# Barriers or Enablers?

## Towards Trade-Compatible Technical Measures in Latin America and the Caribbean

Special Report on
Integration and Trade

**Juan S. Blyde**

IDB

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# Prologue

Most countries promote public policy objectives like food safety, animal or plant health, or the conservation of the environment, establishing regulations that impose requirements on the commercialization of goods in their respective territories. These so-called technical measures can be found in almost all aspects of our lives.

Technical measures can boost international trade by providing information on the intrinsic properties and quality of a product, thereby building trust, facilitating comparison, reducing uncertainty, and signaling that a product is safe to consume.

However, technical measures can also create barriers to trade when they unnecessarily increase the costs of goods that cross borders. As tariff rates have declined, technical measures have become relatively more important as potential barriers to international trade. In other words, policy-induced market access frictions have become increasingly regulatory in nature.

Unfortunately, technical measures do not always rank high on the trade and integration agendas of Latin American and Caribbean countries. For starters, technical measures are less visible than tariff rates, and their effects on trade are harder to quantify and understand. Furthermore, the negotiations around these regulations can be complex, rife with technical language, and difficult to summarize. Rarely do these regulations make headlines.

In addition, the trade agenda on technical measures needs to look beyond trade ministries and incorporate the many other government agencies that are often behind these regulations. However, such agencies are not always well-versed in trade matters and may not even

be aware of how their actions impact trade. All the same, this lack of understanding of technical measures and their limited visibility do not prevent them from having a significant impact on international trade. That is why it is important to examine in detail the relationship between technical measures and trade flows and discuss how Latin American and Caribbean countries can meet the national objectives pursued by such regulations without undermining international trade and potentially even promoting it. This is the objective of this report.

The publication presents detailed information on the prevalence of technical measures in Latin America and the Caribbean, examines their relationship with international trade, and discusses the main policy issues that countries in the region should consider in order to ensure that the use of technical measures is compatible with a modern trade and integration agenda.

**Fabrizio Opertti**
Integration and Trade Sector Manager
Inter-American Development Bank

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# Executive Summary

**Barriers or Enablers?**
Towards Trade-Compatible Technical Measures
in Latin America and the Caribbean

# Executive Summary

**Technical measures can be found in many aspects of our lives.** Water filters, baby cribs, recyclable bottles, and cigarette cases are all the subject of technical measures. Governments impose technical measures on the commercialization of goods ranging from food products to electronic devices to promote public policy objectives such as food safety, the protection of human, animal or plant health, or the conservation of the environment. Technical measures include sanitary and phytosanitary measures as well as technical requirements.

**Technical measures can facilitate trade.** Technical measures can provide information regarding a product's intrinsic properties and quality, thereby building trust, facilitating comparison, reducing uncertainty, and signaling that the product is safe to consume. This may increase demand and, therefore, imports.

**Technical measures can hinder trade.** Technical measures can also create barriers to trade by unnecessarily increasing the costs of goods that cross borders. This can happen because information on technical measures is often opaque, ambiguous, and scattered; regulations are much stricter than necessary; and requirements for conformity assessment are excessive.

**Technical measures should be part of a modern trade and integration agenda.** In modern societies, technical measures coexist with international trade. However, countries must ensure that their growing use is compatible with an appropriate trade and integration agenda.

**In Latin America and the Caribbean, technical measures are becoming increasingly prevalent.** The demand for technical measures in the region has grown. On average, 52% of the imported products were subject to a technical measure in 2020, up from 20% in 2000.

**Technical measures are applied to final goods and also to intermediate inputs, which could limit participation in global value chains.** The technical measures used in the region apply not only to final products but also to intermediate inputs and capital goods. Accordingly, these regulations, when poorly designed, can increase the costs of the imports used in the production of goods and limit participation in global value chains.

**There is substantial heterogeneity in the technical measures applied by countries in Latin America and the Caribbean.** The average regulatory distance between the region's countries is 58%. In other words, on average, 58% of the technical measures that exist in the region's countries are different. The equivalent measure in the countries of the European Union is zero because they have achieved regulatory convergence by combining a series of schemes.

