these products in terms of their share in total import values. Figure 4 presents the share of affected product lines across sectors.

In Paraguay and Uruguay, only about 2 per cent of product lines are restricted, mostly through non-automatic licences. However, the affected products are much more relevant in terms of trade. In Paraguay, the restrictions mostly affect textile and clothing, petroleum derivatives, sugar, certain seeds, meat and used vehicles. These sectors represent 19 per cent of total imports and up to 28 per cent of imports from MERCOSUR partners. Uruguay mainly regulates motor vehicles and certain parts thereof, mineral fuels and sugar. The import values of these products are equivalent to 27 and 23 per cent of total and intra-MERCOSUR imports, respectively.

<sup>8</sup> The data are originally collected at the national tariff-line level. In order to compare products and policies across countries, the data are aggregated to the 6-digit level of the Harmonized System, which distinguishes about 5,200 different products.

Figure 3. Development of quantitative restrictions in MERCOSUR



Source: Authors' calculations based on UNCTAD-ALADI NTM data and COMTRADE trade data.

Abbreviations: ARG, Argentina; ARG DJAI, advance sworn import declaration (Argentina); BRA, Brazil; PRY, Paraguay; URY, Uruguay; VEN, Bolivarian Republic of Venezuela; VEN CINPN, certificates of non-domestic production or insufficient production (Bolivarian Republic of Venezuela).

Brazil restricts the import quantity of about 8 per cent of product lines. Furthermore, this substantial share has slightly increased since 2010. A wide range of products is affected, including mineral and bio fuels, machinery and vehicles, various chemicals and plastics, sugar and certain textiles. The quantity controls therefore affect 42 per cent of Brazil's imports; and up to 49 per cent of intraregional imports.

Argentina and the Bolivarian Republic of Venezuela require more differentiated analyses.

### Argentina

In Argentina, only a few products are regulated by product-specific non-automatic licences. These mainly concern used vehicles, machines and equipment, and paper.<sup>9</sup> Since most of these restrictions do not include new products, the relevance for trade is indeed minimal.

<sup>9</sup> The restrictions that only concern used goods are excluded from figure 3 and illustrated in light grey in figure 4.

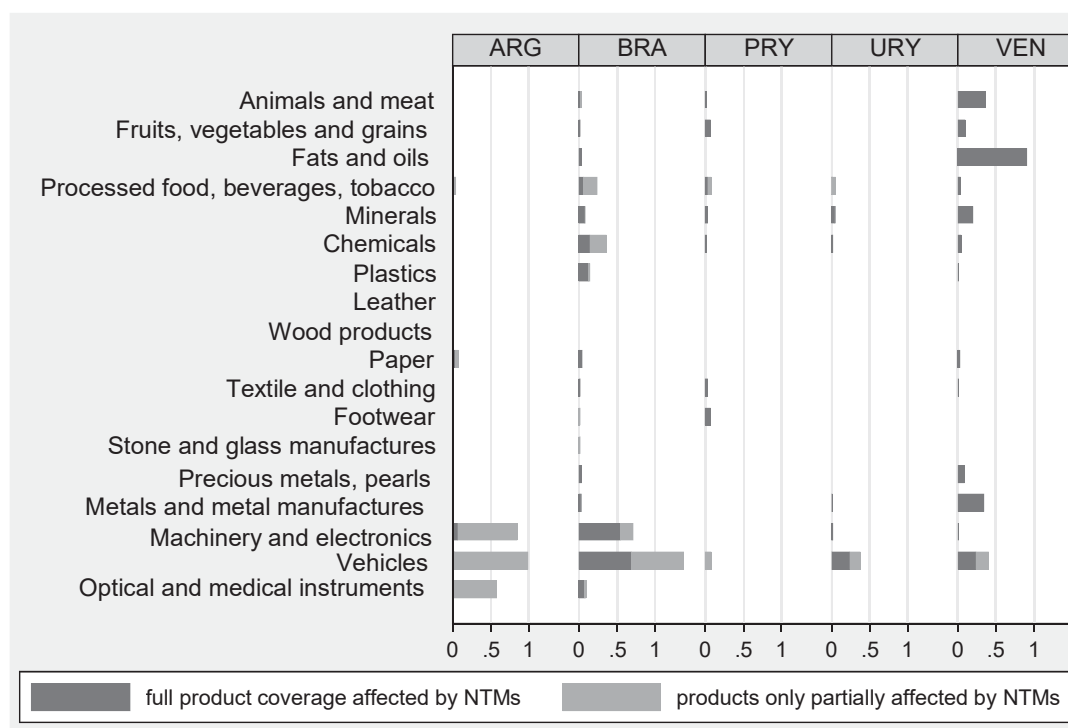
However, figure 3 also shows an almost full coverage of products since 2012 with respect to the advance sworn import declaration (DJAI, Declaración Jurada Anticipada de Importación). The impact and legality of this measure was intensely disputed. During the drafting of this report, Argentina's new Government terminated the DJAI and introduced a new import monitoring system.<sup>10</sup>

Having received a lot of attention during its application between 2012 and 2015, the DJAI is nevertheless briefly discussed here. It is important to emphasize that this report takes a fully neutral approach and abstains from any judgment about legality or conformity with WTO or MERCOSUR rules. Consequently, the measure is also excluded or specifically highlighted in subsequent figures.

<sup>10</sup> See General Resolution 3823/2015 of Argentina's Federal Administration of Public Revenues (AFIP), available at: <http://www.infoleg.gov.ar/infolegInternet/anexos/255000-259999/257180/norma.htm> (accessed 29 April 2016).



Figure 4. Use of quantity controls, by country and sector (simple averages, 2014)



Source: Authors' calculations based on UNCTAD-ALADI NTM data.

Note: Figure does not include DJAI (see below) and finance measures applied by Argentina or certificates of non-domestic production or insufficient production of the Bolivarian Republic of Venezuela.

Abbreviations: ARG, Argentina; ARG DJAI, advance sworn import declaration (Argentina); BRA, Brazil; PRY, Paraguay; URY, Uruguay; VEN, Bolivarian Republic of Venezuela; VEN CINPN, certificates of non-domestic production or insufficient production (Bolivarian Republic of Venezuela).

While Argentina's former government maintained that the DJAI is a simple customs formality, a number of countries alleged that the DJAI effectively acts as a non-automatic licence. Formal complaints were submitted to the WTO by Japan, the European Union and the United States in 2012 and were since then joined by several third parties.<sup>11</sup> In the same disputes, complainants challenged certain unwritten trade-related requirements that coupled imports into Argentina to other commitments by foreign exporters. The WTO dispute settlement panel found that "[T]he DJAI procedure is inconsistent with Article

XI:1 of the GATT 1994, since it has a limiting effect on imports, and thus constitutes an import restriction".<sup>12</sup> Argentina appealed in September 2014, but the WTO Appellate Body maintained the original position of the Panel. The DJAI was abolished in December 2015.

<sup>11</sup> Dispute numbers DS 445, DS 438 and DS 444. In addition to complainants Japan, European Union and United States, the following WTO members joined as third parties: Australia, Canada, China, Ecuador, Guatemala, India, Israel, the Republic of Korea, Norway, Saudi Arabia, Switzerland, Taiwan Province of China, Thailand and Turkey.

<sup>12</sup> WTO summary of dispute settlement proceedings of case DS 445, available at [https://www.wto.org/english/tratop\\_e/dispu\\_e/cases\\_e/ds445\\_e.htm](https://www.wto.org/english/tratop_e/dispu_e/cases_e/ds445_e.htm) (accessed 13 August 2015). The complainants state that the "unwritten" trade-related requirements aim to "(a) to offset the value of imports with, at least, an equivalent value of exports; (b) to limit imports, either in volume or in value; (c) to reach a certain level of local content in domestic production; (d) to make investments in Argentina; and (e) to refrain from repatriating profits." The requirements are in some cases contained in agreements signed between economic operators and the Argentine Government or in letters addressed by economic operators to the Argentine Government.



While a causal relation between the DJAI and imports cannot be established easily, figure 5 shows a significant decline in Argentinian imports since 2012. While the falling imports temporarily increased Argentina's shrinking trade surplus, exports also started declining rapidly. Today, Argentina's trade surplus stands at only US\$3 billion. This situation is critical as Argentina sees its sensitive foreign exchange reserves under threat. On the other hand, a lack of imported inputs has created significant bottlenecks for Argentina's production and export.

Argentina also regulates certain terms of payment for a wide range of products if it involves an outflow of foreign exchange. While foreign exchange transactions for the import of critical products such as health-related goods can be made immediately, other transactions need to be authorized in advance (usually 30 or 45 days). Transactions for imports of motor vehicles and of certain capital goods worth less than US\$ 200,000 require authorization 180 days in advance. Capital goods imports worth more than US\$ 200,000 even require a 360-day advance period.<sup>13</sup>

Such an advance authorization period can turn into serious barriers to import in some sectors.

### Bolivarian Republic of Venezuela

Specific quantitative restrictions apply to about 10 per cent of product lines in 2014, an increase from about 5 per cent in 2010/2011 (dark grey bar in figure 3). The respective restrictions affect 12 per cent of import value; up from about 6 per cent in 2010/2011. Sector-specific non-automatic licensing requirements have been in place for some time for hydrocarbons and their products, as well as vehicles and certain parts; since 2013 and 2014, also some animal and plant products, textiles, metals, minerals, petroleum and natural gas require licensing. Tariff-rate quotas apply to imports of oilseeds, corn, wheat, milk and dairy products, and sugar (see figure 4).

<sup>13</sup> Comunicación "A" 3473 de 09/II/03. Modified by Comunicaciones Nos. "A" 3523/02, 3594/02, 3846/02, 3811/02, 3859, of 7/I/03 and 4404 of 16/VIII/05; and Comunicación "A" 4372 of 23/VI/05. Modified by Comunicación "A" 4385 of 11/VII/05. Central Bank of Republic of Argentina. Summaries are available at: <http://consultawebv2.aladi.org/sicoexV2/layout/infoMnapdf.pdf?docId=3&cid=20719> (accessed 15 September 2015) and <http://consultawebv2.aladi.org/sicoexV2/layout/infoMnapdf.pdf?docId=4&cid=20719> (accessed 3 October 2015).

In addition to these product-specific restrictions, the Bolivarian Republic of Venezuela applies an almost horizontal licensing scheme that is related to currency controls. Due to shortages of foreign currency reserves, importers must apply to the Foreign Exchange Commission (Comisión de Administración de Divisas, CADIVI) to obtain foreign currency, particularly United States dollars. The allocation of foreign exchange is then linked to domestic production incentives.<sup>14</sup> For a long list of products, importers need to obtain a certificate of non-domestic production or a certificate of insufficient production to be able to import. A joint resolution issued by several ministries of the Bolivarian Republic of Venezuela in 2010 defines which products require a certificate, from which responsible ministry, and which exchange rate is applicable (see light grey bars in figure 3).<sup>15</sup> Some sensitive products, such as many food products and pharmaceuticals, are exempted from these requirements or can be temporarily exempted in case of domestic shortages.

Furthermore, the Bolivarian Republic of Venezuela applies price control measures (reference prices and price bands) to certain textile products and home electronics. Vehicle wheels and tyres, some alcoholic beverages, ceramics, locks and tyres are also subject to price controls if they originate from particular countries. MERCOSUR partners Argentina (wheels, tyres and alcoholic beverages) and Brazil (wheels, tyres and locks) are also affected by these price bands.

### Other non-tariff barriers

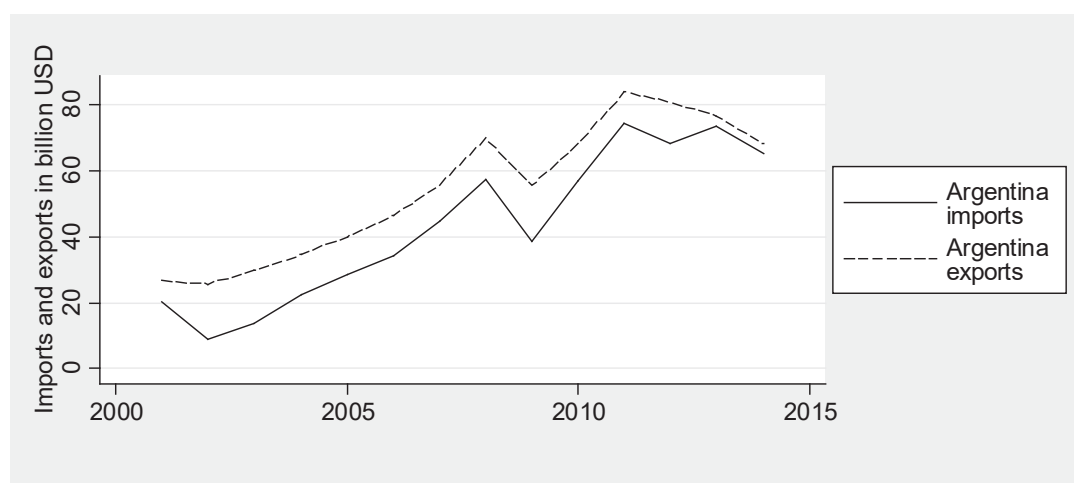
While the aforementioned barriers represent the bulk of trade-restrictive measures in MERCOSUR, anti-dumping measures should also be mentioned.

Anti-dumping duties are applied to protect domestic industries from foreign competition selling at unfairly low prices (dumping). Such measures are

<sup>14</sup> Resolutions DM/Nos. 2658, 26, 17, 019, 051, 048, 036 and 010 of 23 March 2010. Ministries of People's Power for Commerce, Basic Industries and Mining; Agriculture and Lands; Health; Energy and Petroleum; Science, Technology and Intermediate Industries; Nutrition; Planning and Finance. See <http://nt5000.aladi.org/mna/Venezuela/ResDMN%C2%BA2658-2010.pdf> (accessed 1 November 2015), and for a summary, <http://consultawebv2.aladi.org/sicoexV2/layout/infoMnapdf.pdf?docId=1&cid=111540> (accessed 1 November 2015).

<sup>15</sup> Ibid.

Figure 5. Development of Argentinian exports and imports



Source: UNCTAD calculations based on COMTRADE data.

applied against specific countries or even individual companies. Bown (2015) estimates that about 2 per cent of Argentina's and Brazil's import value is restricted through anti-dumping measures. Both countries mostly protect their economies from products originating from Europe, the United States, China and other Asian countries. Argentina also maintains a significant number of anti-dumping duties against Brazil (Bown, 2015). The Bolivarian Republic of Venezuela applies fewer anti-dumping measures, whereas Uruguay's and Paraguay's use of these measures is negligible.

### 3.3 PREVALENCE OF SPS MEASURES AND TBT IN MERCOSUR

The primary objectives of technical measures are the protection of human, animal and plant health, safety and the environment. Most developed and developing countries therefore apply such important regulations to a wide range of products, especially agricultural products, food and drugs.

Following WTO agreements, these measures should be science based and not restrict trade more than necessary. Most technical measures are also applied non-discriminatorily to both domestic and foreign producers. Nevertheless, research shows that, on aggregate, SPS measures and TBT are reducing trade and increasing prices more than any other group of NTMs. Since their objectives make them

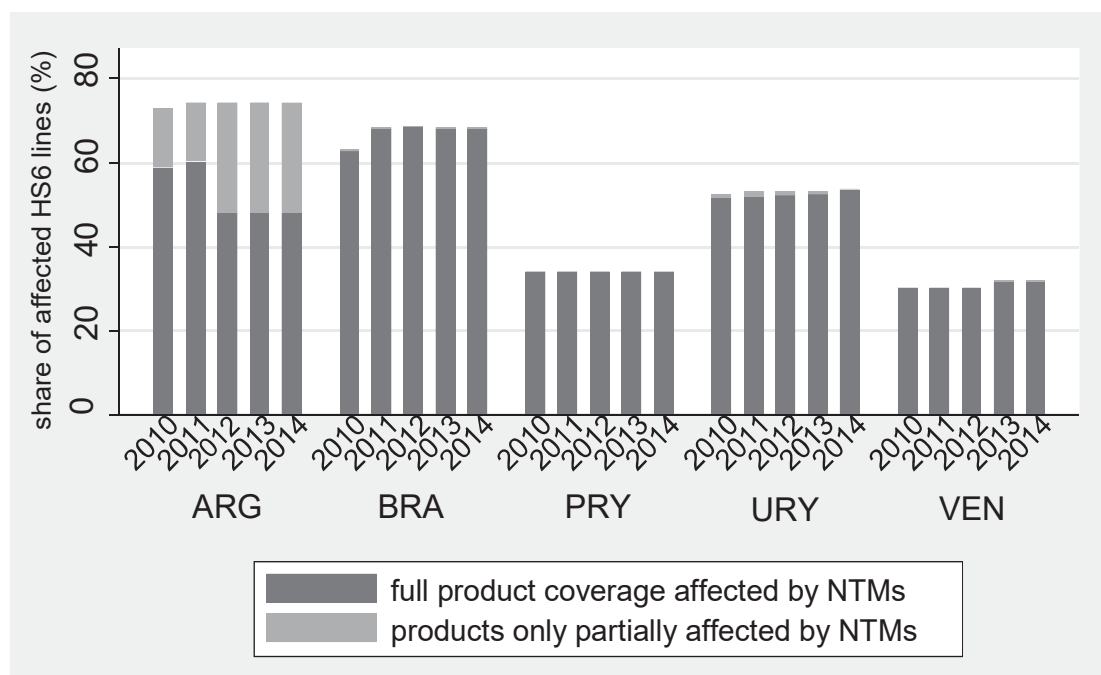
indispensable, elimination is not an option. Regulatory harmonization has been deemed the essential way forward and sections 0 and 5 of this report offer a view on the current state and impact in MERCOSUR. First, however, the report explores the prevalence of technical regulations across countries, sectors and types of measures.

Figure 6 shows the overall product coverage of technical measures in MERCOSUR. Unsurprisingly and like most middle- to high-income countries, MERCOSUR members apply measures to large shares of the product spectrum. The lowest coverages are observed in the Bolivarian Republic of Venezuela and Paraguay, where only about 30 to 35 per cent of products face one or more technical requirements. Uruguay regulates about 53 per cent of product lines; Brazil up to 68 per cent. Argentina's coverage share ranges between 48 and 73 per cent, with a substantial share of product lines only partially affected.<sup>16</sup>

Figure 6 also shows that the regulated product coverage is stable, with only minor changes over time.

<sup>16</sup> For example, products that are only partially affected are used vehicles. Several regulations impose technical requirements solely on used vehicles, not new ones. As the product classification (Harmonized System, 6 digits) does not distinguish between new and used vehicles, such cases are considered for the purpose of this report as only partially affected products.

Figure 6. Development of technical regulations in MERCOSUR



Source: Authors' calculations based on UNCTAD-ALADI NTM data.

Abbreviations: ARG, Argentina; BRA, Brazil; PRY, Paraguay; URY, Uruguay; VEN, Bolivarian Republic of Venezuela.

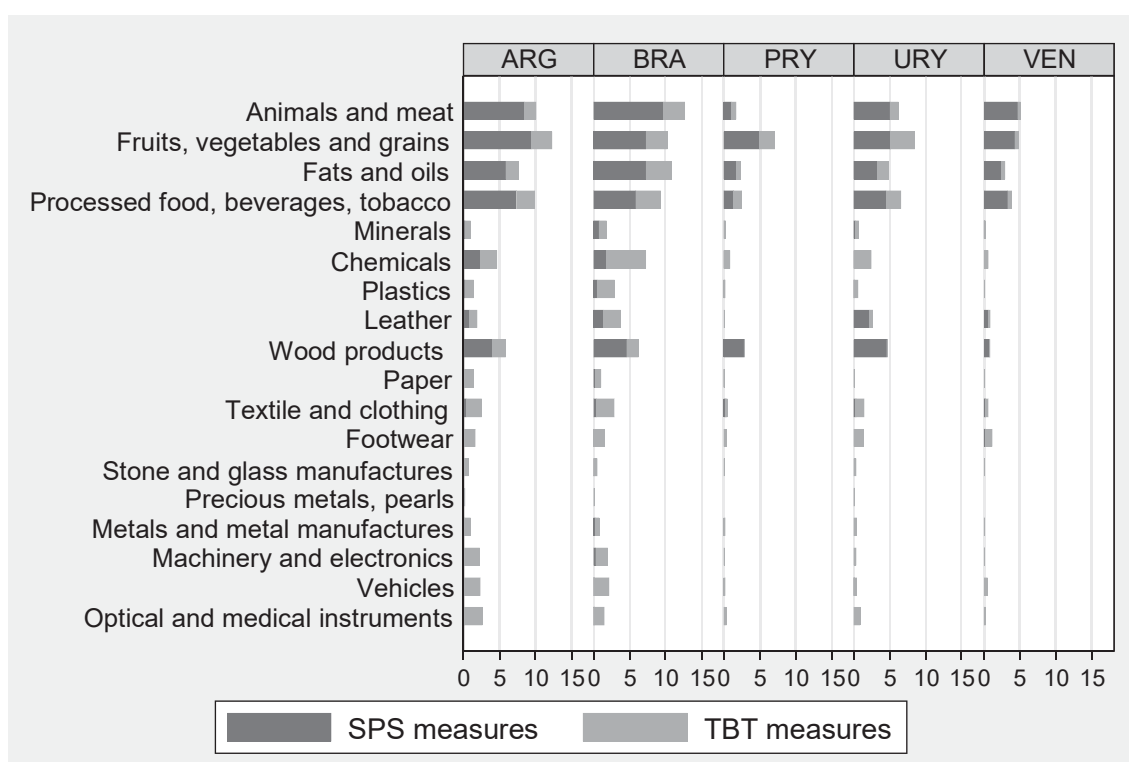
However, the mere existence and product coverage of technical measures is not very telling. Figure 7 therefore takes a second look at the number of SPS measures and TBT across sectors. SPS requirements and TBT comprise many different subtypes, as briefly outlined in section 2. The classification and data used in this report cover 34 different SPS measures and 24 distinct TBT measures. This provides an insight into the intensity of regulation by counting the number of distinct technical measures types per product. Figure 7 shows the respective averages per sector.

Like the overall product coverage, the number of distinct NTMs per product is highest in Brazil and Argentina. In sensitive food-related sectors, between 7 and more than 10 different types of measure are applied to each product. The respective figures across sectors are lower in Uruguay, followed by the Bolivarian Republic of Venezuela and Paraguay. The cross-sectoral patterns are similar in the five countries and to the rest of the world. Most technical measures are applied in agriculture-related sectors, where SPS measures are naturally dominant. Among these sectors, Paraguay's low level of regulation stands out most in animals and meats, fats and oils, processed food, beverages, tobacco and leather.

The important chemicals sector, which includes fertilizers and pharmaceuticals, is highly regulated in Argentina and Brazil, and least in Paraguay and the Bolivarian Republic of Venezuela. Most other manufacturing sectors are relatively moderate in technical regulation, except for Paraguay and the Bolivarian Republic of Venezuela, where regulation is minimal. Regulation tends to be higher in those sectors where the respective countries have a domestic industry. These include the vehicles and machinery sectors in Argentina and Brazil, and the clothing and footwear sectors in all five countries.

On the one hand, many technical measures are clear-cut conditions of how to produce or sell a product, for example, labelling or packaging requirements. Once these conditions are fulfilled, trade should be allowed. If these measures are transparent and reasonable, trade should not be restricted disproportionately.

On the other hand, certain types of measures and implementation mechanisms are more likely to have an impact as trade restrictions. Within the classifications used in this paper, outright prohibitions and discretionary measures, such as special import

**Figure 7. Number of distinct SPS and TBT measures, by sector and country (simple averages)**

Source: Authors' calculations based on UNCTAD-ALADI NTM data.

Abbreviations: ARG, Argentina; BRA, Brazil; PRY, Paraguay; URY, Uruguay; VEN, Bolivarian Republic of Venezuela.

authorizations and registration requirements, can be singled out. The latter types usually require extensive paper work, delays and a case-by-case decision of a government authority.