**The regulatory heterogeneity in Latin America and the Caribbean negatively affects trade flows.** The heterogeneity of technical measures in the region exerts a negative impact on the probability of there being trade between countries. For example, an increase of just 10% in regulatory distance between countries reduces the probability of market entry by 1.18 percentage points, which is equivalent to a 16% reduction in the probability of a product from Latin America entering the average market in the region. A 10% increase in regulatory distance also reduces intraregional import volumes by 3.5%.

**Data from a business survey confirms the negative impact of regulatory heterogeneity on trade in the region.** Nearly 60% of companies surveyed said they had a product that was subject to different regulations in different Latin American and Caribbean countries. Of these firms, 43% said that this situation results in high costs due to significant changes in production and/or testing to satisfy each destination market. In general, 33% of the companies said that technical measures are an impediment to exporting in the region, and the proportion increases to 50% among the companies with low export levels.

**Engaging in international regulatory cooperation can significantly foster international trade.** International regulatory cooperation—the menu of options to reduce trade costs associated with technical measures—is increasingly associated with positive trade impacts, many studies have found. The research in this report shows that if regulatory distances between the countries of Latin America and the Caribbean were reduced by 50%, the average probability of entry into Latin American markets would increase by 81% and intraregional trade flows by 17%. Likewise, if regulatory distances between countries in the region and the rest of the world were reduced by 50%, the probability of entry into the average world market would increase by 143% and trade flows by 17%.

**In international regulatory cooperation, one size does not fit all.** Countries have a menu of options for engaging in international regulatory cooperation, ranging from shallow to deep approaches to cooperation. In general, shallow approaches do not seek to modify national regulations substantially, and the cost of engagement is relatively low. The opposite is true for deep approaches. The various approaches to regulatory cooperation imply different institutional setup costs, different levels of flexibility around modifying or maintaining existing national regulations, and different capacities on the part of regulatory authorities. The appropriate approach is thus likely to depend on the specific sector and trade partner.

**International regulatory cooperation within the region should not lose sight of regulatory developments in the rest of the world.** Exporting firms from Latin America and the Caribbean have a potential market in the region and in other parts of the world. Reducing regulatory heterogeneity within the region would not be desirable if it meant increasing heterogeneity with the rest of the world. Adopting international standards as much as possible and employing mutual recognition agreements may reduce the likelihood of drifting away from the rest of the world when reducing regulatory heterogeneity within the region.

**The process of achieving a successful international regulatory cooperation agreement comprises various stages.** The milestones that must be reached include: i) identifying countries with a marked interest in bringing their regulatory schemes closer together; ii) selecting the sectors on which regulatory cooperation will focus; iii) analyzing national regulations to identify similarities and differences and ascertain the existing level of regulatory overlap; iv) weighing up the pros and cons of the different regulatory cooperation scheme and choosing the one around which there is the greatest consensus; v) drafting the regulatory cooperation agreement. Each of these stages involves multiple tasks, and the process can be demanding. Some countries may need support from the international community to participate actively in international regulatory cooperation mechanisms.

# 1

# Technical Measures: What Are They?

- **What costs do firms face when dealing with technical measures?**
- **Why might technical measures hinder international trade?**

# 1 Technical Measures: What Are They?

Technical measures are regulations that governments impose on the commercialization of products in their respective territories to promote public policy objectives in different areas, like food safety, the protection of human, animal or plant health, or the conservation of the environment. Technical measures may also seek to guarantee the quality of a product or ensure that the components of a system are compatible, as happens in the telecommunications sector. Technical measures include sanitary and phytosanitary measures and technical requirements.[1] [2]

Technical measures are all around us. For example, in most countries, there is a good chance that any vegetables you buy comply with certain regulations, such as a maximum permitted level of pesticide residues. These regulations are implemented to ensure that products are safe for consumption. Most food products—including fruits, meat, poultry, fish, eggs, or milk— are subject to different sanitary or phytosanitary requirements to prevent food-borne illness. But technical measures go far beyond food. From requirements on how to build a baby's crib to regulations to remind consumers that certain products should be recycled, technical measures can be found in many aspects of our lives. Box 1.1 provides some illustrative examples.

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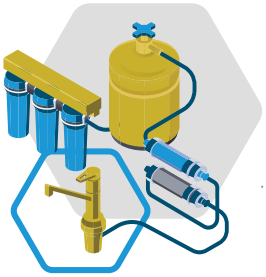
1 Technical measures are one type of so-called nontariff measures (NTMs), which are policy measures other than ordinary tariffs that can have an economic effect on international trade (UNCTAD, 2010).

2 Sanitary and phytosanitary measures are normally used to protect human or animal health from hazards, pests or diseases carried by animals, plants or food. Accordingly, sanitary and phytosanitary measures are most often, but not always, applied to food. Technical requirements, on the other hand, can cover any subject and are applied to many sectors, encompassing a wide variety of goods. For example, labelling requirements or nutritional information on food products are generally not considered to be sanitary or phytosanitary measures and are therefore usually viewed as technical requirements.

**Box 1.1** Examples of Technical Measures

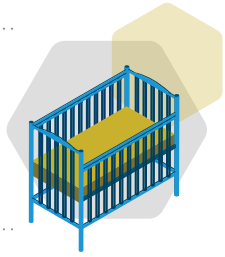


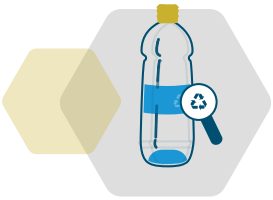
## Water filter

Normally, there is a regulation that dictates the maximun allowed of polluting particles in water filters

## Baby crib

The space between the slats of baby cribs is regulated to prevent parts of the body from getting trapped



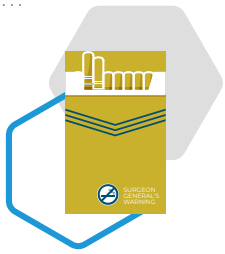


## Recyclable bottle

Many materials that are recyclable must indicate so on the label. The main purpose is to remind consumers to recycle the material and contribute with the protection of the environment

## Cigarette labeling

In many countries, cigarette labeling must indicate that they are harmful. This is to raise awareness about the potential side effects of the product



The ubiquity of technical measures implies that they play many important roles in modern societies. For example, technical measures can provide valuable information about the intrinsic properties and quality of a product, thereby building trust, facilitating comparison, reducing uncertainty, decreasing the chances of deception, indicating that a product is safe to consume, or informing of its potential side effects or environmental impacts. In more technical terms, these regulations address many market failures, such as negative externalities or information asymmetries, resulting in improved welfare for the country.[3]

3 The WTO provides a clear distinction between standards and technical measures: standards are voluntary and technical measures are mandatory. This report focuses on technical measures.

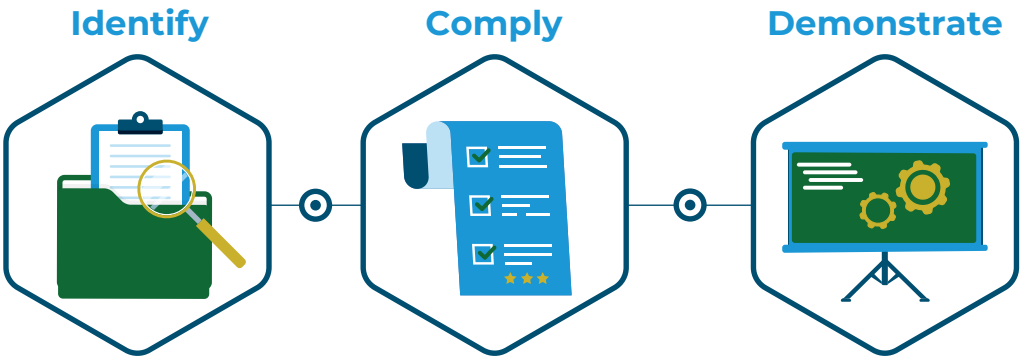
If technical measures are poorly designed, they can create barriers to international trade, especially if they are unnecessarily stringent and onerous to comply with. In some cases, these measures are implemented for protectionist reasons. The World Trade Organization (WTO) regulates these measures through the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement) and the Agreement on Technical Barriers to Trade (TBT Agreement). These agreements require these regulations to be science-based and nondiscriminatory, meaning that imported products should not be treated less favorably than similar products of domestic origin and similar products originating in any other country. The agreements also require members to avoid unnecessary barriers to trade.[4]