Figure 8 shows the coverage of these particular types of measure across sectors. The prevalence of discretionary technical measures is high. All products in the fruits, vegetables and grains sector require special import authorization or registration in all five countries. Argentina even prohibits imports of almost 70 per cent of products in this sector. Argentina, Brazil, Uruguay and the Bolivarian Republic of Venezuela also apply discretionary technical measures to all animals, meats, processed foods, beverages and tobacco products. The wood sector is also highly restricted in the original four MERCOSUR members.

Similarly to many other countries, products in the chemicals sector tend to require registration or special authorization. Only a few products in other manufacturing sectors are strictly regulated, with the notable exceptions of the vehicles sector in Argentina

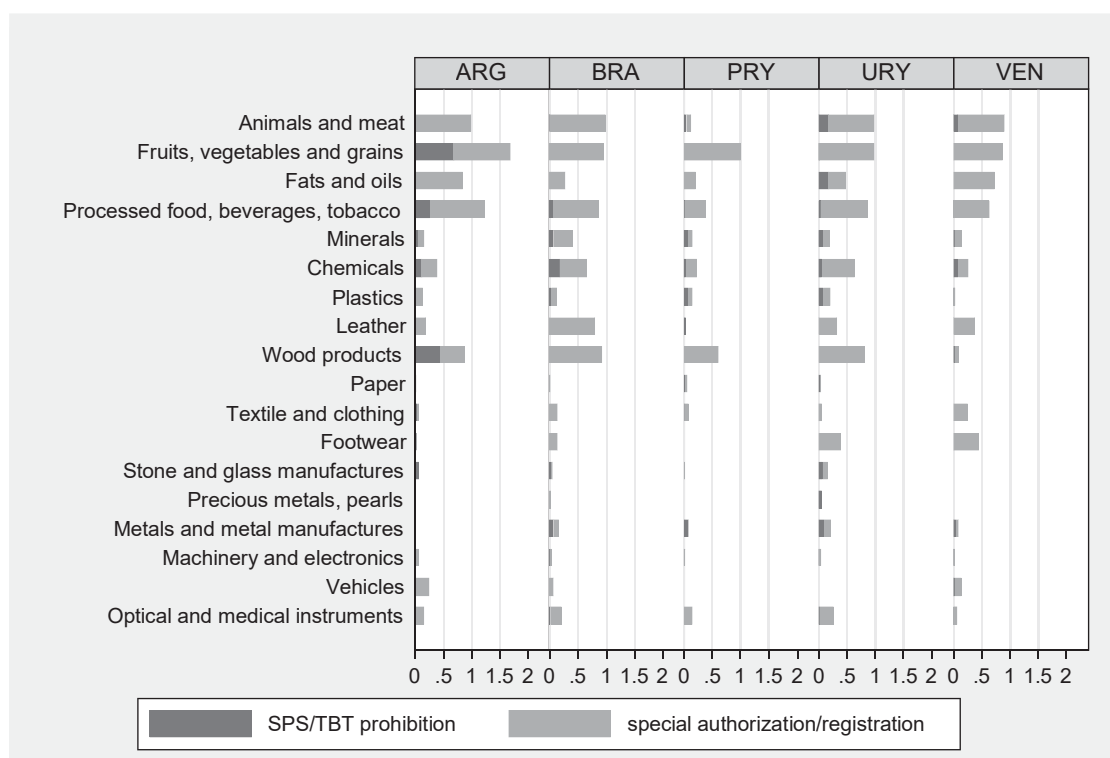
and the footwear sector in Uruguay and the Bolivarian Republic of Venezuela.

### 3.4 TRADE AND NON-TARIFF MEASURES IN THE VEHICLES SECTOR

The vehicles sector is the largest industrial export sector in the region. For Argentina, the sector represents 12.5 per cent of total exports, being only second to the soy export sector. Out of the total of about US\$ 8 billion, 80 per cent, or US\$ 6.6 billion, are destined for Brazil. Reciprocally, Argentina is Brazil's largest export market (54 per cent). Brazil's total exports in the sector amount to US\$ 10 billion, or 4.4 per cent of total exports. While Uruguay's exports in the sector are much smaller at US\$ 268 million and almost exclusively go to Brazil and Argentina, they still account for 3 per cent of total exports. Today, exports from the Bolivarian Republic of Venezuela and Paraguay in the sector are negligible.<sup>17</sup>

<sup>17</sup> See table 9 in the annex for an overview of aggregate export and import figures.

**Figure 8. Prohibitions and discretionary SPS and TBT measures, by sector and country**



Source: Authors' calculations based on UNCTAD-ALADI NTM data.

Note: This figure only refers to product lines that are fully affected by the respective measures; figure 27 in the annex also includes partially affected product lines.

Abbreviations: ARG, Argentina; BRA, Brazil; PRY, Paraguay; URY, Uruguay; VEN, Bolivarian Republic of Venezuela.

After vehicle exports mostly stagnated between 2010 and 2013, the 2013–2014 period saw them shrink substantially. Argentina's exports dropped by 17 per cent in a year. At the same time, however, Argentina's imports also diminished even more rapidly, by 37 per cent. This, in turn, meant a 41 per cent collapse of Brazil's exports to Argentina, and a 30 per cent drop in Brazil's total vehicle exports. These developments saw Argentina's sector-specific trade balance go from a deficit of US\$ 4 billion in 2013 to only 0.4 billion in 2014. In intra-MERCOSUR trade, Argentina now even trades a sectoral surplus of US\$ 1.3 billion. Under these circumstances, Uruguay has weathered the crisis relatively well and maintains an 8 per cent export growth average over the 2010–2014 period, despite a loss of 6 per cent in 2013/2014. While the Bolivarian Republic of Venezuela used to be a major exporter of cars, trucks and vehicle parts, production and exports have collapsed dramatically over the last decade. In 2007, exports in the vehicles sectors stood at about US\$ 300 million; in 2013, the figure was only US\$ 4 million.

Macroeconomic factors and exchange rates in Argentina, Brazil and the Bolivarian Republic of Venezuela can explain the large changes in production and trade.<sup>18</sup> However, trade policy is likely to have played a substantial role in these developments.

Within the region, the automotive sector has been excluded from MERCOSUR free trade agreements since its inception. Since 2001, so-called flex ratios have governed bilateral trade between Argentina and Brazil. The recently revised and agreed flex ratio of 1.5 implies that duty-free sectoral exports from Argentina to Brazil will be 1.5 times higher than flows from Brazil to Argentina. Exceeding that ratio, full most-favourite nation duties are to be paid. This is

<sup>18</sup> In particular, monetary policy and respective exchange rate fluctuations. Brazil interest rates: <http://www.bcb.gov.br/?INTEREST>; Argentina interest rates: <http://data.worldbank.org/indicator/FR.INR.LEND> and <http://www.bcra.gov.ar/pdfs/Comytextord/B11036.pdf> (accessed 17 August 2015).

the lowest ever flex ratio between the two countries.<sup>19</sup> Relying heavily on imported car parts from Brazil, Argentina risks further bottlenecks in the domestic car industry. Figure 9 shows that 44 per cent of Argentina's imports of vehicle parts (HS 8708) originate from Brazil.

In 2014, major vehicle exporters of the European Union, Japan and the United States saw their exports to Argentina drop by 52, 33 and 31 per cent, respectively. In earlier complaints against Argentina at WTO, the three exporters blamed DJAI and related requirements for difficulties in exporting to Argentina (see section 3.2). While these requirements exist since 2011/2012 and were formally removed in December 2015, it is possible that DJAI and foreign exchange approvals (180 days advance authorization required; see section 3.2) were granted less during the 2014 period. The same restrictions applied to MERCOSUR partners. In fact, Uruguay's vehicle exports have changed profoundly: while Argentina used to be the much larger export market before 2011, four times more exports went to Brazil than to Argentina in 2014.

Figure 9 shows the trade flows of the most important vehicle subsectors and figure 10 the respective NTMs.

Beyond the aforementioned DJAI and foreign exchange controls, Argentina requires certification and compliance of performance requirements including safety and emissions for all vehicles subsectors (other technical measures, figure 10). In addition, registration with and authorization from the National Industry Directorate (DNI) and the National Institute for Industrial Technology (INTI) are required.<sup>20</sup>

For most vehicles, Brazil, Uruguay and the Bolivarian Republic of Venezuela require a licence from the Secretariat of Foreign Trade (SECEX, Brazil), the National Industry Directorate (DNI, Uruguay) and the Ministry of People's Power for Industry and Commerce, respectively.<sup>21</sup> The latter non-automatic licence in the Bolivarian Republic of Venezuela is not applied to vehicle parts, where a certificate of insufficient domestic production is required.

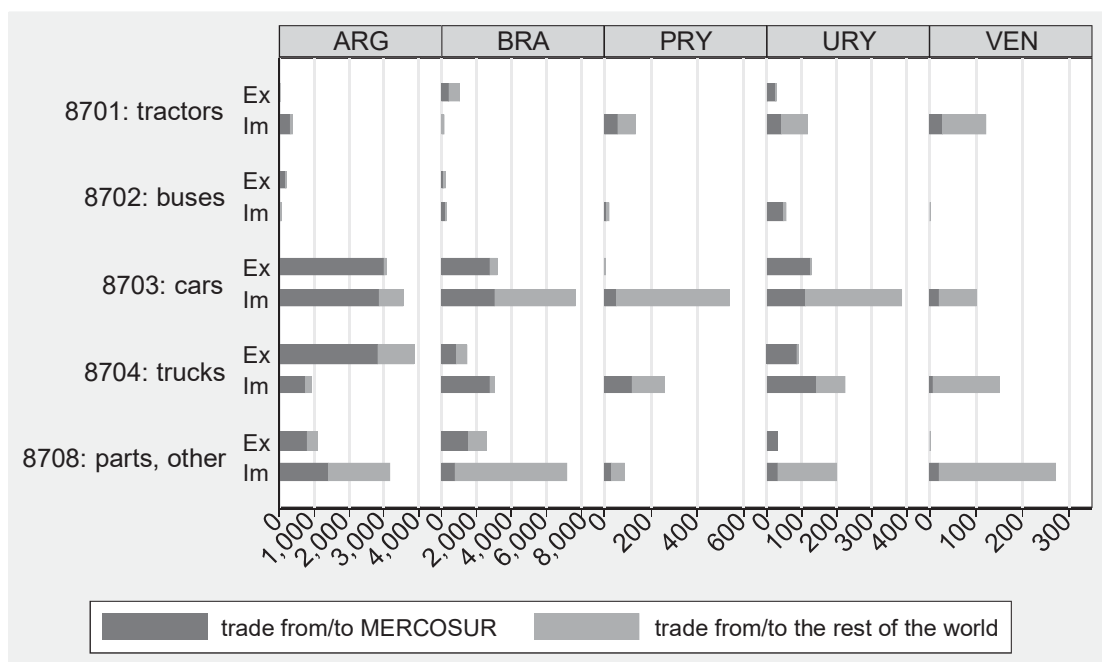
Like Argentina, Brazil requires certain safety and emission standards and their respective certification. Uruguay and the Bolivarian Republic of Venezuela primarily regulate emission standards. Paraguay applies minimal technical regulation and no other restrictions to road vehicles.

It is clear that the vehicle-producing countries restrict their markets most. In addition, all countries strictly regulate or prohibit the import of used vehicles.

<sup>19</sup> IADB, 2015, "Prórroga del acuerdo automotor Argentina-Brasil. Available at <http://www10.iadb.org/intal/cartamensual/cartas/Articulo.aspx?id=7e6d1f57-b48f-4469-bc21-4ac4dfbf03aa&lang=es> (accessed 17 August 2015); and "Acuerdo de Complementación Económica N° 14 suscrito entre la República Argentina y La República Federativa del Brasil": [http://www.aladi.org/biblioteca/publicaciones/aladi/acuerdos/ace/es/ace14/ACE\\_014\\_041.pdf](http://www.aladi.org/biblioteca/publicaciones/aladi/acuerdos/ace/es/ace14/ACE_014_041.pdf) (accessed 15 September 2015).

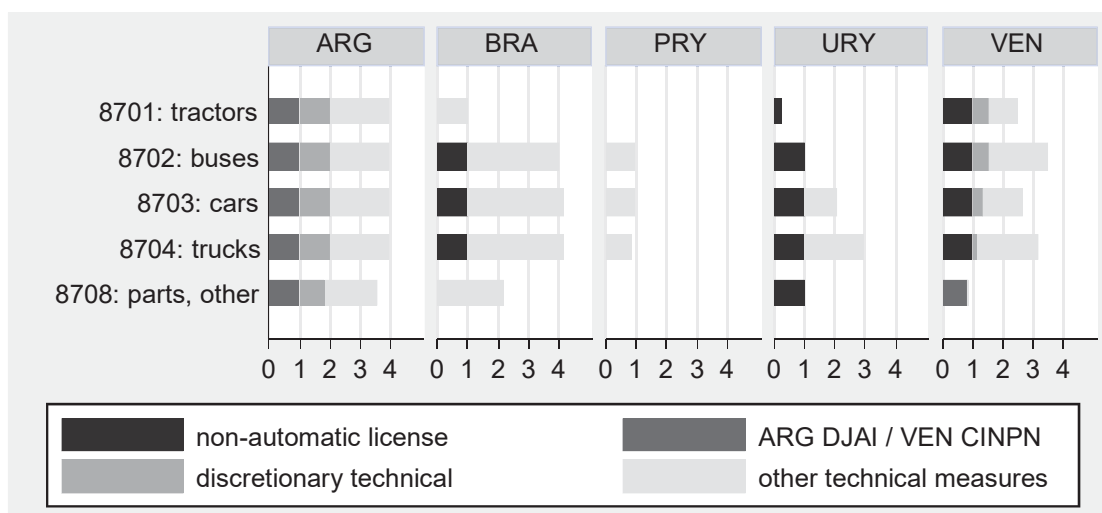
<sup>20</sup> See discretionary technical measures in figure 10. For information about the authorization, see <http://www.industria.gob.ar/lcm/tramites/> (accessed 19 August 2015).

<sup>21</sup> Brazil Circular No. 40 of 29 October 1998, available at <http://consultawebv2.aladi.org/sicoexV2/layout/infoMnapdf.pdf?docId=1&cid=22584> and Uruguay Decree No. 727/991 of 21 September 2011, available at: [http://www.aduanas.gub.uy/innovaportal/v/7596/3/innova.front/decreto\\_nC2B0727\\_991.html](http://www.aduanas.gub.uy/innovaportal/v/7596/3/innova.front/decreto_nC2B0727_991.html) (accessed 15 September 2015).

**Figure 9. Exports and imports of largest vehicle subsectors, by country, 2014 (in US\$ million)**


Source: Authors' calculations based on COMTRADE data.

Note: Statistics are for 2014, except for the Bolivarian Republic of Venezuela, the latest available trade data were that of 2013. Abbreviations: ARG, Argentina; BRA, Brazil; PRY, Paraguay; URY, Uruguay; VEN, Bolivarian Republic of Venezuela; Ex, Exports; Im, Imports.

**Figure 10. Non-tariff measures applied across vehicle subsectors (simple averages), by country**


Source: Authors' calculations based on UNCTAD-ALADI NTM data.

Note: Measures on used vehicles are not included.

Abbreviations: ARG, Argentina; ARG DJAI, Advance Sworn Import Declaration (Argentina); BRA, Brazil; PRY, Paraguay; URY, Uruguay; VEN, Bolivarian Republic of Venezuela; VEN CINPN, Certificate of Non-Domestic Production or of Insufficient Production (Bolivarian Republic of Venezuela).



## 4. ASSESSING REGULATORY DISTANCE IN MERCOSUR

### 4.1 INTRODUCING THE COMPLEXITY AND DIMENSIONS OF REGULATORY CONVERGENCE

Recognizing the necessity of SPS measures and TBT to protect health, safety and environment entails that such NTMs need to be harmonized rather than eliminated. However, due to the complexity of these measures, it is extremely difficult to assess the current level and impact of regulatory convergence or divergence. The following will introduce a range of perspectives from micro-level analysis about specific measures and products to the authors' proposal to measure broader sector- and country-wide structural regulatory distance.

Many researchers have investigated the impact of very specific requirements applied to specific products, and they have found some compelling cases. For example, Wilson et al. (2003) examine the impact of residue limits of tetracycline (an antibiotic) in beef. They find that beef imports are significantly lower for importing countries that have a more stringent residue limit. They estimate that regulatory convergence towards the international standard set by

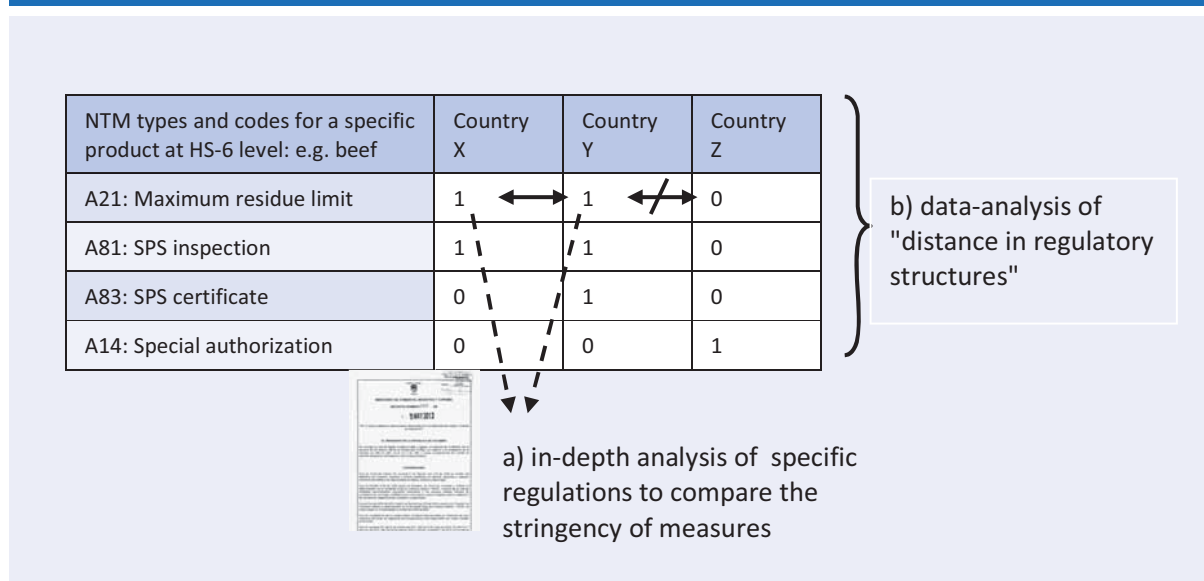
the Codex Alimentarius would increase international trade of beef by about US\$ 3.2 billion.

However, even for a single product, there are usually many more requirements. Figure 11 helps to visualize the dimensions and complexity of regulatory convergence. The figure illustrates a few NTMs applied to a specific product across three countries.

Consider the previous example of tolerance limits of residuals of antibiotics in beef, assuming that countries X and Y apply such NTMs, and country Z does not. In the UNCTAD-MAST classification, these measures would be classified as NTM code A21 for tolerance limits for residues of or contamination by certain substances (see section 2). The regulatory pattern across the three countries is summarized in figure 11, row 1.

However, within the same NTM type for beef, the residuals of dozens of other substances may be regulated. The regulated substances and the stringency for each substance tend to vary across countries. It takes an enormous amount of in-depth analysis of specific regulations to compare the stringency of measures – just for a single product and type of measure. There is great merit in conducting this type of analysis for high-priority products and measures. However, detailed studies cannot be produced in sufficient quantity and product and measure coverage to get a big enough picture to

Figure 11. Example of NTM data mapping with respect to regulatory distance



Source: Authors' illustration.

compare the wider regulatory convergence across sectors and countries.

Furthermore, many other types of NTMs apply to a single product. As shown in figure 7, there are about 10 different SPS and TBT types of measure (according to the UNCTAD–MAST classification) applied to each meat product in Argentina or Brazil. For a specific beef product, there may be SPS requirements regarding inspection, certification, labelling, packaging, and hygienic and transport conditions; or a quantitative restriction in the shape of non-automatic licences. A few examples are shown in the other rows of figure 11.

In the next subsection a concept is introduced that makes use of the structure visualized in figure 11, providing the possibility of a wider sectoral- and country-level perspective on regulatory convergence.

#### **4.2 A WIDER APPROACH: MEASURING THE DISTANCE IN REGULATORY STRUCTURES**

The overall table in figure 11 shows a pattern of NTMs across countries that allows taking a more structural approach to regulatory convergence. The following method of summarizing and evaluating these structural patterns in UNCTAD NTM data was first introduced by UNCTAD in Cadot et al. (2015). This method is called distance in regulatory structures, or simply regulatory distance.

The basic concept is quickly understood with the help of figure 11. In the example, countries X and Y both apply maximum residue limits (MRL) of certain substances to the product. Both also use an inspection as a conformity assessment procedure for the MRL. So far, the regulatory structure would appear to be similar. In other words, the regulatory distance is short. However, country Y also requires an SPS certification procedure as an additional conformity assessment. With this third measure, the regulatory distance between countries X and Y increases slightly. Finally, country Z regulates imports with a different regulatory approach and applies a special authorization. This type of discretionary restriction differs substantially from the more specific and transparent product criteria that countries X and Y use to regulate the import of the product. Therefore, the regulatory distance between country Z and countries X and Y is large.

The example focuses on a single product and compares three countries, but the method makes

it possible to see the bigger picture as well. The respective average regulatory distance can easily be aggregated to the sector level or across all goods; and comparisons can be made between any number of countries.

This perspective is only feasible thanks to a key feature of the international NTM data collection effort led by UNCTAD: boxing the almost limitless variations of NTMs into the 178 distinct types of measure according to the UNCTAD–MAST classification. While not comparing the full complexities of specific NTMs, these boxes allow for a structural analysis. For each product, the table presented in figure 11 would actually present 178 rows for each type of NTM and a column for each country. These data are provided for each of the roughly 5,200 distinct products classified in the Harmonized System (HS 6-digit) for all MERCOSUR members and some key trading partners and across the years 2011 to 2014.

Formally, the distance in regulatory structures can be expressed and aggregated as follows:

The specific type ( $l$ ) of NTM applied by an importing country ( $i$ ) to a specific product ( $k$ ) coming from an exporting country ( $j$ ) in a given year ( $t$ ) is defined as a dummy variable:<sup>22</sup>

$$n_{ijkt}^l = \begin{cases} 1, & \text{if country } i \text{ applies NTM type } l \\ & \text{to product } k \text{ from origin } j \text{ in year } t \\ 0, & \text{if no such NTM is applied} \end{cases}$$

The regulatory distance (RD) between two countries  $i$  and  $j$  for the same type of NTM, product and year is therefore:

$$RD_{ijkt}^l = |n_{ijkt}^l - n_{jikt}^l|, \text{ for } i \neq j$$

If both countries apply the same measure, the regulatory distance is 0; if not, the equation yields 1. To analyse regulatory patterns, it has to be aggregated across measures and products. The overall regulatory distance between countries  $i$  and  $j$ , across all products and types of measure in a given year, is thus:

<sup>22</sup> It is feasible that an importer applies several different regulations that are classified under the same NTM code (for example, two different certificates – a health certificate and a veterinary certificate). In such cases, still only a ‘1’ is counted for this importer-product-NTM combination.

$$RD_{ij,t} = \frac{1}{LK} \sum_l^L \sum_k^K |n_{ijkt}^l - n_{jikt}^l|$$

where  $L$  is the number of different types of NTM aggregated, and  $K$  the number of different products over which the average is built. Instead of aggregating across all types of measure and products, it is possible to focus on just technical measures and specific product sectors.<sup>23</sup>

In the following subsection, the methodology is applied to MERCOSUR to illustrate the current state of distance in regulatory structures in comparison with other countries.

### 4.3 REGULATORY DISTANCE IN MERCOSUR

Beyond NTM data for MERCOSUR, the data are also available for the rest of the ALADI region as well as the European Union and United States (only 2014). The following analysis benefits from including all of these countries to provide a more comparative perspective.