## What costs do firms face when dealing with technical measures?

There are three phases in the process of dealing with technical measures that impose costs on firms. First, firms must identify the relevant technical measures that apply in a market; second, they must comply with these measures to serve that market; and third, they must demonstrate that the product complies with the regulations. These three phases—identifying, complying, and demonstrating—are associated with specific costs for firms, including search costs, specification costs, and conformity assessment costs.

4 The WTO also has regular committees to manage trade tensions and concerns associated with implementing technical measures (González, 2023)

**Box 1.2** The Three Phases of Dealing with Technical Measures




This is the process of searching and gathering information about the technical requirements that apply to the product

In this phase the firm may need to adjust the product to comply with the regulation

In this final phase, the firm demonstrates to the authorities that its product complies with the regulations

In the identification phase, firms incur costs associated with searching for, identifying, gathering, and processing information on the technical requirements that apply to their products.

In the compliance phase, firms may need to adjust the product specification to meet regulatory requirements. The costs incurred at this stage are sometimes referred to as specification costs: they may be fixed, such as opening a new product line, or variable, such as adding an input to each unit of the good produced.

In the demonstration phase, firms incur costs associated with demonstrating to the authorities that their products comply with the regulations. These costs cover the procedures required to show compliance, including laboratory testing, inspections, audits, or certifications. These are sometimes referred to as conformity assessment costs.

The cost of dealing with technical measures can increase unnecessarily in each of the three phases. For example, identification costs can be high in countries where information about technical requirements is opaque and ambiguous, and where regulations are scattered and atomized. Compliance costs can also be high if countries impose regulations that are much more stringent than necessary. Finally, conformity assessment costs can be high if countries require unreasonable amounts of testing, inspection, or certification.

## Why might technical measures hinder international trade?

Technical measures must be non discriminatory—that is, they must apply equally to all firms, whether domestic or foreign. However, technical measures can have potentially adverse effects on international trade if the regulations in the destination market differ significantly from those in the exporting country, as foreign firms wishing to export to that market will face additional costs associated with identifying, complying with, and demonstrating compliance with the regulations in that market in addition to those in their home country.

The following example illustrates this point. When a consumer buys a new TV, they do not expect to get an electric shock when plugging it in or to burn their hand when using the remote control. This is why most countries in the world impose regulations on the sale of TVs within their own territories, including safety requirements for many internal parts. Let's assume that two countries in Latin America imposed very different safety requirements on the commercialization of a part that is needed to produce a new TV. Potential suppliers of this part operating in one of the countries must comply with two different safety requirements to sell the part in both markets. This may mean hiring additional staff for testing and certification, creating two designs for the part, opening two separate product lines, or even setting up two different production facilities. The existence of different safety requirements across countries increases the cost of the product that is traded.

If these requirements are different in each destination market, these costs may be multiplied by the number of markets that the exporter wishes to serve. In technical terms, the company cannot take advantage of economies of scale, and thus the cost per unit of production increases. This can be particularly detrimental to small and medium-sized enterprises.

Initially, governments may have legitimate reasons for regulating differently: for instance, their societies may have different preferences, risk tolerance levels, and income levels, or may be affected by cultural or other factors. Therefore, in a world without trade, the optimal regulations in each country may vary. When countries trade, however, there will be trade costs associated with the fact that regulations are not similar, as discussed above, and this may lead to economic losses that reduce welfare, potentially in the form of higher import prices and/or reduced availability of imported varieties. Consequently, optimal regulation in a world with trade needs to consider not only domestic factors but also the trade-induced welfare effects that may result from reducing regulatory differences between countries.

# 2

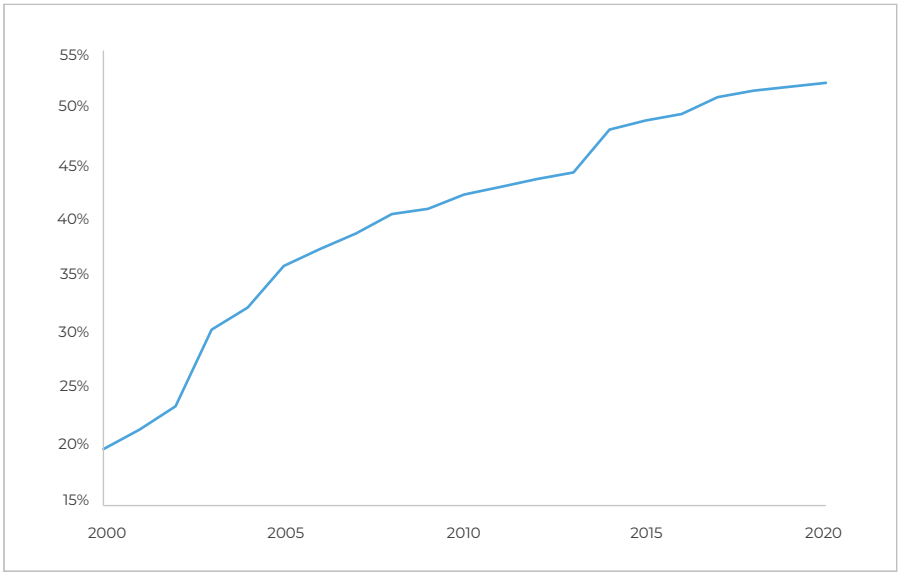
# An Overview of Technical Measures in Latin America and The Caribbean

- **Prevalence of technical measures**
- **How different are the technical measures between LAC countries?**

## Prevalence of technical measures

Traditionally, developed countries were the first to introduce technical measures, partly because they tend to have higher levels of social awareness—for example, about the standards of the food they consume. For example, the European Union (EU) countries impose technical measures on around 82% of their import tariff lines, and similar shares are observed in the US and Canada. However, the demand for technical measures is also on the rise in the developing world, including in Latin America and the Caribbean. Figure 2.1 shows the evolution of technical measures in the region. On average, these were applied to 52% of import tariff lines in 2020, up from 20% in 2000. [5]

**Figure 2.1** Share of tariff lines affected by technical measures
LAC average country




**Source:** IDB calculations.

**Notes:** The figure shows the simple average share of tariff lines at the HS 6-digit level affected by one or more technical measures (SPS and TBT measures) for 24 countries in Latin America and the Caribbean (LAC). This is also called a frequency index. See appendix A for the database sources.

5 Appendix A describes the different datasets used in this report.

As table 2.1 shows, SPS measures are more common in the agricultural sector and for products of animal origin, as controlling them is important to guaranteeing consumer health and safety. Conversely, TBT measures are applied to a much wider range of products and are more evenly distributed across economic sectors.

**Table 2.1.** Share of tariff lines affected by SPS and TBT measures, by section. LAC average

| SECTION | SPS | TBT |
|---|---|---|
| Animals and meat | 66% | 76% |
| Vegetable products | 60% | 77% |
| Fats and oils | 62% | 92% |
| Processed food, beverages, tobacco | 56% | 84% |
| Mineral products | 6% | 50% |
| Chemical products | 44% | 45% |
| Rubber and plastics | 9% | 36% |
| Leather products | 19% | 36% |
| Wood products | 29% | 40% |
| Paper | 2% | 38% |
| Textile and clothing | 12% | 76% |
| Footwear | 1% | 60% |
| Stone and cement | 1% | 50% |
| Precious metals, pearls | 0% | 52% |
| Metals and metal manufactures | 1% | 39% |
| Machinery and electronics | 2% | 46% |
| Motor vehicles | 4% | 42% |
| Optical and medical instruments | 4% | 42% |
| Miscellaneous goods | 3% | 53% |

**Source:** IDB calculations.

**Notes:** The table shows the share of tariff lines at the HS 6-digit level in each section of the harmonized system affected by SPS and TBT measures. The results are simple averages for 24 countries in LAC. The results are for 2020.