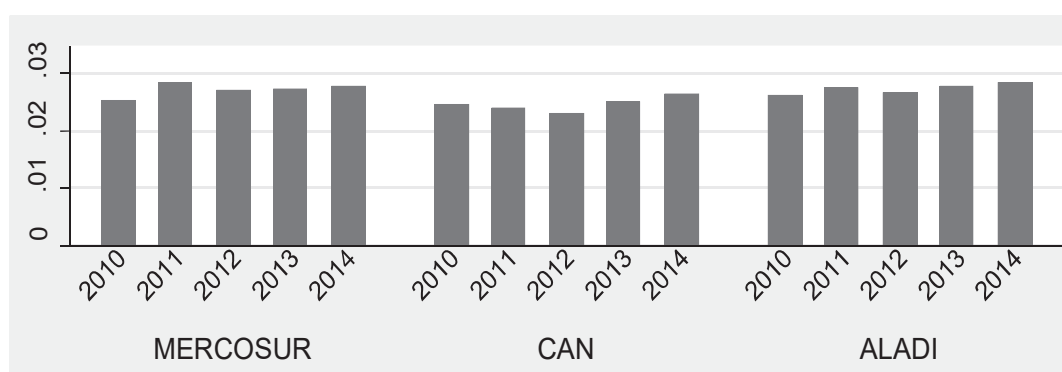
The scope of using the regulatory distance measure is most appropriate with respect to technical, sanitary and phytosanitary regulations. The logic of regulatory convergence and harmonization applies only to technical measures. Outright barriers could

be reduced or eliminated, but not harmonized. In the following, we therefore focus on the regulatory distance of technical measures.

Figure 12 shows the development of average bilateral regulatory distance between members of MERCOSUR, the Andean Community (CAN) and the entire ALADI group.<sup>24</sup> Longer bars imply greater structural regulatory distance (divergence). The results are less than encouraging. First, the overall depth of structural NTM convergence in MERCOSUR is not notably different from the entire ALADI group. The CAN exhibits a slightly lower regulatory distance. Over the last five years, no clear trend of decreasing or increasing regulatory distance can be observed in any of the regions.

Comparing intra-MERCOSUR regulatory distance across sectors in figure 13, two patterns stand out. Firstly, regulatory distance is particularly high in those sectors that are already heavily regulated (see figure 7 and figure 8): agriculture-based sectors including leather and woods, and chemicals. Conversely, extractive sectors, such as minerals and metals, tend to be consistently less regulated by all countries – therefore regulatory distance is also low. Secondly, regulatory distance is also slightly higher for products that are produced in the region. These sectors overlap with the highly regulated agri-food sectors, but additionally include clothing and footwear, vehicles and machinery.

**Figure 12. Development of regional regulatory distance in MERCOSUR, CAN and ALADI (only technical measures)**

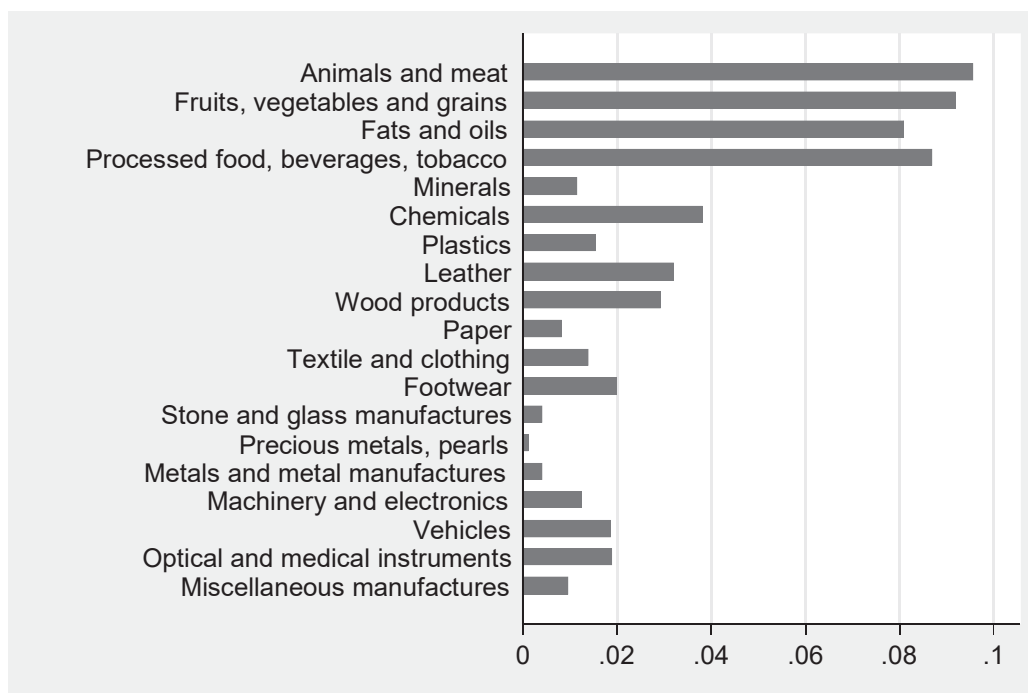


Source: Authors' calculations based on UNCTAD-ALADI NTM data.

<sup>23</sup> Figure 29 and figure 30 show the distribution of the regulatory distance measure in the sample, separating the agri-food sector and the manufacturing sector.

<sup>24</sup> The figure includes MERCOSUR and CAN in ALADI. Data for the following countries in ALADI are available: Argentina, the Plurinational State of Bolivia, Brazil, Chile, Colombia, Cuba, Ecuador, Mexico, Peru, Paraguay, Uruguay and the Bolivarian Republic of Venezuela.

**Figure 13. Average regional regulatory distance across sectors (technical measures, simple averages)**



Source: Authors' calculations based on UNCTAD-ALADI NTM data.

A special statistical technique called multidimensional scaling also lets us visualize all bilateral regulatory distances between the countries in our sample. Essentially, the aggregation method described in section 4.2 yields a single figure for the regulatory distance between each pair of countries. Figure 14 then plots all of these distances onto a two-dimensional graph with the best possible fit. The distance between two country points in the graph therefore reproduces the calculated regulatory distance measure. The graphs are best understood as maps, where distances between country points imply regulatory distances rather than geographical distance.

It is important to point out that there is no more or less regulation in these graphs, only relative positions of similarity. The absolute position towards the left, right, top or bottom of a graph therefore has no significance.<sup>25</sup> However, the United States and the

European Union may be taken as reference points for high levels of regulation. Paraguay represents a reference for a rather low level of NTM prevalence, as we have seen in section 3.

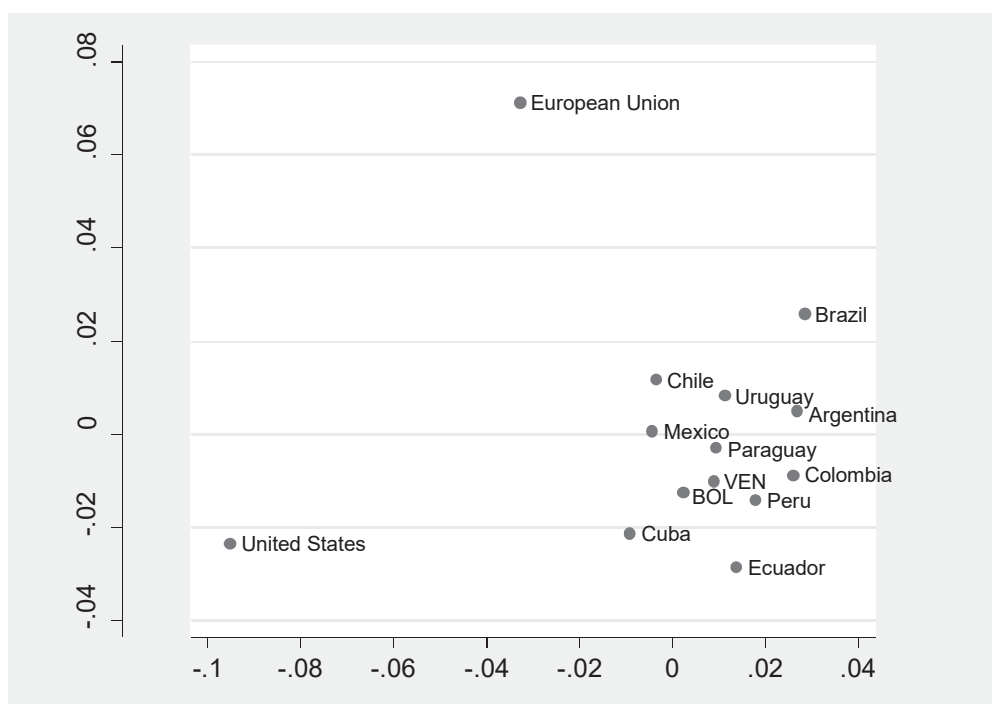
Figure 14 shows regulatory distances for the aggregate of all sectors and for technical measures. The most striking observation is the huge regulatory distance between the Latin American markets as a group, the European Union and the United States. The latter two are highly regulated, but in very different ways.<sup>26</sup> The Transatlantic Trade and Investment partnership between them aims to reduce this gap. Still, the existing divergence illustrates the astonishing level of distinctiveness of regulatory patterns between such highly developed industrial markets.

Focusing on MERCOSUR members, it is notable that Brazil is the most distant from the other four members. More similarity with Argentina may be

<sup>25</sup> The centre of the graph at coordinates (0;0) represents the point that is closest to the average of countries of the sample. With a limited set of countries in the sample, this point also has little significance. The axis scales are relevant when comparing across different graphs, as they do relate to the absolute values of regulatory distance.

<sup>26</sup> While this observation may fully reflect the regulatory reality of these markets, it should be mentioned that the data collection process in these two markets has also differed. This is due to the distinct ways in which regulations are published. Within ALADI, however, the approach and process is highly consistent.

Figure 14. Bilateral regulatory distances (only technical measures), all sectors



Source: Authors' calculations based on UNCTAD-ALADI NTM data.

Abbreviations: BOL, Plurinational State of Bolivia (the); VEN, Bolivarian Republic of Venezuela.

expected when simply looking at the overall high level of technical regulation shown in figure 6 and figure 7. This, in fact, highlights the different perspective that the regulatory distance method provides. We also see Paraguay, Uruguay and the Bolivarian Republic of Venezuela are also more similar to the rest of Latin American markets, whereas Brazil and Argentina find themselves at the margins of the group.

Considering the discussions about a trade agreement between the MERCOSUR block and the European Union, the regulatory distance to overcome is immense, that is, if convergence of SPS measures and TBT is foreseen. In relative terms, the existing regulatory structure of the European Union is slightly closer to Brazil and Uruguay than to Argentina, Paraguay and the Bolivarian Republic of Venezuela.

In this context, the large distance between the United States and the European Union exhibits the possible polarization that other countries and regions face when envisaging trade agreements with either of these giants. However, while increasing numbers of modern trade agreements include provisions on SPS and TBT harmonization, the reality on the ground may

not follow at the same pace. For example, in figure 14, the regulatory distance between the members of the North American Free Trade Agreement (NAFTA), Mexico and the United States, remains large. NAFTA does have provisions on SPS- and TBT-related collaboration, but does not envisage full harmonization and gives every member full freedom to impose the measures they see fit.

Figure 15 provides a breakdown of the overall aggregate and examine the agricultural sector. While the overall regulatory distances increase (figure 13), the general patterns remain similar. The disparity between Argentina and Brazil becomes even more visible; Uruguay and Paraguay find themselves in the middle; and the Bolivarian Republic of Venezuela more divergent from Brazil's regulatory policies. While Argentina and Brazil both remain significantly outside the group of other Latin American countries, Brazil appears relatively closer to the European Union.

Figure 16 now shows the regulatory distance in the manufacturing sector. While overall patterns stay similar, the level of technical regulation of industrial products in Latin America is significantly lower than

in agriculture. This common feature lets the regulatory distance shrink as well. By contrast, the United States and the European Union, as major producers of industrial goods, regulate their markets differently. Between these extremes are the relatively more developed industries in Argentina, Brazil and Uruguay, as well as Chile and Mexico. Their regulatory patterns distinguish themselves from those Latin American countries whose economies rely more on agriculture and extractive industries, for example Paraguay and the Bolivarian Republic of Venezuela.

While the above graphs provided an overview at the country or sector level, the impact analysis in section 5 will make use of the UNCTAD data at the fine-grained product level (6-digits with 5,200 products).

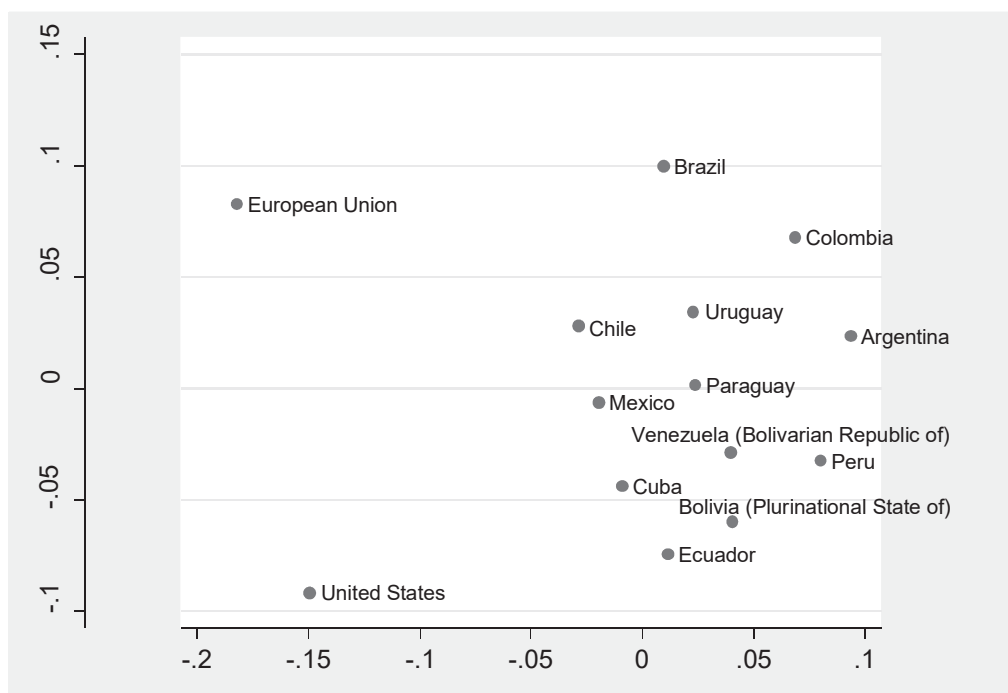
#### 4.4 WHO HAS TO TRAVEL MORE OF THE REGULATORY DISTANCE? LOOKING AT REGULATORY OVERLAP

The regulatory distance expresses how different regulatory structures are between two countries (with respect to technical measures). However, bridging the distance between two countries in figure 15 or 16 is not equally difficult for the two countries.

Take the regulatory distance between Paraguay and Brazil in the agricultural sector in figure 15. As seen in figure 7 in section 3.3, Brazil applies more technical measures than Paraguay. The intuitive hypothesis is that it is easier for Brazil to access the Paraguayan market than vice versa. Assuming that most SPS and TBT measures are applied in a non-discriminatory way to both domestic and foreign producers, a Brazilian producer has to comply with a multitude of domestic requirements. Exporting to Paraguay may then be less of an additional burden. By contrast, with fewer domestic regulations in Paraguay, a Paraguayan producer is likely to find it harder to upgrade the product for the Brazilian market.

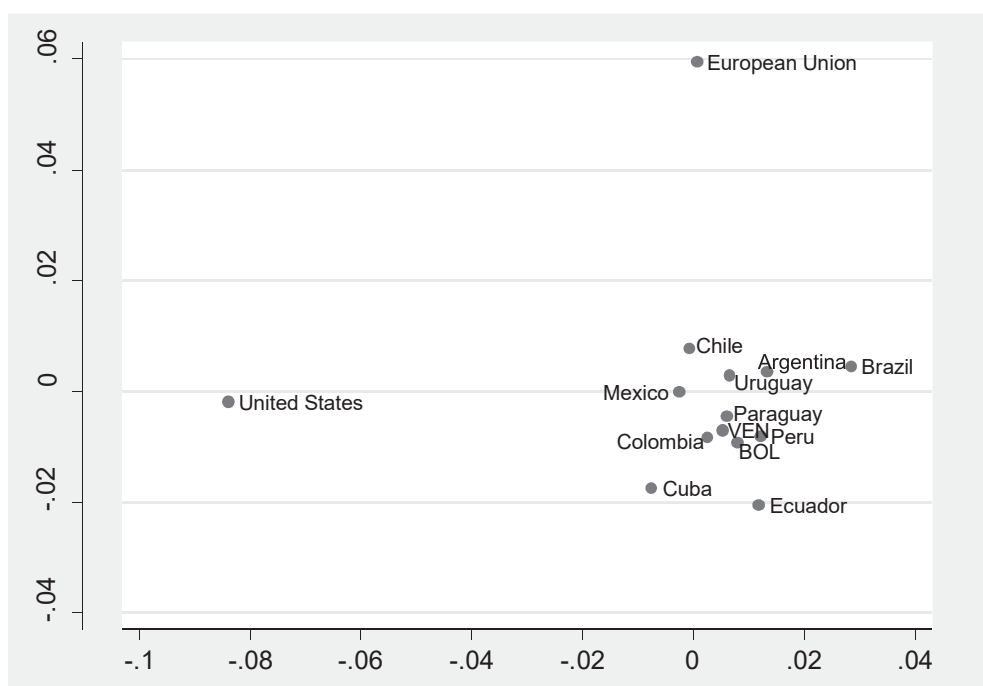
But it is not only about which country has more or less regulation. Their similarity matters particularly if countries have similar levels of regulatory intensity. France, Germany and the United States may have similar numbers of NTMs, but requirements between France and Germany are harmonized through the European Union. For a French producer, exports to Germany therefore hardly imply additional costs. In contrast, exports to the United States may be very costly.

Figure 15. Bilateral regulatory distances in agricultural sectors (only technical measures)



Source: Authors' calculations based on UNCTAD-ALADI NTM data.

Figure 16. Bilateral regulatory distances in the manufacturing sectors (only technical measures)



Source: Authors' calculations based on UNCTAD-ALADI NTM data.

Abbreviations: BOL, Plurinational State of Bolivia (the); VEN, Bolivarian Republic of Venezuela.

Both dimensions matter. The regulatory overlap measure is therefore introduced below. It expresses the share of the importer's NTMs that the exporter is already dealing with at a domestic level.

Again building upon the disaggregated data of NTMs at the product level, table 2 serves best to explain the measure. The table refers to the calculation of the regulatory overlap for a specific product. The left pane of the table shows six different types of technical NTMs. As indicated by a "1" in the respective fields, importer X applies five of these types of measure. Exporter Y applies two. Both importer and exporter require an SPS inspection for the given product. This can be considered a regulatory overlap from the perspective of exporter Y (as indicated by the arrow in the second row).<sup>27</sup> It can be assumed that a producer in country Y is used to domestic SPS inspections and therefore finds it less difficult to also comply with the inspection of importer X. However, there is no overlap regarding the other four measures that exporter Y needs to comply with when trading to importer X (as

indicated by the crossed arrows in the other rows). Furthermore, the special authorization (A14) measure applied by exporter Y (first row of the table) does not create additional regulatory overlap because this type of NTM is not applied by importer X. In summary, the table shows that the share of regulatory overlap for exporter Y is one out of the five measures that importer X applies, or 20 per cent.

If exporter Y wanted to increase the regulatory overlap through domestic reform (exporter Y\*), a simple scenario could be imagined. Exporter Y could replace the discretionary A14 special authorization by more transparent SPS certificate and maximum residue limit requirements. The total number of NTMs in exporter Y has only increased from two to three. However, now all three measures overlap with importer X. The share of regulatory overlap with importer X has tripled from 20 to 60 per cent.<sup>28</sup>

Certainly, details are particularly crucial with complex technical measures. SPS certificates,

<sup>27</sup> Following WTO principles of non-discrimination between domestic and foreign products, most measures applied as import-related NTMs should also be applied domestically for domestic producers.

<sup>28</sup> If country X was the exporter and country Y the importer, the regulatory overlap would also increase. From the perspective of country X as an exporter to country Y, the regulatory overlap went from 50 to 100 per cent.



Table 2. Example of NTM data mapping with respect to regulatory overlap

NTM types and codes for a specific product at HS-6 level: e.g. beef	Importer X	Exporter Y	Exporter Y* after reform
A14: Special authorization	0 ←/	1 -- →	0
A81: SPS inspection	1 ←	1	1
A33: SPS certificate	1 ←/	0 -- →	1
A21: Maximum residue limit	1 ←/	0 -- →	1
A63: Transport and storage requirements	1 ←/	0	0
A62: Animal-raising processes	1 ←/	0	0
<b>Total number of NTMs</b>	<b>5</b>	<b>2</b>	<b>3</b>
<b>Number of overlapping NTMs from perspective of Exporter Y</b>		<b>1</b>	<b>3</b>
<b>Share of regulatory overlap from perspective of Exporter Y</b>		<b>1 out of 5: 20 per cent</b>	<b>3 out of 5: 60 per cent</b>

Source: Authors' illustration.

inspections and maximum residue limits may vary substantially between two countries. The proposed regulatory overlap only delivers an approximation with respect to the similarity of regulatory structures and mechanisms. With thousands of products and many countries to compare, a more detailed comparison is not feasible.

Section 5 will show that a higher share of regulatory overlap, as measured by UNCTAD data, indeed reduces the burden of foreign NTMs.

Formally, the share of regulatory overlap is calculated as follows:<sup>29</sup>

$$RO_{ijkt} = \frac{\sum_l n_{ijkt}^l n_{jikt}^l}{\sum_l n_{ijkt}^l}$$

$$\text{where } n_{ijk}^l = \begin{cases} 1, & \text{if country } i \text{ applies NTM type } l \\ & \text{to product } k \text{ from origin } j \\ 0, & \text{if no such NTM is applied} \end{cases}$$

<sup>29</sup> The formula is not defined if the importer does not apply any NTMs. If the importer has no NTMs, the exporter cannot overlap with any particular regulations. In this case, the regulatory overlap is set to 1 (i.e. full overlap). This intuitively implies that an exporting company does not have to upgrade or change products (overcome a regulatory distance) when accessing the foreign market. If no NTMs are applied by the importer, this is the case for any domestic regulatory framework in the exporting country.

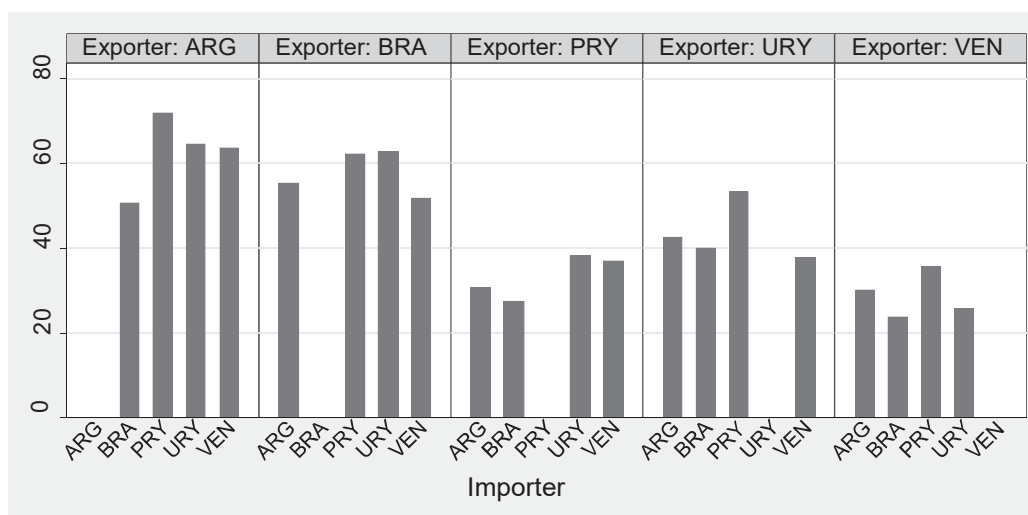
As shown in table 2, the calculated regulatory overlap (RO) indicates the share of NTM types applied by the importer that are also applied by the exporter. Figures 17 and 18 show the average regulatory overlap in agri-food sectors and in manufacturing, respectively.

Unlike the regulatory distance in previous subsections, the regulatory overlap is asymmetric. For instance, when Argentina exports agri-food products to Paraguay, the regulatory overlap is over 70 per cent (see figure 17). Over 70 per cent of Paraguay's technical import requirements are measures that Argentina also applies (presumably in a non-discriminatory way to domestic production and imports). Compliance with Paraguayan NTMs is therefore presumably less costly for Argentinian exporters. Vice versa, however, Paraguay's regulatory overlap with Argentina's import requirement is only about 30 per cent. For Paraguay, Argentinian import requirements therefore require substantial upgrading.

Figure 17 helps to illustrate two key determinants of the share of regulatory overlap in the agri-food sector.<sup>30</sup> First, as expected, if the exporting country has less technical NTMs than the importing country, then the share of regulatory overlap tends to be lower; and vice versa. For example, Paraguay applies few technical NTMs and therefore only has

<sup>30</sup> The overall distribution of the regulatory overlap measures is shown in figure 31 in the annex.

Figure 17. Share of regulatory overlap in the agricultural sector by exporter



Source: Authors' calculations based on UNCTAD-ALADI NTM data.

Abbreviations: ARG, Argentina; BRA, Brazil; PRY, Paraguay; URY, Uruguay; VEN, Bolivarian Republic of Venezuela.

lower levels of regulatory overlap with countries like Argentina and Brazil, which apply many NTMs to imports. Conversely, Argentina and Brazil tend to have higher levels of regulatory overlap when exporting to Paraguay.

Secondly, similarity of structures also matters. For example, Brazil exhibits a higher regulatory overlap with Uruguay than with the Bolivarian Republic of Venezuela – despite the latter applying less technical NTMs. Exports from Uruguay benefit from a higher regulatory overlap when destined for Argentina than for the Bolivarian Republic of Venezuela – again despite the former applying significantly more NTMs than the latter.

Figure 18 shows similar patterns for manufacturing sectors. However, overlap levels are generally significantly lower, as also observed in figure 16. Furthermore, the generally much lower number of technical NTMs in the manufacturing sector makes the structural indicators of regulatory distance and regulatory overlap less reliable. In order for the structural indicators to properly approximate regulatory convergence, a critical number of NTMs is necessary. With few NTMs, levels of stringency are more important and cannot be compared easily for a wide variety of products. see also section 5.2 for the implications on the respective econometric impact analysis.

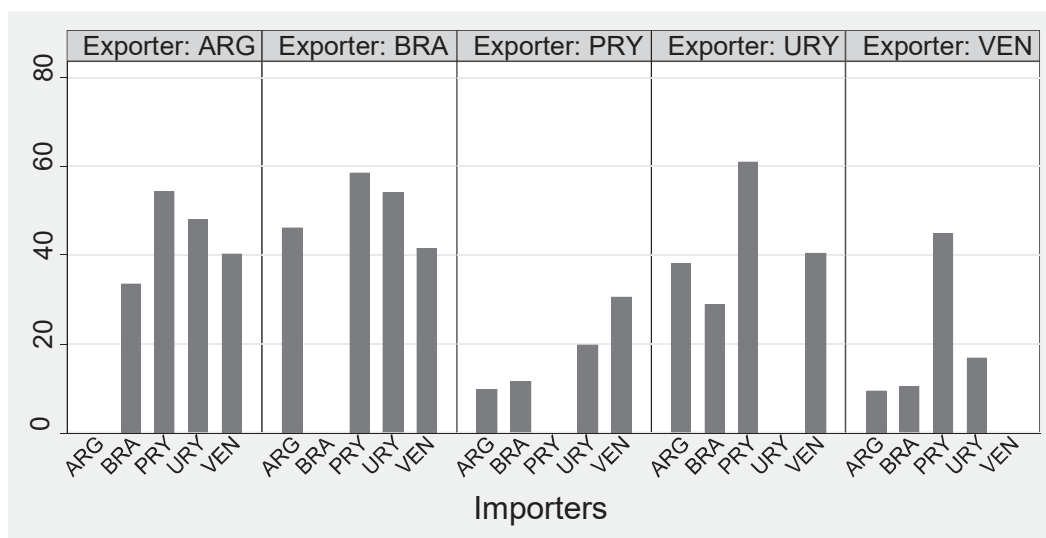
## 5. MEASURING THE IMPACT OF NTBs, NTMs AND REGULATORY DIVERGENCE

### 5.1 AN ANECDOTAL PRIMER ON THE IMPACT OF NTMs ON CONSUMERS

Technical measures and non-technical barriers alike reduce trade and tend to make products more expensive. This section will quantitatively estimate those impacts. To protect health and the environment, the impact of science-based technical measures should be justified to a large extent. An assessment is also made of the cost-reducing impact of regulatory convergence as an alternative to elimination. Traditional barriers as instruments of industrial policy aim to protect and develop domestic industries. While this may generate income and growth of the productive sector, it also entails higher consumer prices for the entire population. Restricting the import of intermediate goods may also have a negative impact on upstream industries in value chains.

Consumer prices depend on many factors such as domestic supply and demand, but also trade and therefore NTMs. Thus, while not presuming an exclusive causal link between prices and NTMs, an example of anecdotal evidence helps to illustrate the point.

Figure 18. Share of regulatory overlap in the manufacturing sectors



Source: Authors' calculations based on UNCTAD-ALADI NTM data.

Abbreviations: ARG, Argentina; BRA, Brazil; PRY, Paraguay; URY, Uruguay; VEN, Bolivarian Republic of Venezuela.

Figure 19 shows the consumer price development of cotton business shirts in chain stores in Buenos Aires, Rio de Janeiro, Asunción, Montevideo and Caracas. The five graphs show the price change since 2010 (index set to 100 in 2010). Since overall inflation is considerably different across the four countries, the dotted line in each graph shows the development of low-skilled wages as a reference point. If the consumer prices of a shirt rise faster than wages, the relative affordability of the product diminishes.

All five countries have domestic clothing industries, but are also dependent on imports and have negative trade balances in the sector. Clothing exports by all MERCOSUR members have stagnated over the last years and competition, particularly from China, is putting pressure on the industry.

Nevertheless, Uruguay has not enacted protective trade barriers to clothing imports. Consumers see the prices of business shirts remaining constant, while income increases. The product is becoming relatively cheaper. Paraguay, in contrast, has imposed a non-automatic licensing requirement in 2009. Since then, prices of business shirts have risen considerably faster than income.

Argentina does not apply restrictions specifically to clothing imports. However, as discussed earlier, it requires the DJAI procedure as well as an advance

authorization for foreign exchange outflows. Whether or not these requirements have a causal impact on steeply rising overall price levels,<sup>31</sup> (+228 per cent since 2010) – and clothing specifically – cannot be asserted at this point. Brazil is another interesting example. While there are no specific restrictions on clothing imports, a temporary reduction of cotton import tariffs in 2013 may have been a factor in falling shirt prices in the same year. This boost of cheaper inputs may have strengthened the domestic textile and clothing industry and driven down consumer prices.

In addition to the aforementioned controls of currency outflows (certificate of insufficient/no domestic production), the Bolivarian Republic of Venezuela has applied a reference price scheme to counteract cheap textile and clothing imports since 2005.<sup>32</sup> While price increases of shirts only began to outpace low-skilled labour wages in 2013–2014,

<sup>31</sup> The official INDEC consumer price index rose by 58 per cent between 2010 and 2014. Unofficial figures from StateStreet even suggest a plus of 162 per cent over the same period (available at <http://www.statestreet.com/ideas/pricestats.html>, accessed 10 June 2015). Our index of low-skilled labour wages grew by about 170 per cent.

<sup>32</sup> Resolution DM/No. 1590 and 377 DM of 12 January 2005; Ministry of Finance and Ministry of Production and Commerce. See summary at <http://consultawebv2.aladi.org/sicoexV2/layout/infoMnapdf.pdf?docId=3&cid=111540> (accessed 3 October 2016).

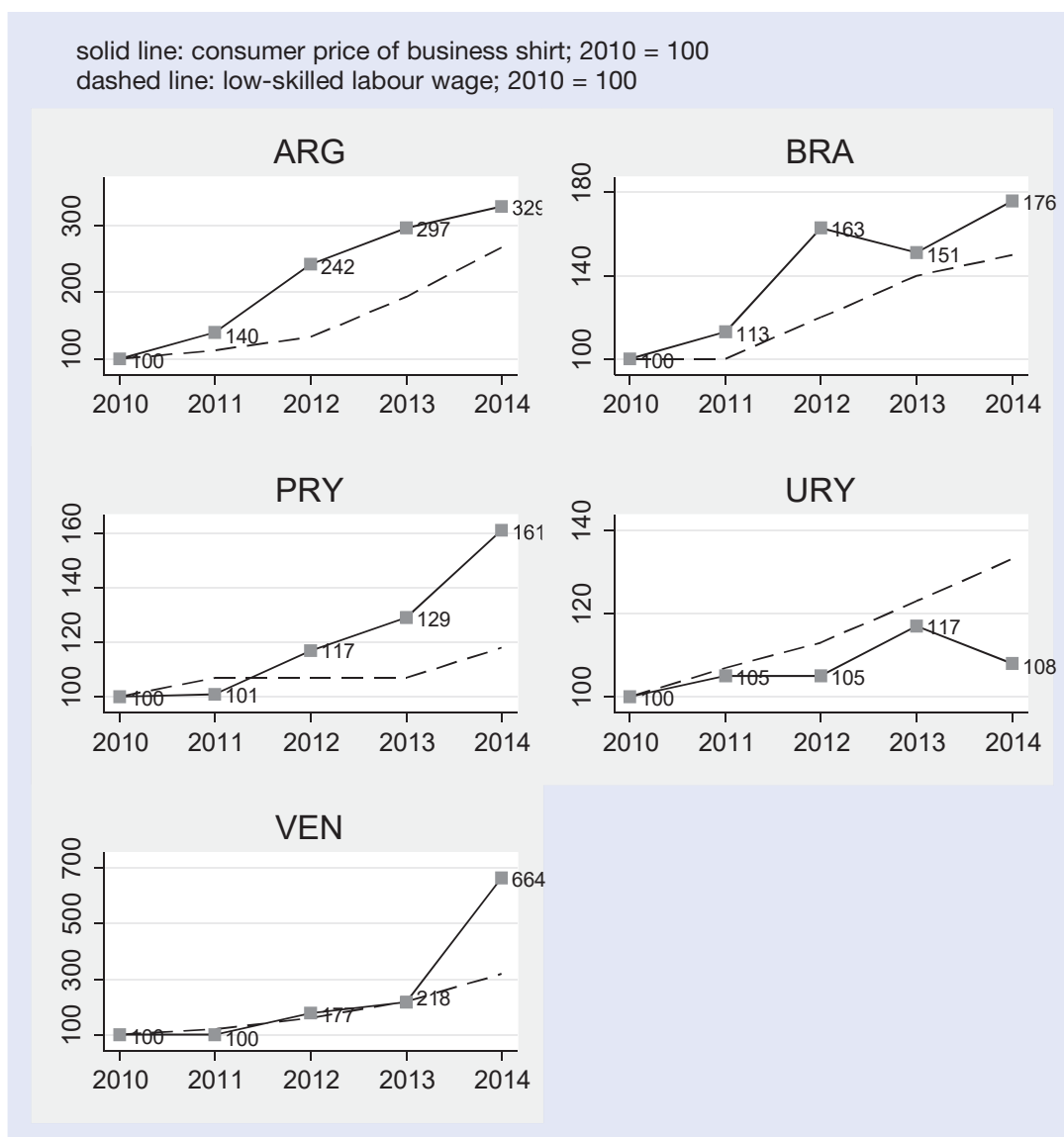
the struggling domestic clothing industry, combined with restrictive import policies, may have played an important part.

In sum, this anecdotal evidence suggests that NTMs plays a role for all consumers. The perspective of industrial policy and market access needs to be viewed in relation to the wider impact of these policies on the entire population. The following estimates of trade effects and ad valorem equivalents of NTMs should therefore also be seen through this wider lens.

### 5.2 ECONOMETRIC APPROACH TO ESTIMATING THE IMPACT OF NTBs, TECHNICAL MEASURES AND REGULATORY OVERLAP

From the anecdotal primer on the potential impact of NTMs, the following section estimates the actual average price effects of non-tariff barriers, technical measures and regulatory divergence. These price effects are referred to in this paper as ad valorem equivalents (AVEs).

**Figure 19. Consumer price development of business shirts**



Source: Authors' calculations based on Economist Intelligence Unit City Data.  
Abbreviations: ARG, Argentina; BRA, Brazil; PRY, Paraguay; URY, Uruguay; VEN, Bolivarian Republic of Venezuela.

When imposing a restriction, the price of the affected product will rise. When SPS or TBT measures are non-discriminatory as mandated by WTO rules, imported and domestically produced products both increase in price. Higher prices reduce demand, and therefore, also imported quantities. There are, thus, two common ways of estimating AVEs: through prices or through quantities.<sup>33</sup> In the following, a simple price-based method is proposed. It builds upon the approaches of Cadot et al. (2015) and Reyes and Kelleher (2015), but further develops them by including the regulatory overlap.

The basic intuition of the estimation is that product prices are “treated” by different types of NTMs as well as the regulatory overlap.

Since detailed and comparable consumer price data, as shown in section 5.1, is not available for a wide range of specific products, trade unit values are used for the estimations. Trade unit values have the advantage of being widely available at the product level (classified at HS 6 digits), and both exporter- and importer-specific. Cost-insurance-freight (c.i.f.) unit values are used instead of free-on-board (f.o.b.) values, as they are likely to capture more of the NTM-related costs. While unit values at the bilateral and product levels are known to be statistically noisy, this paper uses the dataset provided by Berthou and Emlinger (2011), which improves data quality significantly. The estimated effects are therefore ad valorem equivalents (AVEs) in terms of the impact on the final c.i.f. unit value goods price.

The main explanatory variables are trade policy indicators calculated from our unique NTM dataset for Latin America and the European Union for the period 2010–2014. By product and importer (and, if applicable, by country of origin), the following variables are used:

- Number of traditional trade barriers (see section 3.2 and figure 4);
- Number of distinct technical measures applied by the importer (see section 3.3 and figure 7)<sup>34</sup>

- Two variables related to the share of regulatory overlap (see section 4.4): the share of overlap itself and an interaction term with the importer’s number of NTMs. The latter is important to show that regulatory overlap is more relevant if the importer has many NTMs.

Barriers and technical measures are expected to raise prices. The regulatory overlap should act as a mitigating factor that accounts for the domestic ability to comply in the exporting country. The number of technical measures applied by the exporter is also used as an approximation of the domestic market requirements in the country of product origin.

Furthermore, control variables are included to capture transport costs (distance and common borders) as well as product-and-country specific comparative advantages in export and import.<sup>35</sup> The latter absorb some demand and supply effects in the importing and exporting country that may also influence product prices.

To account for economy-wide factors that may change over time, such as purchasing power and exchange rates, importer-and-time as well as exporter-and-time *fixed effects* (*FE*) are included. Product-specific effects are absorbed through product-and-time fixed effects.

The simple log-linear estimation equation reads as follows with subindices for product *k*, importer *i*, exporter *j* and year *t*:

$$\begin{aligned} \ln(p_{ijkt}) = & \alpha + \beta_1 \text{NTB}_{ijkt} + \beta_2 \text{ImpNTM}_{ijkt} \\ & + \beta_3 \text{RO}_{ijkt} + \beta_4 (\text{ImpNTM}_{ijkt} * \text{RO}_{ijkt}) \\ & + \beta_5 \text{ExpNTM}_{j,kt} + \beta_6 \ln(\text{distance}_{ij}) \\ & + \beta_7 \text{contig}_{ij} + \text{controls} \\ & + \text{FE}_{it} + \text{FE}_{jt} + \text{FE}_{kt} + \varepsilon_{ijkt} \end{aligned}$$

The estimation strategy makes use of a panel data structure across years (2010–2014) and products. Regarding the latter, estimations are performed separately for the entire agri-food and

<sup>33</sup> See, for example, UNCTAD (2013) for an overview of the existing literature.

<sup>34</sup> As a robustness check, all regressions were also conducted with the log of the number of distinct NTMs. The results were fully consistent in terms of magnitude and statistical significance. For ease of interpretation, the simple

count (level) in the final regression output was chosen.

<sup>35</sup> Revealed export advantage (REA) and revealed import advantage (RIA) of exporter and importer.

$$\text{REA} = \frac{x_{jk}/x_k}{x_j/x}, \text{RIA} = \frac{m_{ik}/m_k}{m_i/m}$$
, with X for exports, M for imports and “.” for world exports/import.

manufacturing sector, whereas observations remain at the HS 6 digit level within each sector. This implies that the estimated effects are the average effects of NTMs in the respective sectors.

Table 3 shows the results of the estimations. Specifications (1) and (2) refer to the agricultural and food sectors (including wood) and specification (3) to manufacturing sectors.

### NTBs

All specifications find price-increasing impacts of traditional NTBs. In agri-food products, the estimated effect is about 3 per cent and is only marginally statistically significant. In manufacturing, the effect is slightly larger at 4 per cent and more statistically significant. An explanation of these rather low parameters is that trade unit values do not properly capture the effects of quantitative restrictions. Trade unit values are not domestic consumer prices and do not include domestic retail and sales margins.

**Table 3. Regression results**

<i>Dependent variable: log (c.i.f. trade unit value)</i>				
		<i>Agriculture</i>		<i>Manufacturing</i>
		<i>(1)</i>	<i>(2)</i>	<i>(3)</i>
<b>Main variables</b>	Importer's number of barriers	0.031*	0.033*	0.040**
		(0.02)	(0.02)	(0.02)
	Importer's number of technical measures	0.011***	0.016***	0.0074**
		(0.00)	(0.00)	(0.00)
	Share of regulatory overlap		0.069*	
		(0.04)		
	Interaction term:			
	Share of regulatory overlap x		-0.025***	
	Importer's number of technical measures		(0.01)	
	Exporter's number of technical measures		-0.0070	
			(0.00)	
<b>Control variables</b>	Revealed export advantage (exporter)	0.050***	0.049***	0.026**
		(0.02)	(0.02)	(0.01)
	Revealed export advantage (importer)	0.029**	0.030**	0.015
		(0.01)	(0.01)	(0.01)
	Revealed import advantage (exporter)	-0.060***	-0.061***	0.12***
		(0.01)	(0.01)	(0.01)
	Revealed import advantage (importer)	-0.092***	-0.092***	0.087***
	(0.01)	(0.01)	(0.01)	
	log(distance)	0.018	0.016	0.070**
		(0.04)	(0.04)	(0.03)
	1 if common border	-0.26***	-0.26***	0.12***
		(0.04)	(0.04)	(0.04)
	Constant	8.11***	8.16***	9.30***
		(0.30)	(0.30)	(0.28)
	Observations	66029	66029	533486
	Adjusted R <sup>2</sup>	0.670	0.671	0.702

Clustered standard errors in parentheses; \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01.

Fixed effects regression with importer-year, exporter-year and HS6-year fixed effects.



Therefore, the shadow value of non-automatic licences may not be fully reflected (see Cadot et al., 2015). The estimate may thus only reflect the actual costs of obtaining a licence, but not the price-raising effects of lower market supply. The actual effects on consumers may indeed be larger.

### Technical measures and regulatory overlap in agri-food sectors

Turning to technical measures, specification (1) omits the variables related to regulatory overlap and therefore represents a more standard approach from previous literature. The estimated coefficients indicate that an additional technical measure increases prices of agri-food products by 1.1 per cent. A linear extrapolation of the marginal effect<sup>36</sup> would yield that 10 NTMs translate into an ad valorem equivalent of 11 per cent.

However, excluding the regulatory overlap causes a certain downward bias in the estimate. Implicitly, the parameter reflects the impact of NTMs at an average regulatory overlap. It implies that an NTM has the same impact on exports from Argentina to Paraguay (high regulatory overlap) as from Paraguay to Argentina (low regulatory overlap). To test the hypothesis that the former has a lower effect than the latter, the measures of regulatory overlap are included in specification (2).

At 1.6 per cent, specification (2) exhibits a significantly higher marginal effect of technical NTMs. The new estimate for the impact of technical NTMs could now be interpreted as a gross AVE, as it represents the hypothetical impact of an NTM if there was no regulatory overlap at all.<sup>37</sup> Taking into account the cost-reducing impact of regulatory overlap then

<sup>36</sup> Regression parameters using the number of distinct technical NTMs are valid “at the margin”. This means that it estimates the impact of an additional NTM around the average number of NTMs. In the above regressions, this would be the effect of increasing from 6 NTMs (the sample average) to 7 NTMs. It is a strong assumption to insinuate that it has the same effect to increase the number of NTMs from 0 to 1, or from 20 to 21.

<sup>37</sup> By explicitly including the regulatory overlap, an omitted variable bias on the effect of technical measures is removed. Since the regulatory overlap and the respective interaction term are included without centring, the marginal effect of technical measures has to be interpreted as if both variables were zero (i.e. no regulatory overlap).

yields the effective net impact, depending on the regulatory framework in the exporting country.

The estimates show a highly significant price-reducing effect of the interaction term. However, the direct effect of the regulatory overlap measure itself is positive and hardly statistically significant. This shows again that the impact of regulatory overlap matters most if the importer applies many NTMs. Both variables have to be looked at simultaneously, which is best explained in a numerical example. Taking the example from table 2, importer X has 5 NTMs, and there is a regulatory overlap of 20 per cent from the perspective of exporter Y. The gross AVE of the 5 NTMs is 5 times 1.6 per cent, which equals 8 per cent. A low regulatory overlap of 20 per cent effectively reduces this “gross” effect by only 1 per cent.<sup>38</sup> If the regulatory overlap is increased to 50 per cent, as in table 2 for exporter Y\*, the cost-reducing effect of regulatory overlap jumps to 2.45 per cent.<sup>39</sup> The effect of the same regulatory overlap is more than doubled (from 2.45 to 8.55 per cent) if the number of importer NTMs is doubled (from 5 to 10).<sup>40</sup> The following section 5.3 shows the respective numerical extrapolations for all MERCOSUR members and sectors.

The estimated parameter for the exporter’s number of technical measures turns out to be statistically insignificant and is therefore disregarded.

### Technical measures in manufacturing sectors

Attempting the same regression for the manufacturing sector,<sup>41</sup> it became evident that using the regulatory overlap measure relies on sufficiently high numbers of NTMs to properly capture a structural

<sup>38</sup> The cost-reducing effect is calculated as follows:  
From the interaction term: 20 per cent regulatory overlap \* 5 NTMs \* -0.024 estimate = - 2.4 per cent.  
From the direct effect: 20 per cent \* 0.069 estimate = 1.38 per cent.  
Total effect: -2.4 + 1.38 = -1.02 per cent.

<sup>39</sup> The example with Y\* as the exporter runs as follows:  
From the interaction term: 50 per cent regulatory overlap \* 5 NTMs \* -0.024 estimate = - 6 per cent.  
From the direct effect: 50 per cent \* 0.069 estimate = 3.45 per cent.  
Total effect: -6 + 3.45 = -2.45 per cent.

<sup>40</sup> Following the same calculation as above, but with 10 NTMs instead of 5.

<sup>41</sup> The respective regression is not included in table 3 but can be made available upon request.



overlap. With mostly only one to three technical NTMs being applied in the manufacturing sector (see figure 7), this is not the case. The structural overlap, as measured by UNCTAD data, is an insufficient approximation to actual regulatory convergence and stringency. The structural regulatory overlap is therefore dropped from the analysis in the manufacturing sector.

Specification (3) therefore reverts back to the approach of specification (1). The respective result for the manufacturing sector is that an additional technical measure increases prices by 0.74 per cent. With only few technical measures being applied in MERCOSUR manufacturing sectors, this implies a low overall restrictiveness. In manufacturing sectors, NTBs are therefore the dominant concern.