SPS and TBT measures affect not only final products but also intermediate inputs and capital goods (see table 2.2). Accordingly, these regulations can increase the costs of the imports used in the production of goods at home and limit the country's participation in global value chains.

**Table 2.2.** Share of tariff lines affected by SPS and TBT measures, by product use, LAC average

| SECTION | SPS | TBT |
|---|---|---|
| Final products | 29% | 65% |
| Intermediate inputs | 18% | 47% |
| Capital goods | 3% | 45% |

**Source:** IDB calculations.

**Notes:** The table shows the share of tariff lines at the HS 6-digit level in each product category affected by SPS and TBT measures. The results are simple averages for 24 countries in LAC. The results are for 2020.

Some of the most common technical measures include requirements related to labeling, marking, and packaging; prohibitions and restrictions associated with SPS; and licensing, product quality, safety, and performance requirements related to TBT measures (see figure 2.2). Conformity assessments are also very prominent, as figure 2.2 shows, and often constitute requirements in themselves. As noted in chapter 1, countries establish not only the technical measures with which a product must comply but also how conformity with these requirements must be demonstrated, including the types of tests that are acceptable, the certified laboratories that may be used, or the approval procedures that must be followed. These means of demonstrating compliance with the regulations in themselves constitute additional requirements and are considered potential additional barriers to trade.

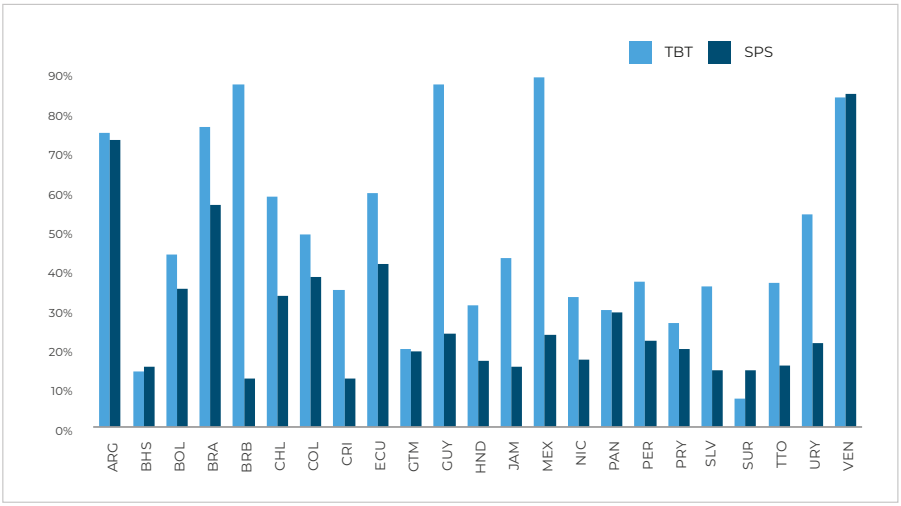
**Figure 2.2** Share of tariff lines affected by technical measures
Average LAC country


**Source:** IDB calculations.

**Notes:** The figure shows the share of tariff lines at the HS 6-digit level affected by specific technical measures. The results are for 2018.

Figure 2.3 shows the prevalence of technical measures in Latin America and the Caribbean by country. There is a great deal of heterogeneity in the region. Some countries—most notably Argentina, Brazil, and Venezuela—impose both TBT and SPS measures on a large number of products. Other countries, such as Mexico, Barbados, and Guyana, impose TBT measures on many products but comparatively few SPS measures. For their part, the Central American countries and the Caribbean countries impose TBT and SPS measures on a relatively smaller number of products than most of their counterparts.

**Figure 2.3** Share of tariff lines affected by technical measures




**Source:** IDB calculations.

**Notes:** The figure shows the share of tariff lines at the HS 6-digit level affected by SPS and TBT measures.

## How different are the technical measures between LAC countries?

As mentioned in the introduction, countries impose technical measures to promote public policy objectives such as food safety, the protection of human health, or the preservation of the environment. These regulations can improve welfare by addressing market failures; therefore, in principle, the number of regulations applied or the number of products affected by these regulations are not in themselves indicators of bad policy, nor are they clear signs of impediments to trade.