### 5.3 THE IMPACT OF NTBS, TECHNICAL MEASURES AND REGULATORY OVERLAP IN MERCOSUR

Using the actual data for MERCOSUR member States, it is possible to calculate and visualize the approximate restrictiveness of NTMs in the region. The following figures rely on an extrapolation of the estimation results from table 3. The estimation provides the average impacts of policies in the agricultural or manufacturing sectors in Latin America and the European Union. Whether individual product- and country-specific measures are more or less restrictive is beyond the scope of the analysis of large datasets.<sup>42</sup>

#### NTBs and technical measures

Figure 20 combines the regression results from specification (2) and (3) to show the AVEs of traditional barriers as well as technical measures for agricultural sectors and manufacturing sectors. As the results are obtained from simple multiplication of the regression parameters with the actually observed numbers of NTMs, AVEs are proportional to the simple incidence and number of NTMs in the respective countries and sectors.<sup>43</sup>

<sup>42</sup> The extrapolation approach is based on the strong assumption that the estimated marginal effect of applying an additional measure (around the average number of measures) holds for any measure in an additive way. Furthermore, it is assumed that technical measures and NTBs are additive and independent. Possible effects of substitution or complementarity between technical measures and NTBs are disregarded.

<sup>43</sup> The logic of the regulatory overlap implies that the

AVEs are generally highest in agricultural and food sectors. As expected, these sensitive sectors are more regulated, particularly through SPS measures. In order to protect human, animal and plant health, it can be assumed that many of these measures are necessary and cannot be eliminated. Regulatory convergence is therefore paramount to reducing trade costs while maintaining food safety.

AVEs reach about 15 per cent in Brazil's animals and meat sector and Argentina's fruits, vegetables and grains sector. In other agri-food sectors in Argentina and Brazil, AVEs are mostly just over 10 per cent but tend to be lower in the fats and oils sector. The fruits, vegetables and grains sector is also highly restrictive in Paraguay, Uruguay (both around 10 per cent) and the Bolivarian Republic of Venezuela (7 per cent). AVEs of technical measures in agriculture are generally lower in Uruguay and lowest in Paraguay and the Bolivarian Republic of Venezuela.

In agri-food sectors, NTBs only have significant effects in Argentina and the Bolivarian Republic of Venezuela (2–4 per cent). In all other MERCOSUR member States, their application is confined to very few products with minimal effects on the sector.

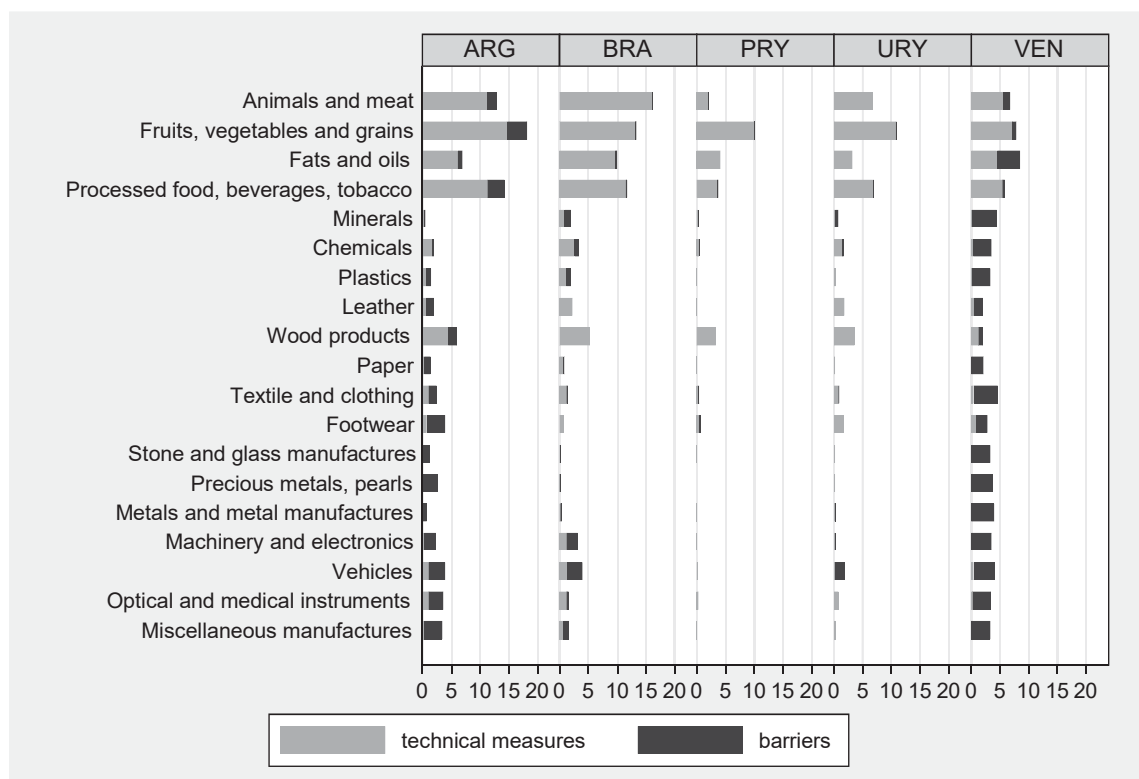
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calculated extrapolations should have the following properties:

(a) The cost-reducing effect of regulatory overlap should not be larger than the gross AVE of the NTMs (as the cost-increasing effect). Only 0.04 per cent of the extrapolated values fail to match this logic. In this rare case, the effect of the regulatory overlap is reduced to match, but not exceed, the gross AVE of the NTMs;

(b) The joint impact of regulatory overlap and the interaction term should always be cost reducing. However, in about 20 per cent of extrapolated values, they turn out to be cost increasing. This is certainly counter-intuitive, but it occurs only when the importer has very few NTMs. In the figures below, the effect of regulatory overlap (and interaction term) is set to zero if the extrapolated value is cost-increasing. Still, it could be argued that if only very few NTMs are applied, those tend to be rather discretionary measures (for example, special authorizations or registration requirements). In this case, regulatory overlap is unlikely to reduce costs. The actual price effect may therefore be higher than the gross AVE suggests. While the estimated model does not actually account for this, it is possible that the regulatory overlap and interaction term (unintendedly) capture some of this non-linearity of the importer-NTM variable.

Figure 20. Gross ad valorem equivalents of non-tariff measures and barriers



Source: Authors' estimations.

Abbreviations: ARG, Argentina; BRA, Brazil; PRY, Paraguay; URY, Uruguay; VEN, Bolivarian Republic of Venezuela.

In manufacturing sectors, the impact of technical NTMs (particularly TBT measures) is marginal. Here, non-technical trade barriers are relatively greater in the countries and sectors where they are applied. Foreign exchange controls and licensing schemes in Argentina and the Bolivarian Republic of Venezuela are reflected in significant AVEs across most sectors.<sup>44</sup> Barriers also have a price-increasing effect in several other sectors in Brazil, including the important machinery and electronics sector. With the exception of Paraguay, all MERCOSUR members also apply non-technical barriers in the vehicle sector.

### Accounting for regulatory overlap and looking at the European Union as a trading partner

As a next step, the observed level of regulatory convergence between importers and exporters is introduced in the following figures. With this, a bilateral dimension is included that lets the same NTMs in an importing country have different effects, depending on the exporter's ability to comply (regulatory overlap). Figure 20, by contrast, showed the gross AVEs of technical measures (in agri-food sectors) that did not depend on the exporter.

However, since the regulatory overlap measure did not yield appropriate results in the manufacturing sector, the focus of the next graphs lies on the agri-food sectors. Furthermore, as only technical measures are relevant with respect to the regulatory overlap, the NTBs shown in figure 20 are not repeated.

With a view towards a potential trade agreement with the European Union, the respective AVEs and effects of regulatory overlap are also included in the next figures.

<sup>44</sup> Consistent with the rest of the report, the estimates include Argentina's foreign exchange authorization and product-specific restrictions, but not DJAI. A horizontal measure such as DJAI would also fail to be properly reflected in the regression specification as it cancels out with the importer-time fixed effect.

Figure 21 reports the impact of trade control measures from the perspective of Argentina as an exporter. For each sector and destination country, the gross AVEs for technical measures are illustrated as positive price increases on the right side of the axis. These values are the same for each importer in all the following figures in this section. What varies is the impact of regulatory overlap, as drawn as a mitigating cost-decreasing factor on the left side of the axis.

It can be seen that the domestic regulatory framework of Argentina substantially increases Argentina’s ability to comply with NTMs in several markets. Having to comply with many domestic requirements, the additional upgrading of products to meet foreign NTMs is less costly. Particularly when exporting to markets with similar levels of regulatory intensity, such as Brazil, regulatory overlap reduces the effective additional compliance cost by about 40 per cent of gross AVEs. Similarly large effects are observed in the fruits, vegetables and grains sector when exporting to Paraguay or Uruguay.

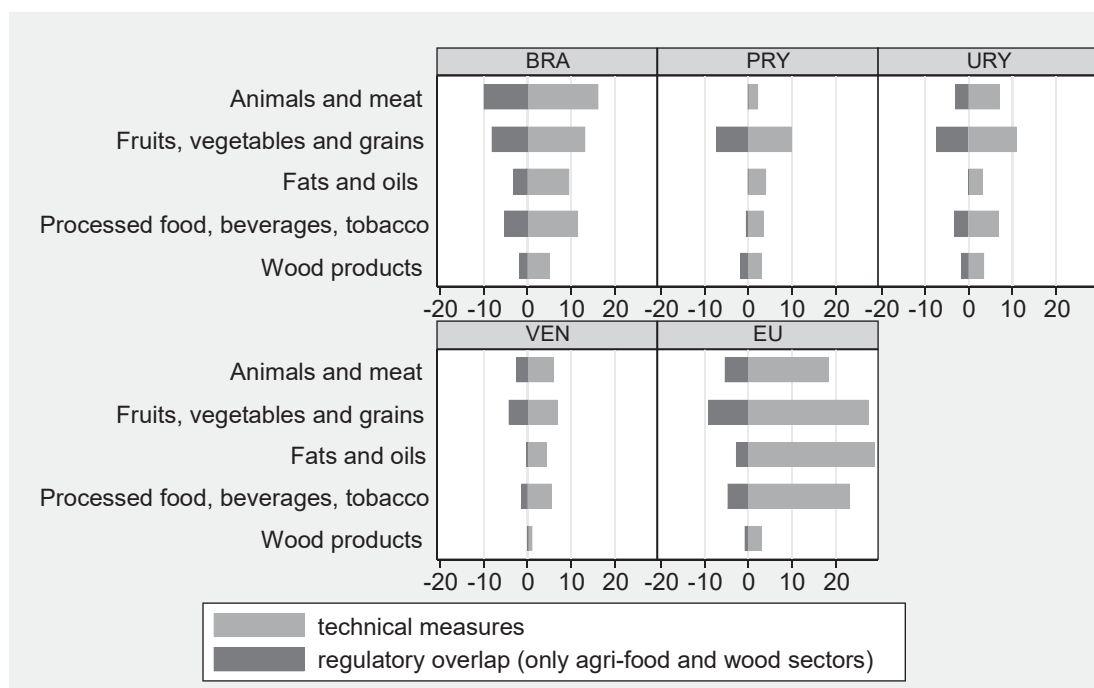
Where destination markets are only regulated by few NTMs, often discretionary authorizations or registration requirements, exporters benefit less from regulatory overlap. For example, the animals and

meat sector in Paraguay; or the fat and oils sectors in Paraguay, Uruguay and the Bolivarian Republic of Venezuela.

Gross AVEs of technical regulations in the European Union are significantly higher than in MERCOSUR, ranging between 20 and 30 per cent in the agri-food sectors. Argentina is able to offset between 3 and 10 percentage points of this burden through regulatory overlap. Compared with MERCOSUR partners, the European Union remains by far the most difficult market to access.

Figure 22 illustrates the impact of technical measures and regulatory overlap for Brazil’s exporters. As the market with the highest number of technical measures in the region (see figure 7), Brazil also has a high regulatory overlap with partners. Still, compared with Argentina, the benefits of regulatory overlap with MERCOSUR partners are marginally lower, indicating that regulatory structures are slightly more divergent from regional partners than Argentina’s (also see figure 15). Nevertheless, the effective additional burden to export to Argentina, Uruguay and the Bolivarian Republic of Venezuela is reduced by about 50 per cent compared with gross AVEs in most agri-food sectors.

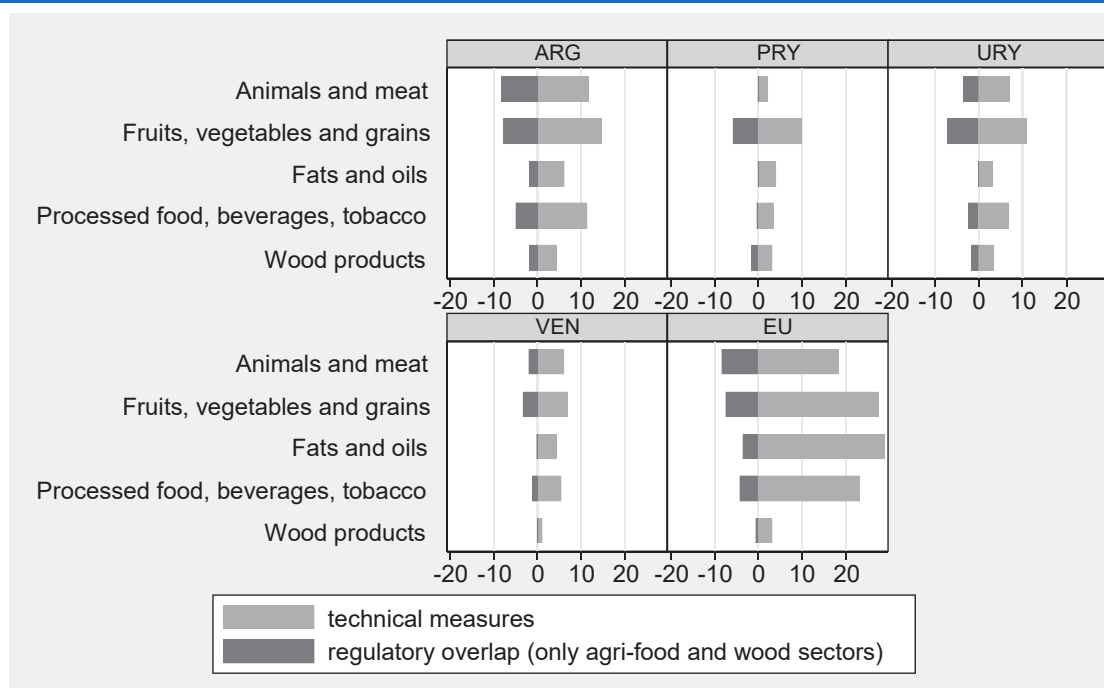
**Figure 21. Exports from Argentina: Effects of technical measures and regulatory overlap**



Source: Authors’ estimations.

Abbreviations: ARG, Argentina; BRA, Brazil; EU, European Union; PRY, Paraguay; URY, Uruguay; VEN, Bolivarian Republic of Venezuela.

Figure 22. Exports from Brazil: Effects of technical measures and regulatory overlap



Source: Authors' estimations.

Abbreviations: ARG, Argentina; BRA, Brazil; EU, European Union; PRY, Paraguay; URY, Uruguay; VEN, Bolivarian Republic of Venezuela.

Again, the benefits of regulatory overlap are negligible in sectors with very low gross AVEs, like most Paraguayan agri-food sectors (except fruits, vegetables and grains), and the fats and oils sectors in Uruguay and the Bolivarian Republic of Venezuela.

Accessing the European market still requires substantial product upgrading despite the benefits of regulatory overlap (3 to 8 percentage points). In relative terms, exports of animals and meat become the most accessible sector due to a regulatory overlap equivalent to an 8 percentage point cost reduction. Thus, the European Union's AVEs are effectively reduced from 18 per cent to a net AVE of 10 per cent.

Figure 23 shows AVEs and the impact of regulatory overlap from Paraguay's export perspective. Paraguay is the least regulated market in the region, with the exception of the fruits, vegetables and grains sectors. The cost-reducing effect of regulatory overlap is therefore also small. The gross AVEs of trading partners affect Paraguay's exporters in their full strength.

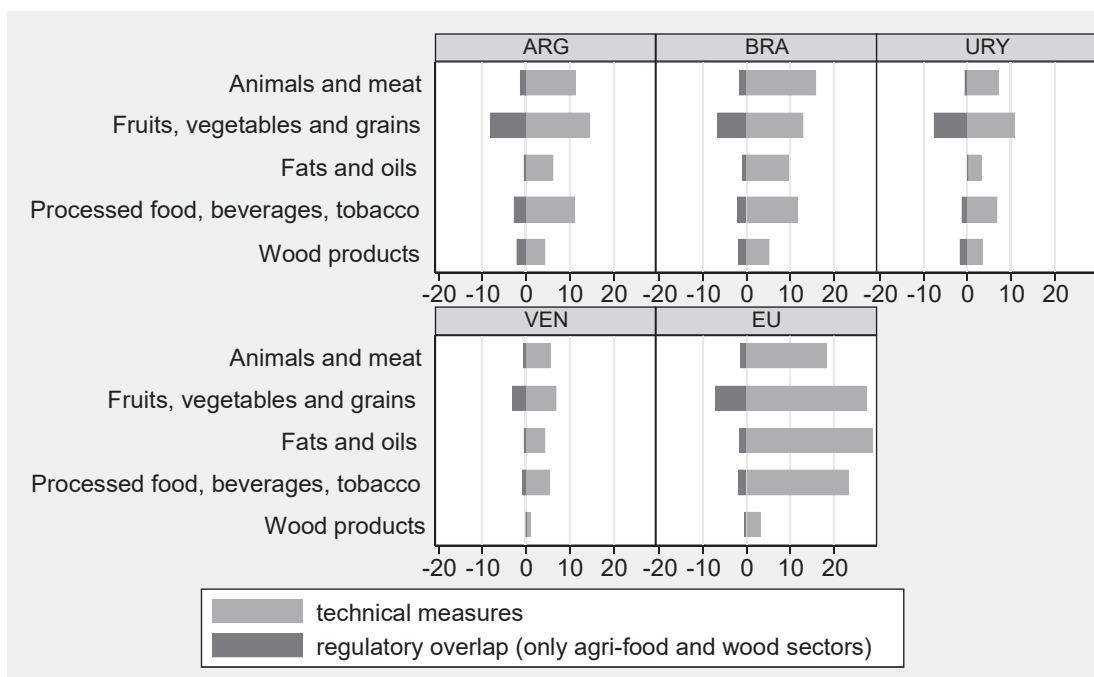
Only in the fruits, vegetables and grains sector, Paraguay's second most important export sector,

a relatively regulated domestic market leads to substantial benefits from regulatory overlap.

Figure 24 reports the impact of regulatory measures and overlap for Uruguay. Despite an average level of domestic regulatory intensity (between Brazil and Argentina on the higher side; and Paraguay and the Bolivarian Republic of Venezuela on the lower; see figure 7), Uruguay benefits from similar levels of regulatory overlap as Argentina and Brazil. This implies that the structure of NTMs in Uruguay is relatively convergent with other MERCOSUR partners (see figure 15).

The animals, meats, fruits, vegetables, grains and processed foods sectors in Argentina and Brazil become relatively accessible. Also exports to Paraguay's fruits, vegetables and grains sector face only low effective (net) compliance costs. Less benefits of regulatory overlap are observed in less regulated sectors in Paraguay and the Bolivarian Republic of Venezuela, generally in the fats and oils sector. Complying with technical regulations in the European Union remains costly despite some regulatory overlap.

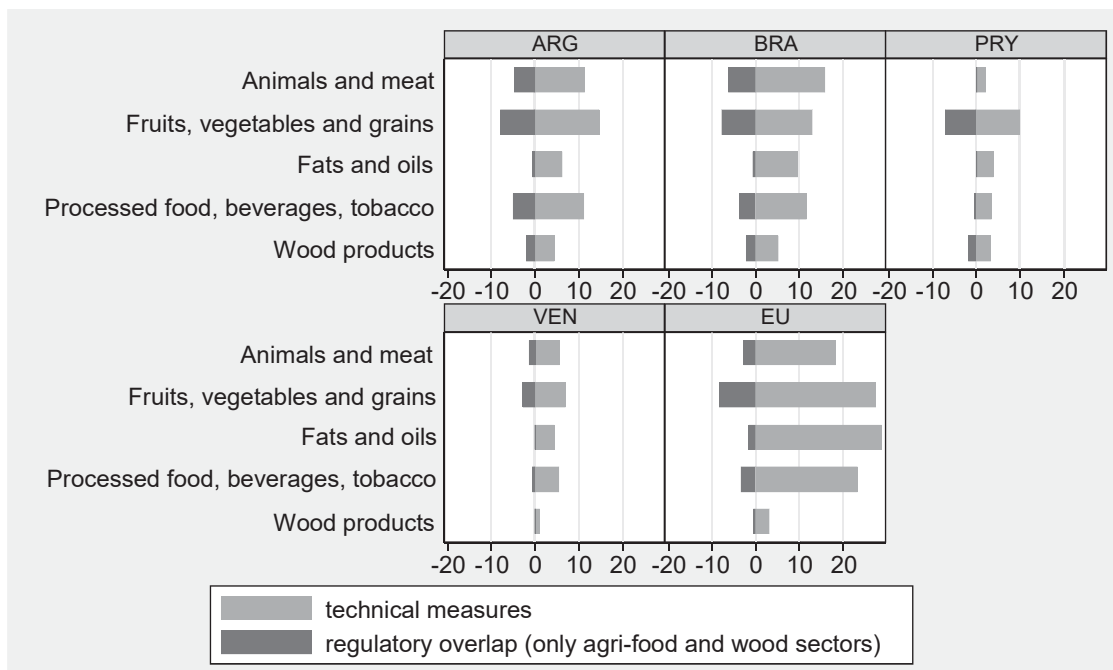
**Figure 23. Exports from Paraguay: Effects of technical measures and regulatory overlap**



Source: Authors' estimations.

Abbreviations: ARG, Argentina; BRA, Brazil; EU, European Union; PRY, Paraguay; URY, Uruguay; VEN, Bolivarian Republic of Venezuela.

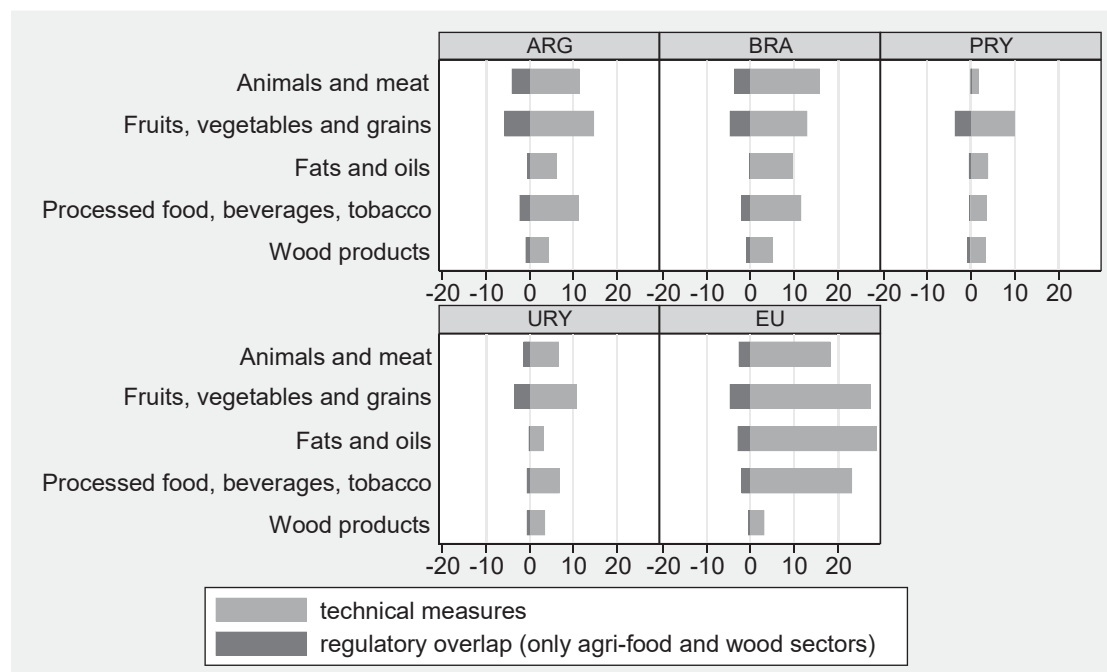
**Figure 24. Exports from Uruguay: Effects of technical measures and regulatory overlap**



Source: Authors' estimations.

Abbreviations: ARG, Argentina; BRA, Brazil; EU, European Union; PRY, Paraguay; URY, Uruguay; VEN, Bolivarian Republic of Venezuela.

**Figure 25. Exports from the Bolivarian Republic of Venezuela: Effects of technical measures and regulatory overlap**



Source: Authors' estimations.

Abbreviations: ARG, Argentina; BRA, Brazil; EU, European Union; PRY, Paraguay; URY, Uruguay; VEN, Bolivarian Republic of Venezuela.

Figure 25 shows the impact of NTMs for exporters from the Bolivarian Republic of Venezuela. While actual exports other than petroleum to MERCOSUR markets are negligible, potential exporters of agri-food products would face not more regulatory challenges than Paraguayans. Regulatory overlap does reduce the compliance cost with technical measures by a moderate amount of 1 to 6 percentage points.

## 6. WELFARE ANALYSIS

### 6.1 METHODOLOGY

Once the ad valorem equivalents of NTBs, technical measures and regulatory overlap are estimated, the next step is to assess the potential impact of their reduction or removal. This is done by feeding the shocks into a well-known computable general equilibrium (CGE) model, the Global Trade Analysis Project (GTAP),<sup>45</sup> and examining the resulting

impacts on national income, trade flows and real wages.

The use of a general equilibrium model such as GTAP makes it possible to capture the interactions in the whole economy by linking all the sectors through input-output tables and by linking all countries through trade flows. GTAP is a well-documented, static, multiregional, multisectoral model that assumes perfect competition, constant returns to scale and imperfect substitution between foreign and domestic goods and between imports from different sources. Version 9 of GTAP is used in this application.<sup>46</sup>

The GTAP database has 140 countries or regions and 57 sectors. The full model cannot be solved with this number of countries, so both countries and sectors must be aggregated. Countries are aggregated into 23 regions and 45 sectors. The regional aggregation separates out MERCOSUR

<sup>45</sup> For information on GTAP, see <https://www.gtap.agecon.purdue.edu> (accessed 1 November 2015).

<sup>46</sup> GTAP 9 uses base quantity and policy data of 2011, although many of the input-output tables linking the sectors are from previous periods. This implies that some of the input-output relationships are somewhat dated. However, the estimated AVEs of NTMs are based on the latest available data from 2011 to 2014.

countries and their trading partners as well as possible. The aggregation is shown in annex table 10.

The imperfect substitution feature of GTAP is essential for examining bilateral tariff changes that differ from country to country because importers will most likely switch suppliers when relative prices change. By examining policy changes at the industry level, it is possible to make a reasonable estimate as to their likely effects on the industry's prices and production, consumption and trade. The key step is to determine the size and nature of the shock, and the ad valorem equivalent of NTMs. The model is static, with no phasing in of reforms or underlying growth in the economy. The results show the impact of the policy change at a given point in time, assuming the changes take three to five years to work through.

There are two main approaches to feeding NTMs into a general equilibrium model such as GTAP: tariff equivalents and productivity shocks (see Vanzetti et al., 2016).<sup>47</sup>

The first approach is the most common. Treating NTMs as tariff equivalents implies that tariff-like revenue is collected by the Government. This is reasonable for traditional NTBs. For example, government revenue could come from fees related to non-automatic licences or from auctioning quota rights. The removal of NTBs will then lead to a fall in such revenue. The policy generates rents that are transferred when the measure is reduced, just as with the removal of a tariff. This is appropriate where the rents from NTBs are captured by the importing economy. This critical assumption has important implications on total welfare effects, as discussed in section 6.3. To implement this in GTAP, the tariff equivalent needs to be estimated first, as described in the previous section. These AVEs are set as a baseline before they are removed or reduced,<sup>48</sup> either bilaterally or multilaterally, in a simulation scenario.

The second approach of changes in productivity is applicable where there are no rents captured, such as many SPS, TBT and other regulatory measures. Andriamananjara et al. (2003) refer to this as “sand in the wheels”. Regulatory convergence, as discussed

in sections 4 and 5, reduces such trade costs between two countries. In GTAP, such changes are implemented through a productivity shock on bilateral trade.<sup>49</sup>

Because technical NTMs have important benefits, for example in limiting the spread of infectious diseases and pests, it is unrealistic to remove them completely. That requires a more differentiated decision about how and how much to reduce trade and production costs. To simulate potential cost reductions stemming from regulatory convergence, a twofold strategy is employed:

1. The regulatory overlap is increased where the respective data and estimates are available: for agri-food sectors in MERCOSUR and the European Union (see figures 21 to 25),
2. Otherwise, the overall AVEs of technical NTMs is reduced to approximate a similar effect (see grey bars in figure 20).<sup>50</sup>

## 6.2 SCENARIOS OF LIBERALIZATION AND REGULATORY CONVERGENCE

To explore the effects of different potential liberalization and regulatory convergence scenarios, five scenarios are simulated. Table 4 provides an overview. In the table, elimination of NTBs refers to a full removal of the tariff equivalents of traditional barriers (see black bars in figure 20). Increases of regulatory convergence are modelled in the two-fold approach described above (section 6.1). The adoption of international standards is modelled as a reduction of AVEs of technical measures for all exporting trading partners.

Simulation 1 (Sim 1) can be viewed as the minimum level of liberalization within MERCOSUR. It fully eliminates traditional non-tariff barriers, but only for MERCOSUR partners.

Simulation 2 (Sim 2) builds on the first one, but includes “deeper” regional integration through regulatory convergence. Among MERCOSUR partners, previous levels of regulatory overlap in the agri-food sectors (see figure 17) are raised by 40

<sup>47</sup> A third approach is to treat NTBs as an export subsidy equivalent. This is not used here.

<sup>48</sup> The Altermax procedure in GTAP sets the baseline AVEs and the reduction is implemented through shocks using the *tms* variable.

<sup>49</sup> The shock is implemented using the *ams* variable.

<sup>50</sup> The two approaches of reducing gross AVEs and increasing regulatory overlap are never mixed for the same product- and country-pair combination.



Table 4. Alternative integration scenarios

<i>No.</i>	<i>Intuitive description</i>	<i>Detailed changes of AVEs</i>
<b>Sim 1</b>	Elimination of NTBs within MERCOSUR only	NTB: -100 per cent (only MERCOSUR)
<b>Sim 2</b>	Elimination of NTBs and increase of regulatory convergence within MERCOSUR only	NTB: -100 per cent (only MERCOSUR) Regulatory overlap (agri-food only): +40 percentage points (only MERCOSUR) Gross AVEs of NTMs: -30 per cent (only MERCOSUR manufacturing)
<b>Sim 3</b>	Elimination of NTBs and increase of regulatory convergence within MERCOSUR and with European Union	NTB: -100 per cent (only MERCOSUR and the European Union) Regulatory overlap (agri-food only): +40 percentage points (only MERCOSUR) +20 percentage points (only European Union) Gross AVEs of NTMs: -30 per cent (only MERCOSUR manufacturing)
<b>Sim 4</b>	Elimination of NTBs, increase of regulatory convergence within MERCOSUR and adoption of international standards	NTB: -100 per cent (only MERCOSUR) Regulatory overlap (agri-food only): +40 percentage points (only MERCOSUR) Gross AVEs of NTMs: -30 per cent (only MERCOSUR manufacturing) -20 per cent (European Union and rest of the world, all sectors)
<b>Sim 5</b>	Elimination of NTBs and increase regulatory convergence within MERCOSUR and with European Union; adoption of international standards	NTB: -100 per cent (only MERCOSUR and European Union) Regulatory overlap (agri-food only): +40 percentage points (only MERCOSUR) +20 percentage points (only European Union) Gross AVEs of NTMs: -30 per cent (only MERCOSUR manufacturing) -25 per cent (only European Union manufacturing) -20 per cent (rest of the world, all sectors)

percentage points.<sup>51</sup> One possibility of achieving such an increased level of regulatory overlap is illustrated in the example in table 2, section 4.4. In manufacturing sectors, where the impact of regulatory overlap could not be estimated (see section 5.2), the AVEs of technical NTMs are reduced by 30 per cent.

Simulation 3 (Sim 3) extends Sim 2 to include a potential trade agreement with the European Union. NTBs are also fully eliminated in all trade between MERCOSUR and the European Union. However, it is assumed that the regulatory gap between MERCOSUR members and the European Union can only be bridged to a lesser extent. The regulatory

overlap is only increased by 20 percentage points (40 percentage points within MERCOSUR). Similarly, in manufacturing sectors, AVEs are only reduced by 25 per cent in trade with the European Union (30 per cent within MERCOSUR).

Simulation 4 (Sim 4) builds on Sim 2 and foresees the adoption of international standards instead of a trade agreement with the European Union. While this report does not specifically estimate the cost-reducing impact of the adoption of international standards, a 20 per cent reduction of AVEs was deemed appropriate in relation to the other shocks. This scenario only models this reduction in trade costs for exports from the rest of the world to MERCOSUR, not vice versa. The scenario may therefore actually underestimate substantial export-increasing effects of adopting international standards (see, for example, Disdier et al., 2015).

<sup>51</sup> With a maximum value of the regulatory overlap at 100 per cent. For example, a baseline level of regulatory overlap of 80 per cent can only be raised by 20 percentage points (to 100 per cent), not beyond.

Simulation 5 (Sim 5) combines the previous two integration scenarios: MERCOSUR members eliminate NTBs and increase regulatory convergence with the European Union through a deep trade agreement (see Sim 3). In addition, they reduce costs through the adoption of international standards (see Sim 4).

The impacts of eliminating NTBs and reducing gross AVEs of technical NTMs are easily visualized in figure 20. Figures 32–37 in the annex illustrate the respective bilateral impacts of increasing regulatory overlap in the agri-food sector by 40 percentage points within MERCOSUR and by 20 percentage points with the European Union.<sup>52</sup>

### 6.3 RESULTS: WELFARE

The impacts of a policy change to the economy as a whole are best measured by welfare, a proxy for national income that reflects consumption rather than output, as does GDP.<sup>53</sup>

The source of welfare gains is essentially fourfold:

- Allocative efficiency gains from using resources more productively;
- Terms of trade effects, that may be positive or negative (they sum to zero globally);
- Endowment effects, from changes in use of capital and labour;
- Technical productivity effects from reducing trade costs.

The first three can be positive or negative. Productivity effects are generally positive, although increased production can push down prices and make producers worse off. This is more likely to be the case when demand is inelastic, as with some agricultural goods.

The annual welfare gains from reform in each of the five scenarios are shown in figure 26 for the

<sup>52</sup> Figures 32–37 in the annex illustrate Simulations 3 and 5. They also hold for Simulations 2 and 4 when disregarding changes in regulatory overlap with the European Union in the respective figures.

<sup>53</sup> The welfare measure used here is equivalent variation, a measure of wealth that takes account of changes in prices.

MERCOSUR countries as a group and in table 5 for the individual MERCOSUR member countries, the European Union, and the world as a whole. The annex provides the welfare impacts for all 23 countries and regions in the GTAP model.

The broad conclusion is that countries undertaking reforms mostly benefit. In particular, regulatory convergence generates the larger welfare increases, compared with the removal of traditional NTBs. MERCOSUR countries can gain a lot from deep regional integration. Benefits are further increased by lowering trade restrictiveness vis-a-vis the European Union and through the adoption of international standards.

#### Eliminating non-tariff barriers

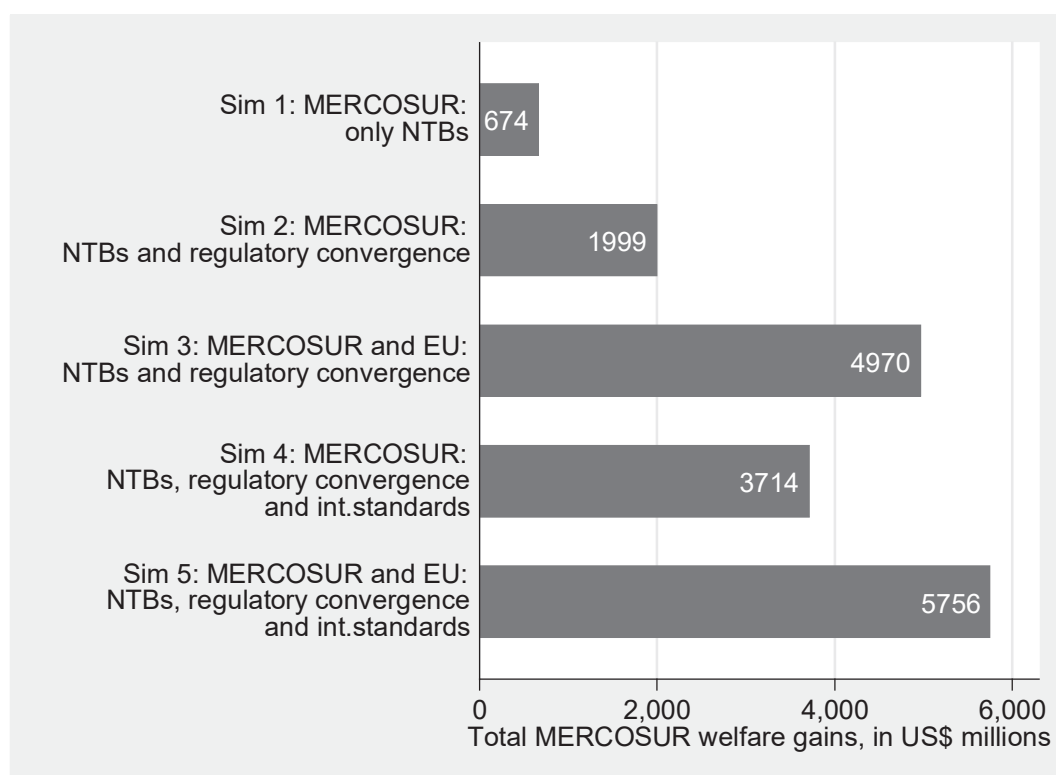
The first observation is that MERCOSUR as a group gains from the removal of NTBs within the region (Sim 1), as would be expected. Gains are dependent on the initial trade flows, the size of the change in the tariff equivalent, and the responsiveness of producers and consumers to relative price changes, as reflected in the elasticities. Argentina and Brazil are the major beneficiaries because they have the largest trade flows.

GTAP modelling treats the elimination of NTBs as an equivalent of tariff reductions. Therefore, countries can make themselves worse off because of the loss in tariff-like revenue. NTBs could generate revenue through fees for non-automatic licences or when auctioning quota rights. This is a critical point, as mentioned above. If NTBs do not actually generate revenue, their elimination also does not cause revenue losses. Fully including revenue losses in table 5 makes the simulations very conservative scenarios.

If no revenue is lost, all countries' welfare gains would increase substantially as follows: Argentina, by about US\$ 500 million to US\$ 670 million; Brazil, by about US\$ 500 million to US\$ 1,000 million; Paraguay, by US\$ 1 million to US\$ 7 million; Uruguay, by US\$ 46 million to US\$ 53 million; and the Bolivarian Republic of Venezuela, by US\$ million 260 to US\$ 420 million.<sup>54</sup> The additional gains from excluding losses

<sup>54</sup> The lower end of potential revenue losses occurs in Simulations 1, 2 and 4 when NTBs are eliminated among MERCOSUR partners only. When the European Union also benefits from the elimination of NTBs in Simulations 3 and 5, the higher end of potential revenue losses is observed.

Figure 26. Annual welfare gains in MERCOSUR



Source: Authors' simulations, based on GTAP.  
Abbreviations: EU, European Union.

Table 5. Welfare impacts of alternative scenarios

Country or group of countries	Sim 1	Sim 2	Sim 3	Sim 4	Sim 5
	US\$ million	US\$ million	US\$ million	US\$ million	US\$ million
<b>Argentina</b>	239	585	1 349	788	1 407
<b>Brazil</b>	431	1 109	2 932	2 318	3 535
<b>Paraguay</b>	13	63	181	76	183
<b>Uruguay</b>	41	145	249	180	256
<b>Venezuela (Bolivarian Republic of)</b>	-50	97	258	353	375
<b>European Union</b>	-156	-189	4 636	1 008	4 558
<b>Global</b>	73	1 276	7 415	3 538	8 386

Source: Authors' simulations, based on GTAP; scenarios are described in table 4.

of tariff revenue are greatest in those countries that applied numerous NTBs. For the Bolivarian Republic of Venezuela in particular, discarding revenue losses would turn a welfare loss of US\$ 50 million in Sim 1 into a welfare gain of over US\$ 200 million. For Paraguay, by contrast, there is hardly a difference in welfare gains.

Despite including revenue losses through the elimination of NTBs in table 5, the Bolivarian Republic of Venezuela is the only country incurring welfare losses in Sim 1. In all other countries, the beneficial effects of removing NTBs outweigh potential revenue losses even in Sim 1. Losses in the Bolivarian Republic of Venezuela are also driven by negative allocative efficiency effects (chemicals, rubber and plastics; motor vehicles and parts; machinery and equipment) and negative terms of trade effects (higher prices of dairy imports and lower prices of exports of chemicals, rubber and plastics; iron and steel; and non-ferrous metals). The effects of negative allocative efficiency suggest that when NTBs are removed only regionally, as happens in Sim 1, resources released from some industries flow into uncompetitive industries. On the export side, oil accounts for over 90 per cent of exports from the Bolivarian Republic of Venezuela, and there are virtually no barriers to this trade; hence no gains to be achieved from the removal of barriers in the countries to which they export.

Reducing tariff-like NTBs on a preferential basis invariably leads to welfare losses for non-members. The findings of this paper show that all non-members suffer a welfare loss. In Sim 1 and Sim 2, the European Union suffers a welfare loss, because it is not party to the regional reforms. However, it gains in Sim 3, as it does partake in the reforms. Most countries in the rest of the world experience welfare losses in all five scenarios, as they do not undertake reforms and suffer from trade diversion. This is shown in annex table 11 and can also be seen in the low value of global welfare gains in table 5.

### **Increasing regulatory convergence in MERCOSUR, with the European Union and through international standards**

Sim 2 shows that the gains from addressing NTMs and regulatory convergence are much greater than gains from eliminating traditional NTBs. In each case, welfare gains for MERCOSUR members are

more than double, and the Bolivarian Republic of Venezuela also becomes a winner. This is partly due to the size of the shocks, but also because there is no loss in tariff-like revenue in regulatory convergence. As discussed earlier, NTMs are modelled as a productivity shift, so there is no transfer of tariff-like revenue as there is with NTBs.

Sim 3 shows the benefits of MERCOSUR extending the reform to include the European Union. All MERCOSUR members gain, as does the European Union. These gains are two to three times those obtained from liberalizing within MERCOSUR alone. This reflects the significant trade flows with the European Union, which is a major trading partner of most MERCOSUR countries. The Bolivarian Republic of Venezuela gains mostly from removing NTMs on intra-MERCOSUR trade with Brazil and Argentina. It has only a small benefit from trading with the European Union.

In Sim 4, the adoption of international standards by MERCOSUR members is modelled as a reduction of costs related to technical NTMs for import from the whole world. This includes the European Union (but to a lesser extent than in Sim 3), the United States, Japan and China, large trading partners of some MERCOSUR countries. The gains are relatively modest, less than Sim 3. There are significant allocative efficiency effects for Brazil and Uruguay, and all countries gain from increased demand for surplus labour. However, the major source of welfare gains are the productivity effects of harmonizing NTMs. This is particularly so for Brazil and the Bolivarian Republic of Venezuela, where over half the gains are from this source. Brazil gains the most from opening up to the United States. The major commodities affected are beverages and tobacco; chemicals, rubber and plastics; and machinery and equipment. Brazil also stands to gain from opening up to China in chemicals, rubber and plastics; and machinery and equipment. MERCOSUR countries enjoy only small or negligible gains by harmonizing NTMs with Japan.

Overall, almost half of the productivity gains are generated from intra-MERCOSUR trade. This is particularly true for Paraguay and Uruguay, which are more dependent on intra-MERCOSUR trade. For Argentina, the most significant sector which benefits from NTM harmonization is motor vehicle imports from Brazil. For Brazil, the most significant trade flow to benefit is wheat imports from Argentina. The Bolivarian Republic of Venezuela enjoys gains from

dairy products from Argentina and pork and poultry meat from Brazil. Uruguay gains from improved imports of coarse grains from Argentina. In Paraguay the gains are spread across sectors.

Sim 5 combines the adoption of international standards (as in Sim 4) with the deeper regional integration of MERCOSUR and the European Union (as in Sim 3). This allows all countries, particularly the European Union, to export more easily to MERCOSUR. This scenario includes removal of NTBs within MERCOSUR and with the European Union, but the real welfare gains come from addressing technical NTMs. As with Sim 4, most of the welfare gains for MERCOSUR countries come from productivity shifts, although there are also positive effects for all countries in terms of allocative efficiency, labour market and terms of trade. For Brazil, the major NTM gains are associated with imports of chemicals, rubber and plastics, amounting to US\$ 277 million. It also gains from machinery and equipment, motor vehicles and processed food. For Argentina, NTM gains of US\$ 248 million are mainly dependent on motor vehicles where Brazil is the major supplier.

Of the global annual welfare gains in Sim 5 of US\$ 8 billion, allocative efficiency gains account for US\$ 3 billion, while US\$ 4.7 billion come from productivity shifts. Increased employment of unskilled labour contributes US\$ 0.6 billion to total gains. Global terms of trade sum to zero.

#### 6.4 RESULTS: TRADE

National trade impacts for MERCOSUR countries are universally positive but relatively modest, less than 1 per cent in many cases and just over two per cent at most. See table 6 for imports and table 7 for exports. Global exports are virtually unchanged but slightly positive, increasing 0.1–0.2 per cent.

Any reduction in trade costs will almost inevitably lead to an increase in imports. Because global imports must equal global exports, an increase in imports must lead to an increase in exports. However, countries that liberalize may not be the ones that increase their exports. Therefore, it is of interest to examine how trade may be affected by reforms to NTMs and NTBs.

Changes in imports by sector relative to the base show more significant variation.<sup>55</sup> In most cases imports in each sector increase from a reduction in trade costs, although this need not be the case. The largest relative increases are in the order of 20–30 per cent, but the estimates are for less traded products such as paddy rice. For each MERCOSUR country, the most significant change in imports in absolute terms are chemical, rubber and plastic products; motor vehicles and parts; and machinery and equipment. There is little change in agriculture, apart from non-ruminant meats and processed foods. The Bolivarian Republic of Venezuela has a large increase in imports of dairy products.

The policy change responsible for the change in imports varies from sector to sector. In the manufacturing sectors, the elimination of NTBs has a larger weight compared with addressing NTMs (see figure 20). In the agri-food sectors, the regulatory convergence of technical NTMs has a bigger impact.

For example, for Argentina, there is little difference in imports of motor vehicles and parts from Sim 1 to Sim 2. This indicates that they are driven by changes in NTBs, not technical NTMs. This also applies to machinery and equipment. This also holds true for Brazil, Uruguay and the Bolivarian Republic of Venezuela. Even small reductions of NTBs cause large changes in the value of imports due to the high initial trade volumes.

The largest relative changes in imports are observed in agri-food sectors such as dairy products, rice and sugar, where regulatory convergence has a large impact. Import increases in absolute terms are smaller, though, due to lower initial trade volumes.