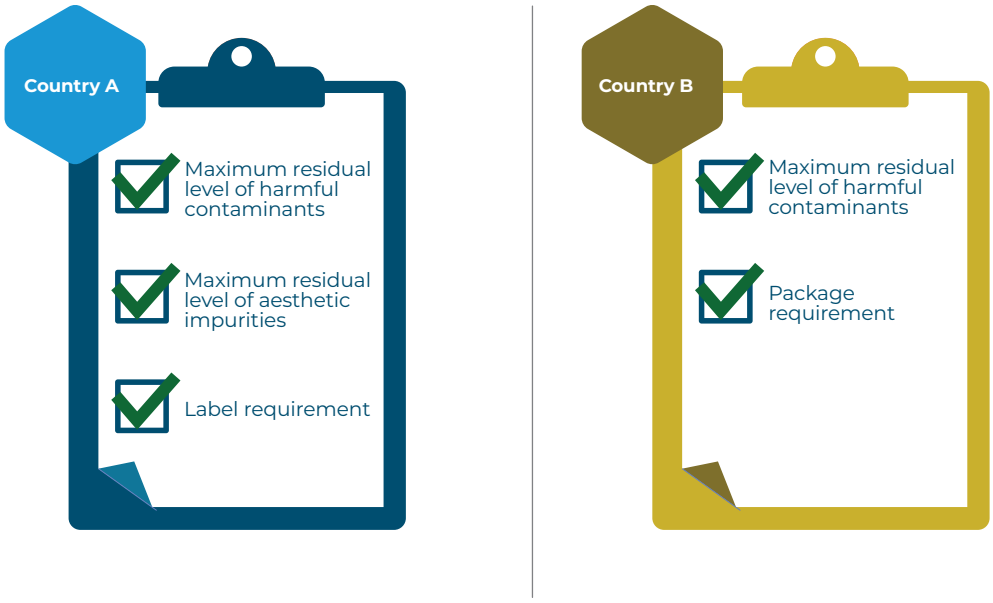
However, the factor that could potentially pose the greatest threat to international trade is the heterogeneity of technical measures across markets. Firms wishing to serve different markets, including their own, may have to meet two or more technical requirements in different countries. This can increase the cost of producing goods.

It is thus important to examine how different the technical measures imposed by LAC countries are. To this end, we use an index of the regulatory distance between country pairs. The index takes all the technical measures that the two countries apply to a particular good and calculates what percentage of the measures are different. The overall regulatory distance between the two countries is calculated as the average regulatory distance across all the products. Box 2.1 presents a simple example of how regulatory distances are constructed, while appendix B explains the calculation in detail.[6]

6 The regulatory distance index is independent of the intensity or severity of the technical measures applied. For example, if two countries apply the same measure but with different thresholds, they are still counted as applying the same measure. As a result, the index may underestimate the degree of regulatory divergence that exists. The index should therefore be regarded as a conservative measure of regulatory distance.

**Box 2.1** Example of Regulatory Distance

**Requirements for home water filters**




In this example, the combined total number of requirements for water filters imposed by countries A and B is four. Only one of these four requirements is the same between countries A and B. This means that three of the four requirements, or 75% of the requirements, are different. Consequently, the regulatory distance in water filters between countries A and B is 0.75.

The average regulatory distance among LAC countries is 58%.[7] In other words, on average, 58% of the technical measures that countries in the region apply within their territories are different. The equivalent measure in

7 We first calculate the regulatory distance between each pair of LAC countries and then we take the average among all these bilateral distances.

the EU is zero because EU countries have achieved regulatory convergence by combining a series of schemes (see chapter 4 for details)[8].

One way to visualize the bilateral distances among all LAC countries is to use multidimensional scaling, a technique that assigns each distance to a two-dimensional graph (figure 2.4). The units of the axes are not important in our context. What is more important is the location of each point in relation to the others. In general, points that are clustered indicate countries that are relatively close in terms of technical regulations, while countries on the periphery have regulatory distances that are relatively large compared to most countries.