The estimated increase in national exports for MERCOSUR countries is reasonably similar to imports in most of the simulations. For example, in Sim 5, Argentina's change in exports – 2.3 per cent – is similar to the change in imports of 2.5 per cent, although the sector and trade partners may differ. For Argentina, the major source of the increase in imports is Brazil, (chemical, rubber and plastic products; motor vehicles and parts; and machinery and equipment), and the major addition to exports is also to Brazil (motor vehicles and parts, petroleum and coal products, and wheat). However, Argentina is also increasing its

<sup>55</sup> Tables with the detailed sector-specific changes of imports and exports are available upon request.

**Table 6. Import impacts of alternative scenarios in percentage changes**

<i>Country or group of countries</i>	<i>Sim 1</i>	<i>Sim 2</i>	<i>Sim 3</i>	<i>Sim 4</i>	<i>Sim 5</i>
<b>Argentina</b>	1.66	2.04	2.56	2.09	2.51
<b>Brazil</b>	0.65	0.92	2.16	1.54	2.27
<b>Paraguay</b>	0.21	0.51	1.13	0.49	1.07
<b>Uruguay</b>	0.79	1.25	1.59	1.19	1.52
<b>Venezuela (Bolivarian Republic of)</b>	0.4	0.52	1.13	1.04	1.14
<b>European Union</b>	-0.01	-0.01	0.01	0.03	0.01

Source: Authors' simulations, based on GTAP; scenarios are described in table 4.

exports of vegetable oils and chemical, rubber and plastic products to the European Union.

The intra-industry trade flows are also interesting. For example, in these simulations both Brazil and Argentina increase two-way trade in chemical, rubber and plastic products, and motor vehicles and parts.

### **6.5 RESULTS: WAGES AND EMPLOYMENT, AND CAPITAL**

Estimated changes in wage rates and employment for unskilled labour in MERCOSUR member countries are positive in all five scenarios (table 8). Wage rates are assumed to change by a uniform amount across all sectors while employment in each sector varies according to the demand for the type of labour. Real wage changes are moderated by the assumption that the labour force is not fixed, but the unemployed or underemployed respond to higher wages by offering their labour. As employment is

demand driven, both wages and employment move in the same direction, and by roughly the same amount. This assumption does not hold for skilled labour and other factors of production that are assumed to be fixed at a national level. For that reason, it can be expected that wages for skilled labour would rise faster than unskilled labour, and in these simulations the change in wage rates for skilled workers is up to twice the change for unskilled workers. The ratio between skilled and unskilled wages varies because the policy changes may lead to a greater or lesser increase in demand for unskilled labour. For example, agricultural labour is predominantly unskilled. So an increase in demand for agricultural products such as Argentine wheat or Uruguay vegetable oil will have a greater effect on unskilled wages relative to skilled wages.

In these simulations, the stock of capital in each region has remained fixed. This is an important assumption, generally considered appropriate for the short run. In the long run, capital is internationally mobile and somewhat responsive to changes in the

**Table 7. Export impacts of alternative scenarios in percentage changes**

<i>Country or group of countries</i>	<i>Sim 1</i>	<i>Sim 2</i>	<i>Sim 3</i>	<i>Sim 4</i>	<i>Sim 5</i>
<b>Argentina</b>	1.32	1.69	2.3	1.73	2.26
<b>Brazil</b>	0.62	0.89	2.13	1.51	2.25
<b>Paraguay</b>	0.23	0.56	1.29	0.54	1.23
<b>Uruguay</b>	0.77	1.3	1.76	1.27	1.68
<b>Venezuela (Bolivarian Republic of)</b>	0.26	0.36	0.85	0.75	0.86
<b>European Union</b>	-0.01	-0.01	0	0.02	0.0

Source: Authors' simulations, based on GTAP; scenarios are describe in table 4.

Note: The European Union estimates are biased downwards because they include intra-European Union trade.



**Table 8. Real wages and employment for unskilled labour in percentage change**

Country		<i>Sim 1</i>	<i>Sim 2</i>	<i>Sim 3</i>	<i>Sim 4</i>	<i>Sim 5</i>
<b>Argentina</b>	Real wages	0.05	0.08	0.13	0.14	0.18
	Employment	0.07	0.11	0.17	0.1	0.14
<b>Brazil</b>	Real wages	0.02	0.05	0.07	0.1	0.12
	Employment	0.03	0.06	0.1	0.07	0.09
<b>Paraguay</b>	Real wages	0.05	0.16	0.31	0.23	0.4
	Employment	0.07	0.2	0.4	0.17	0.31
<b>Uruguay</b>	Real wages	0.12	0.23	0.31	0.36	0.42
	Employment	0.15	0.31	0.41	0.26	0.31
<b>Venezuela (Bolivarian Republic of)</b>	Real wages	0.01	0.04	0.08	0.13	0.13
	Employment	0.02	0.05	0.1	0.09	0.09

Source: Authors' simulations, based on GTAP; scenarios are described in table 4.

rate of return. Based on the assumption that capital can move, the welfare gains are about double those reported here. For example, MERCOSUR welfare gains for Sim 5 would rise from US\$ 5.7 billion to US\$ 16 billion, and global gains from US\$ 8 billion to US\$ 18 billion. Capital tends to flow to those countries that are liberalizing and away from those that are not.

## **6.6 LIMITATIONS, CAVEATS AND ALTERNATIVE MODELLING APPROACHES**

Limitations of econometric estimations as well as CGE modelling should also be kept in mind and results interpreted with care. In this study, however, the more conservative option was always selected when being confronted with a choice between different specifications. Impacts of NTMs, as well as welfare gains, are therefore going to be larger than smaller. Still, assumptions about how NTMs are modelled in CGE models have been shown to be sensitive for the results (Fugazza and Maur, 2008, and Vanzetti et al., 2016).

One important assumption was to treat NTBs as tariff equivalents where tariff-like revenue is generated in the form of rents. Assuming instead that NTBs do not generate rents that are captured, the predicted benefits of reforms are much larger.

Another important assumption in the modelling concerns fixed quantities of capital and skilled labour in each country or region. Unskilled labour was assumed

to be unemployed or underemployed in MERCOSUR. The ability to draw in capital or employ surplus labour makes a significant difference to the welfare impacts of liberalization. The chosen assumptions in this report reflect short- to mid-term impacts. Furthermore, cost of adjustment, such as temporary or frictional unemployment of labour or capital, are unaccounted for in the modelling.

Aggregation is one of the general limitations of estimating the impacts of NTMs and using them in CGE simulation. Much more stringent and also less stringent NTMs hide behind these aggregates. While it may be clear that the quantity of trade between two countries is low, or that prices differ greatly, it is not obvious which of many possible NTMs is binding. The simulations in this report are therefore based on the assumption that aggregate estimates sufficiently reflect the restrictiveness of particular NTMs.

## **7. POLICY IMPLICATIONS AND CONCLUSIONS**

This study has shown the status quo and impact of non-tariff barriers, technical measures and regulatory convergence in the MERCOSUR region.

Particularly in the agricultural and food sectors, SPS and TBT measures have significant price-raising effects that by far exceed those of traditional non-tariff barriers. Due to their important regulatory functions



to protect health and the environment, they cannot be eliminated. However, estimations show that their actual burden is substantially reduced by regulatory convergence. More regulated domestic markets tend to be more able to comply with foreign requirements – especially if they are similar. When exporting to MERCOSUR partners, Argentina, Brazil and Uruguay therefore see the actual cost impact of technical measures reduced by 30 to 50 per cent. From the perspective of Paraguay and the Bolivarian Republic of Venezuela, compliance with the same NTMs in MERCOSUR partners is more costly. Exports to the European Union remain costly for all MERCOSUR members, even after accounting for domestic regulatory frameworks.

Outright non-tariff barriers are relatively more important in manufacturing sectors, where technical regulations only have minor effects. NTBs are particularly common in Argentina and the Bolivarian Republic of Venezuela, but also prevalent in some key sectors in Brazil.

Eliminating NTBs and reducing the impact of technical NTMs through regulatory convergence entail significant welfare gains. This study explored different scenarios of regional integration within MERCOSUR and a potential trade agreement with the European Union. Deeper regional integration with respect to all NTMs has positive effects for all MERCOSUR countries. Even the conservative estimates employed in this study yield significant welfare, trade and employment gains. Gains are higher where countries outside the region also benefit from regulatory convergence.

Going beyond the elimination of traditional non-tariff barriers, such as quotas and non-automatic licensing, is crucial. In fact, ending efforts after the elimination of NTBs will only generate relatively small gains for MERCOSUR members. For all MERCOSUR members, the biggest welfare gains emanate from addressing technical measures such as SPS and TBT. Instead of elimination, regulatory convergence can substantially reduce the effective impact on trade, while fully maintaining regulatory benefits. Increasing regulatory convergence at least doubles the welfare gains compared with the mere elimination of outright barriers. The smaller MERCOSUR members benefit even more.

While eliminating NTBs only requires the implementation of decade-old commitments, advancing regulatory convergence in MERCOSUR requires long-lasting political will and commitment. The work of regional working groups and committees needs to be reignited at the political and technical level. When food safety, health and environmental objectives overlap, the mechanisms of implementation should be harmonized. Discretionary NTMs should be replaced by clear-cut technical criteria and the most cost-effective conformity assessment methods. International standards should serve as strong guiding principles when harmonizing regulation in MERCOSUR. Furthermore, transparency of NTMs can still be improved. The less regulated markets, particularly Paraguay and the Bolivarian Republic of Venezuela, may also need to upgrade technical regulation to align with the more developed markets. But this has to be done carefully in order to avoid domestic price increases.

When advancing regulatory convergence, ad hoc reporting mechanisms between the private and public sectors are an effective way of identifying obstacles to trade. However, ad hoc resolution may also lead to a patchwork of potentially conflicting efforts of regulatory alignment if more than two countries are involved. Therefore, deep regional integration also requires a systematic and institutionalized process of regulatory convergence, particularly with regard to technical regulations.

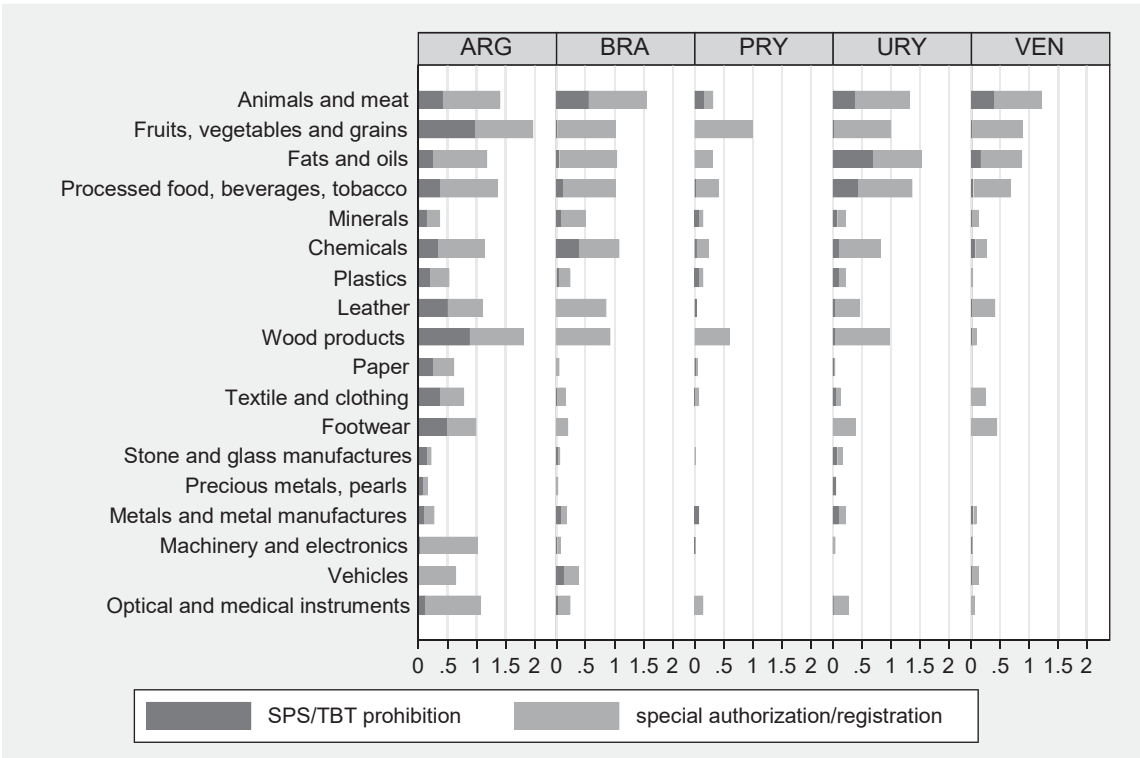
A trade agreement with the European Union that also eliminates NTBs and promotes regulatory convergence would lead to a further two- to three-fold increase of welfare for all MERCOSUR members. Regulatory convergence with the European Union should not, however, imply the domestic adoption of mandatory technical regulations at the level of stringency of the European Union. Disdier et al. (2015) find that this could lock MERCOSUR exporters into a hub-and-spoke trade structure at the expense of South–South trade. Adopting international standards instead has beneficial trade effects for South–North and South–South trade. The findings of this report also indicate that the largest welfare gains would come from a MERCOSUR–European Union trade agreement that uses international standards as a benchmark.

## REFERENCES

- Andriamananjara S, Ferrantino M and Tsigas M (2003). Alternative approaches in estimating the economic effects of non-tariff measures results from newly quantified measures. USITC Working Paper 2003-12-C.
- Berthou A and Emlinger C (2011). The trade unit value database. *International Economics*. 128.
- Bown CP (2015). Global anti-dumping database. World Bank. June. Available at <http://econ.worldbank.org/ttbd/gad/>.
- Cadot O, Asprilla A, Gourdon J, Knebel C and Peters R (2015). Deep Regional Integration and Non-tariff Measures: A Methodology for Data Analysis. UNCTAD/ITCD/TAB/71. United Nations publication. Geneva.
- Disdier A-C, Fontagné L and Cadot O (2015). North–South standards harmonization and international trade. *World Bank Econ Review*. 29(2):327–352.
- Fugazza M and Maur J (2008). Non-tariff Barriers in Computable General Equilibrium Modelling. UNCTAD/DITC/TAB/38. United Nations publication. Geneva.
- Kee HL, Nicita A and Olarreaga M (2009). Estimating trade restrictiveness indices. *Economic Journal*. 119:172–199.
- Reyes JD and Kelleher S (2015). Poverty reduction through regional integration: Technical measures to trade in Central America. *Journal of Economic Integration*. 30(4):644–679.
- UNCTAD (2010). Non-Tariff Measures: Evidence from Selected Developing Countries and Future Research Agenda. UNCTAD/DITC/TAB/2009/3. United Nations publication. Geneva.
- UNCTAD Multi-Agency Support Team (MAST) (2013). Classification of Non-Tariff Measures. February 2012 Version. UNCTAD/DITC/TAB/2012/2. United Nations publication. New York and Geneva. Available at [http://unctad.org/en/PublicationsLibrary/ditctab20122\\_en.pdf](http://unctad.org/en/PublicationsLibrary/ditctab20122_en.pdf).
- UNCTAD (2013). Non-Tariff Measures to Trade: Economic and Policy Issues for Developing Countries. UNCTAD/DITC/TAB/2012/1. United Nations publication. Geneva.
- UNCTAD (2014). Guidelines to Collect Data on Official Non-tariff Measures. United Nations publication. UNCTAD/DITC/TAB/2014/4. Geneva.
- Vanzetti D, Peters R and Knebel C (2016). Sand in the Wheels: Non-Tariff Measures and Regional Integration in SADC. UNCTAD/ITCD/TAB/73. United Nations publication. Geneva.
- Wilson JS, Otsuki T and Majumdsar B (2003). Balancing food safety and risk: Do drug residue limits affect international trade in beef? *Journal of International Trade and Economic Development*. 12(4):377–402.

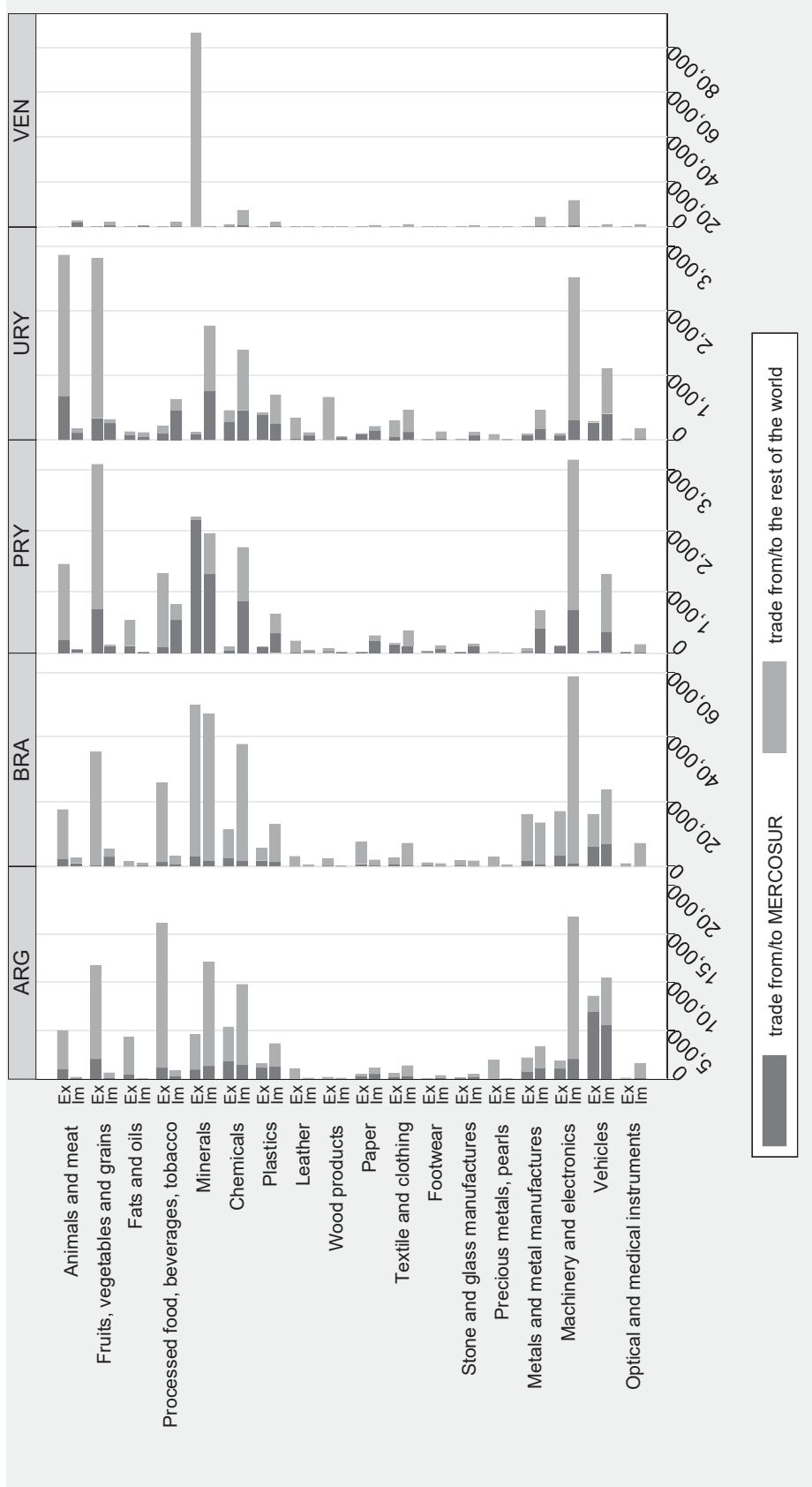
# ANNEX

**Figure 27. Prohibitions and discretionary SPS and TBT measures, by sector and country**  
(simple averages, including partially affected products)



Source: Authors' calculations based on UNCTAD-ALADI NTM data.  
 Abbreviations: ARG, Argentina; BRA, Brazil; EU, European Union; PRY, Paraguay; URY, Uruguay; VEN, Bolivarian Republic of Venezuela.

Figure 28. Exports, imports and share of intra-MERCOSUR trade, by country and sector (millions of United States dollars)



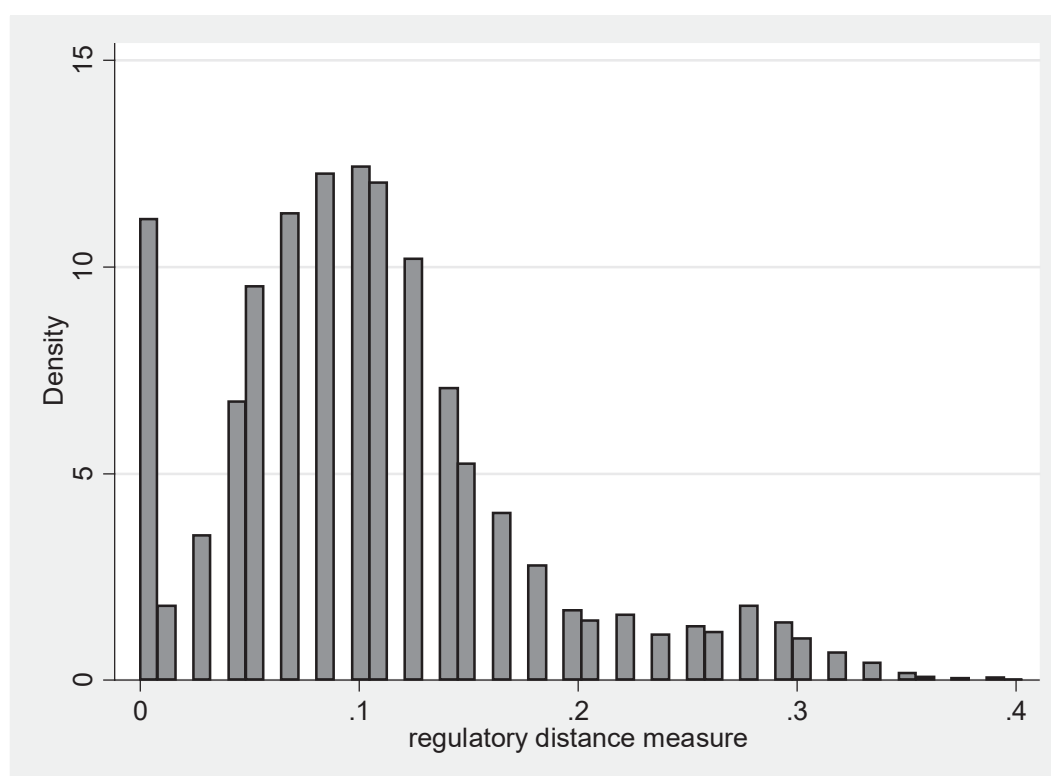
Source: Authors' calculations based on COMTRADE data.  
 Note: 2014 trade values, except for the Bolivarian Republic of Venezuela where latest available data were that of 2013.  
 Abbreviations: ARG, Argentina; BRA, Brazil; PRY, Paraguay; URY, Uruguay; VEN, Bolivarian Republic of Venezuela.

**Table 9. Export and import relevance of the vehicles sector (HS 87), by country (2014)**

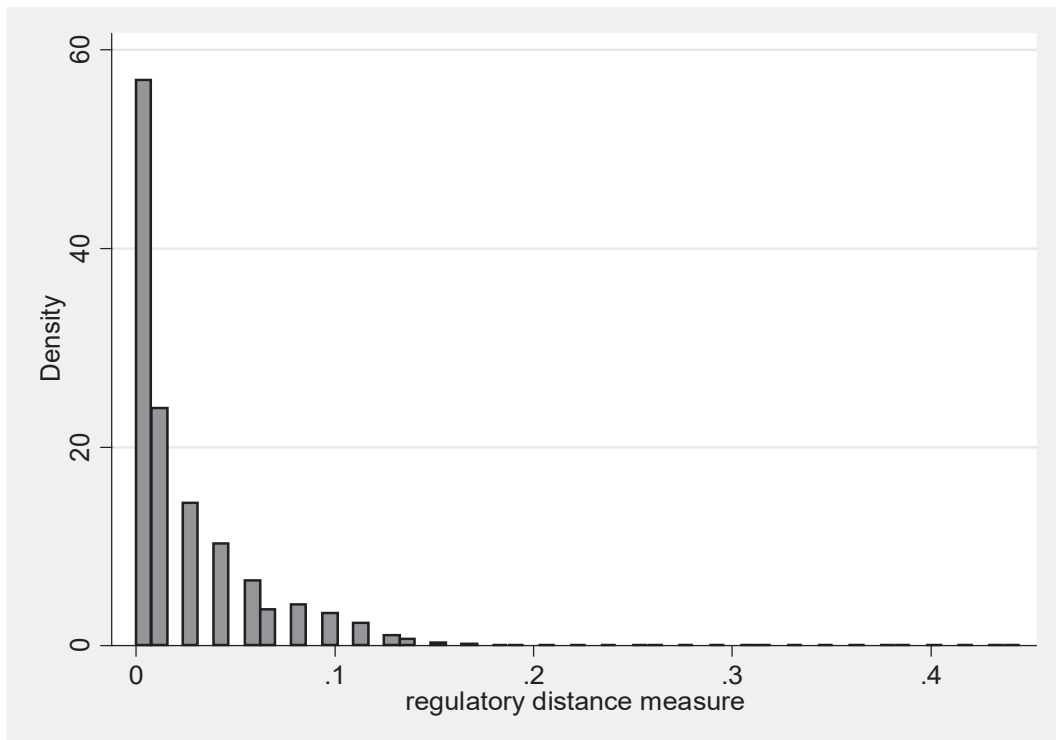
	<i>Argentina</i>	<i>Brazil</i>	<i>Paraguay</i>	<i>Uruguay</i>	<i>Venezuela (Bolivarian Republic of)</i>
Export value (in million US\$)	8 332	9 808	1	268	3
Share in total exports (percentage)	12.5	4.4	0.0	3.0	0.0
Import value (in million US\$)	8 760	19 470	1 213	1 144	642
Share in total imports (percentage)	13.6	8.5	10.0	10.1	2.0

Source: Authors' calculations based on COMTRADE data.

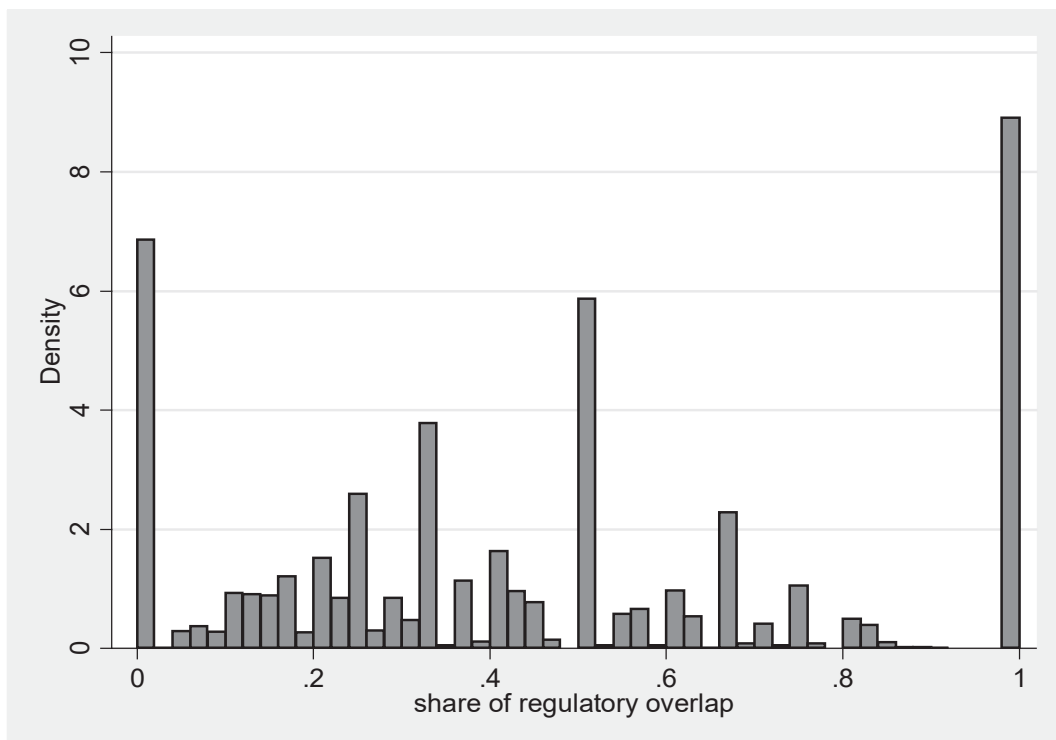
Note: Trade values are for 2014, except for the Bolivarian Republic of Venezuela, where the latest available trade data were that of 2013.

**Figure 29. Distribution of the regulatory distance measure in the agri-food sector**

Source: Authors' calculations based on UNCTAD-ALADI NTM data.

**Figure 30. Distribution of the regulatory distance measure in the manufacturing sector**

Source: Authors' calculations based on UNCTAD-ALADI NTM data.

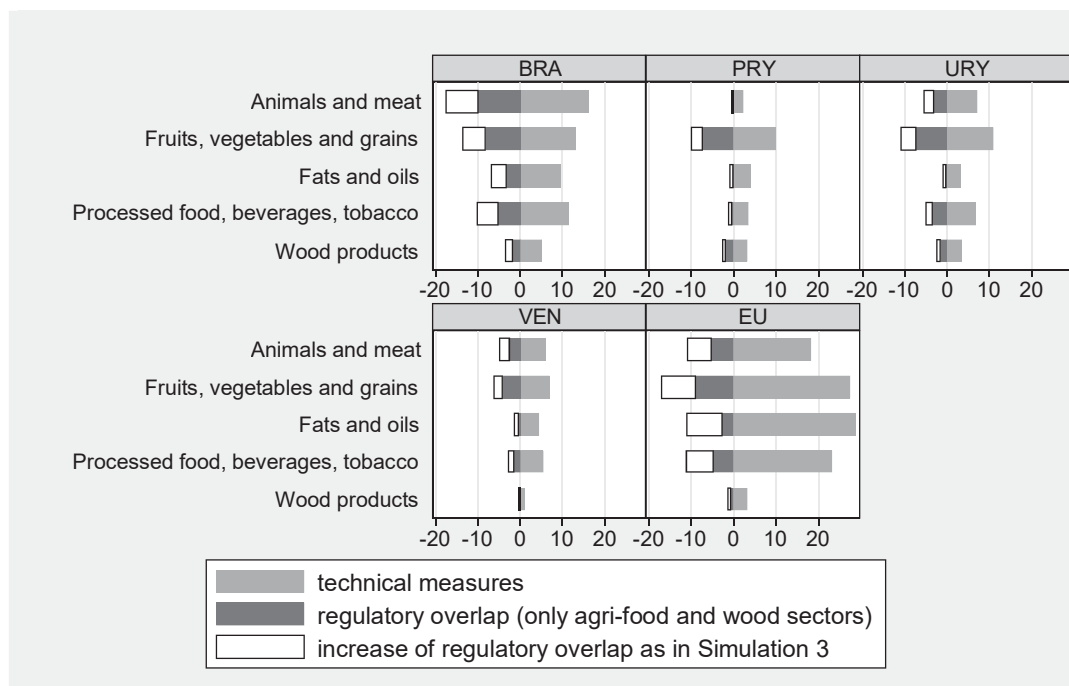
**Figure 31. Distribution of the regulatory overlap measure in the agri-food sector**

Source: Authors' calculations based on UNCTAD-ALADI NTM data.

Table 10. GTAP regional aggregation

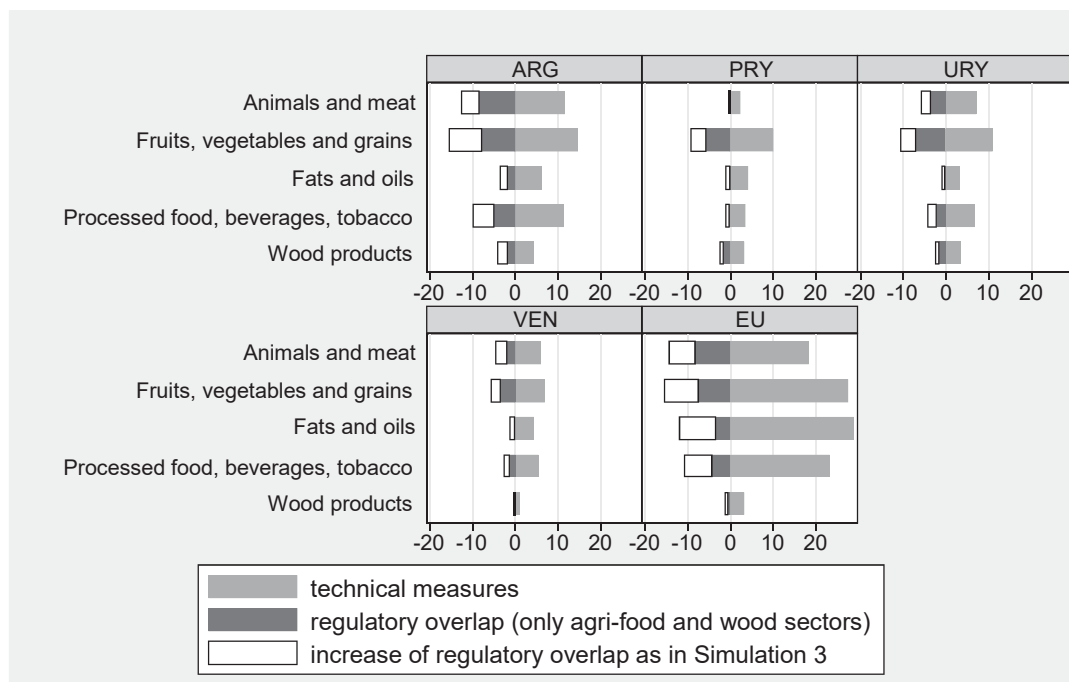
<i>Label</i>	<i>Description</i>
<b>ARG</b>	Argentina
<b>BRA</b>	Brazil
<b>PRY</b>	Paraguay
<b>URY</b>	Uruguay
<b>VEN</b>	Venezuela (Bolivarian Republic of)
<b>EU27</b>	European Union
<b>USA</b>	United States
<b>JPN</b>	Japan
<b>AUS</b>	Australia
<b>ODV</b>	Other developed
<b>CHINA</b>	China
<b>ASEAN</b>	Association of Southeast Asian Nations
<b>SA</b>	South Asia
<b>MEX</b>	Mexico
<b>BOL</b>	Bolivia (Plurinational State of)
<b>CHL</b>	Chile
<b>COL</b>	Colombia
<b>ECU</b>	Ecuador
<b>PER</b>	Peru
<b>CAM</b>	Central America
<b>MENA</b>	North Africa and the Middle East
<b>AFR</b>	Africa
<b>ROW</b>	Rest of the world



**Figure 32. Exporter Argentina: Effects of increasing regulatory overlap in Simulation 3**


Source: Authors' calculations based on UNCTAD-ALADI NTM data.

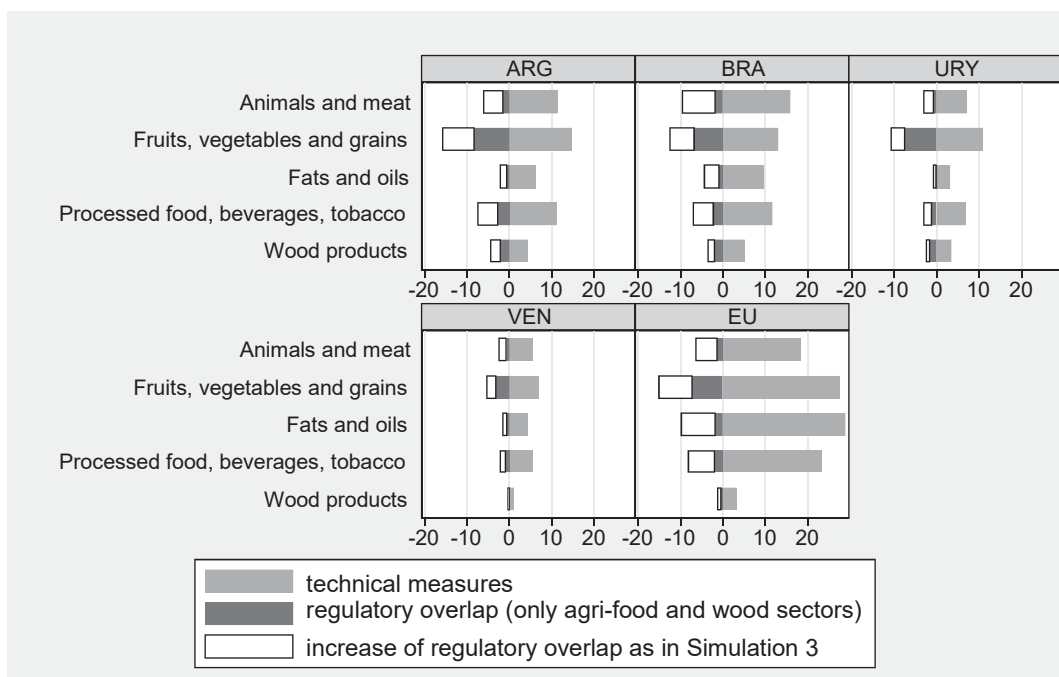
Abbreviations: ARG, Argentina; BRA, Brazil; PRY, Paraguay; URY, Uruguay; VEN, Bolivarian Republic of Venezuela; EU, European Union.

**Figure 33. Exporter Brazil: Effects of increasing regulatory overlap in Simulation 3**


Source: Authors' calculations based on UNCTAD-ALADI NTM data.

Abbreviations: ARG, Argentina; BRA, Brazil; PRY, Paraguay; URY, Uruguay; VEN, Bolivarian Republic of Venezuela; EU, European Union.

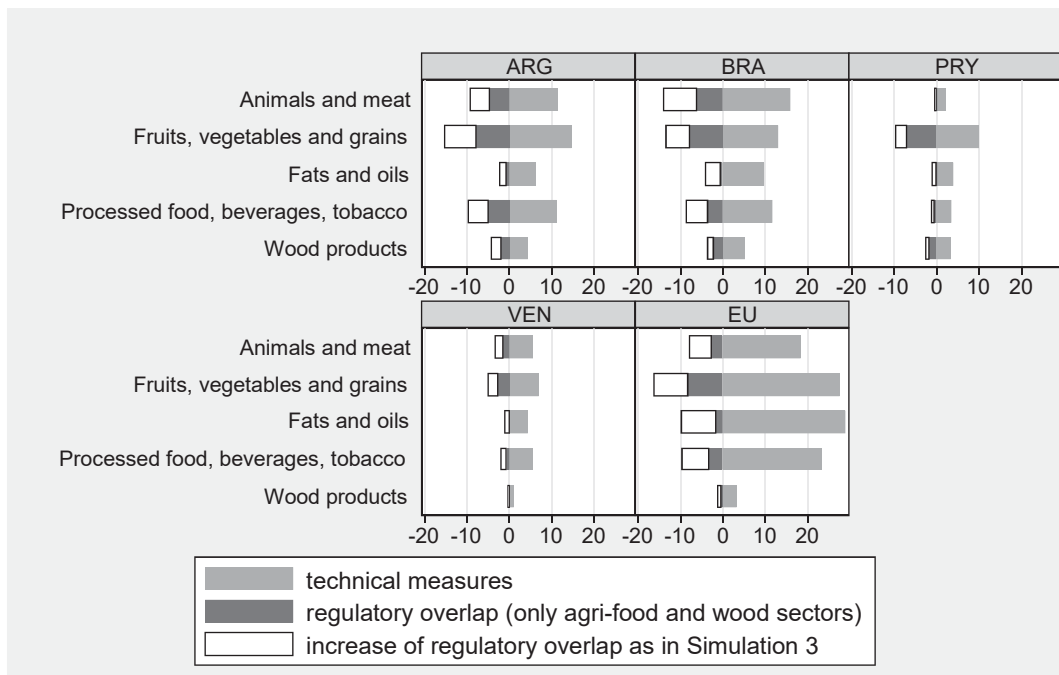
**Figure 34. Exporter Paraguay: Effects of increasing regulatory overlap in Simulation 3**



Source: Authors' calculations based on UNCTAD-ALADI NTM data.

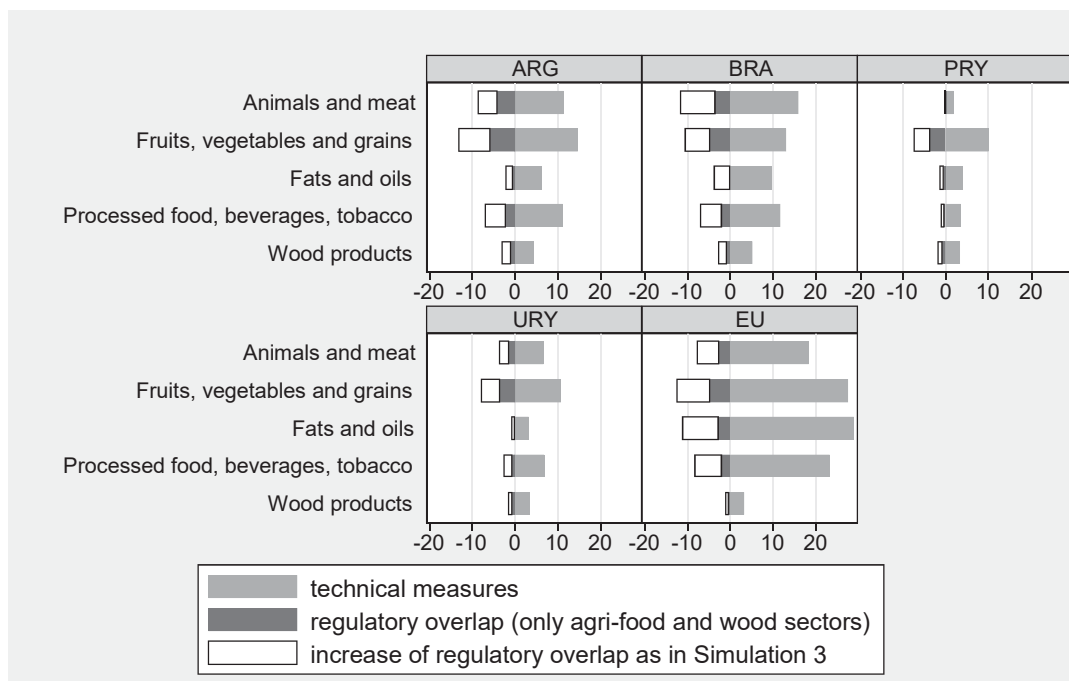
Abbreviations: ARG, Argentina; BRA, Brazil; PRY, Paraguay; URY, Uruguay; VEN, Bolivarian Republic of Venezuela; EU, European Union.

**Figure 35. Exporter Uruguay: Effects of increasing regulatory overlap in Simulation 3**



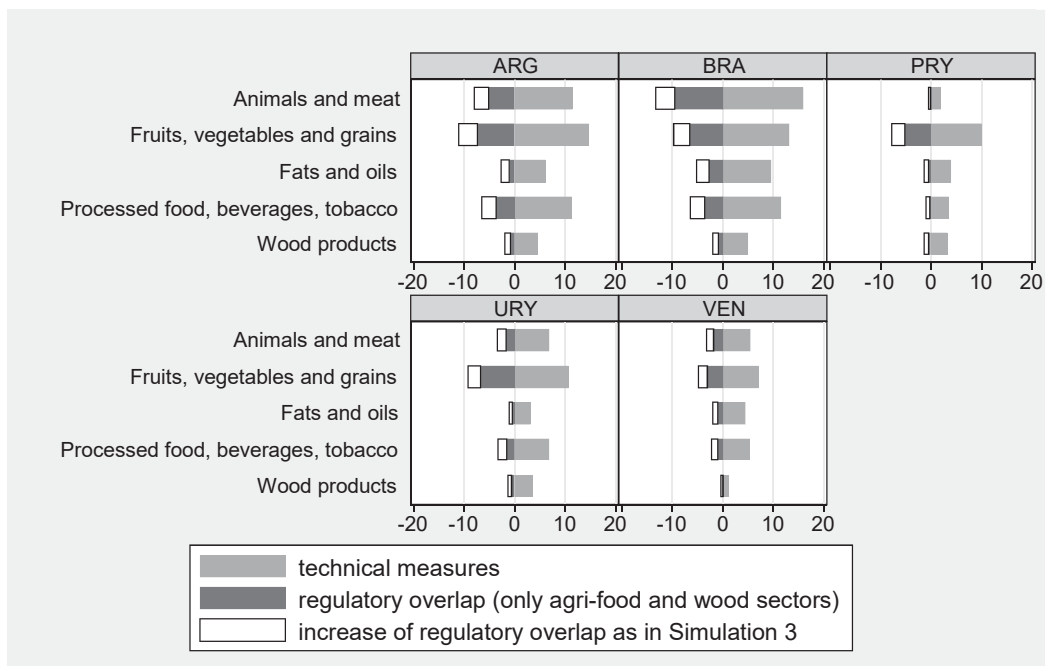
Source: Authors' calculations based on UNCTAD-ALADI NTM data.

Abbreviations: ARG, Argentina; BRA, Brazil; EU, PRY, Paraguay; URY, Uruguay; VEN, Bolivarian Republic of Venezuela; EU, European Union.

**Figure 36. Exporter Venezuela (Bolivarian Republic of): effects of increasing regulatory overlap in Simulation 3**


Source: Authors' calculations based on UNCTAD-ALADI NTM data.

Abbreviations: ARG, Argentina; BRA, Brazil; PRY, Paraguay; URY, Uruguay; VEN, Bolivarian Republic of Venezuela; EU, European Union.

**Figure 37. Exporter European Union: effects of increasing regulatory overlap in Simulation 3**


Source: Authors' calculations based on UNCTAD-ALADI NTM data.

Abbreviations: ARG, Argentina; BRA, Brazil; PRY, Paraguay; URY, Uruguay; VEN, Bolivarian Republic of Venezuela; EU, European Union.

**Table 11. Welfare impacts, all regions**  
(Millions of United States dollars)

<i>Country</i>	<i>Sim 1</i>	<i>Sim 2</i>	<i>Sim 3</i>	<i>Sim 4</i>	<i>Sim 5</i>
<b>Argentina</b>	239	585	1 349	788	1 407
<b>Brazil</b>	431	1 109	2 932	2 318	3 535
<b>Paraguay</b>	13	63	181	76	183
<b>Uruguay</b>	41	145	249	180	256
<b>Venezuela (Bolivarian Republic of)</b>	-50	97	258	353	375
<b>European Union</b>	-156	-189	4 636	1 008	4 558
<b>United States</b>	-45	-47	-281	-220	-210
<b>Japan</b>	-31	-29	-66	-50	-53
<b>Australia</b>	12	13	18	-10	15
<b>Other developed</b>	-43	-56	-187	-106	-156
<b>China</b>	-95	-90	-449	-200	-410
<b>ASEAN</b>	-2	-5	-130	-15	-114
<b>South Asia</b>	-9	-6	-16	-5	-12
<b>Mexico</b>	-27	-33	-66	-53	-57
<b>Bolivia (Plurinational State of)</b>	-8	-11	-43	-34	-38
<b>Chile</b>	-32	-50	-108	-53	-93
<b>Colombia</b>	-11	-17	-62	-25	-55
<b>Ecuador</b>	-10	-16	-36	-15	-31
<b>Peru</b>	-7	-10	-48	-17	-44
<b>Central America</b>	-13	-26	-105	-43	-93
<b>North Africa and Middle East</b>	-83	-99	-302	-166	-281
<b>Africa</b>	-22	-27	-155	-76	-145
<b>Rest of World</b>	-20	-24	-157	-97	-151
<b>World</b>	73	1 276	7 415	3 538	8 386

Source: Authors' simulations, based on GTAP.