**Figure 2.4** Regulatory distances


**Source:** IDB calculations.

8 In the UNCTAD database, the EU is presented as a monolithic bloc sharing the same sets of technical measures. This is because the EU has achieved regulatory convergence of a combination of schemes discussed below. In practical terms, this regulatory convergence is equivalent to countries having a regulatory distance equal to zero in the sense that intra-zone trade of a product does not face different regulations in different countries.

The figure shows a number of important patterns. There are large distances between some countries on the periphery and most of the other countries—this is particularly true for Argentina, Brazil, Venezuela, and Guyana. The number of products affected by SPS and TBT requirements in these countries tends to be large, particularly in Argentina, Brazil, and Venezuela (see figure 2.3). Conversely, there are several clusters of countries, mostly ones from Central America and the Caribbean. In general, the number of products that are affected by SPS and TBT requirements in these countries is small relative to the countries on the periphery (see figure 2.3).

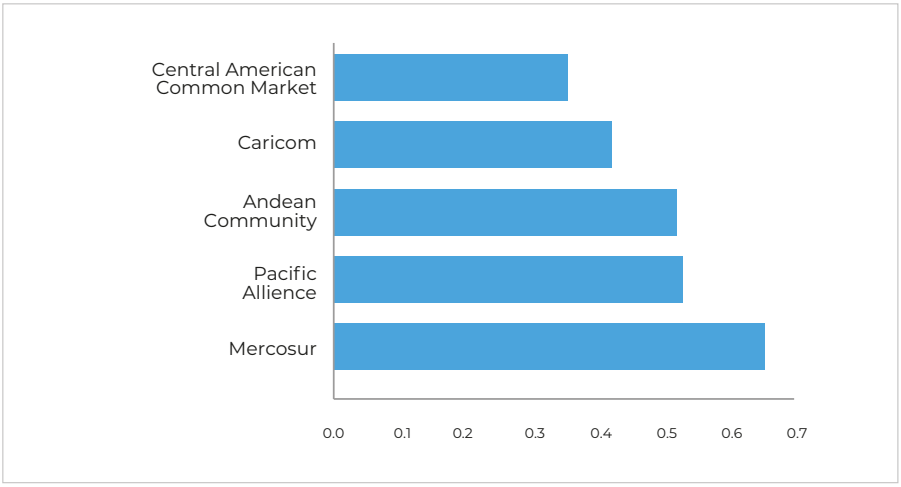
The figure reveals a number of somewhat unexpected similarities. For instance, the average regulatory distance between Uruguay and Nicaragua is smaller than between Uruguay and Argentina. Likewise, the average regulatory distance between Colombia and Jamaica is smaller than between Colombia and Venezuela. These patterns are partly explained by countries like Argentina and Venezuela tending to impose many technical measures to many products: having more technical measures means there is more room for disparities. On the other hand, fewer regulations tend to be associated with fewer disparities—in the extreme case of no regulations being present, there are no disparities.

Another instructive way of presenting the results of regulatory distance is to group countries according to membership of trade agreements. As trade agreements seek to reduce trade barriers among member countries, visualizing the degree of regulatory heterogeneity within each trade bloc can be a step toward illustrating potential trade frictions associated with technical measures. We present our findings in five groups that correspond to LAC's main trade agreements: the Southern Common Market (MERCOSUR), the Andean Community, the Central American Common Market (CACM), the Pacific Alliance (PA), and the Caribbean Community (CARICOM).

Figure 2.5 shows the average regulatory distance between the countries comprising each trade bloc. The bloc with the smallest average regulatory distance among its member countries is the CACM, followed by CARICOM. These patterns were already hinted at in figure 2.4, as the countries that make up these blocs formed relatively close clusters. The bloc with the

greatest regulatory distance among its member countries is MERCOSUR. This is mainly due to the large regulatory distances observed in Argentina and Brazil compared to Uruguay and Paraguay, as mentioned above.

**Figure 2.5** Average regulatory distance of countries within trade agreements

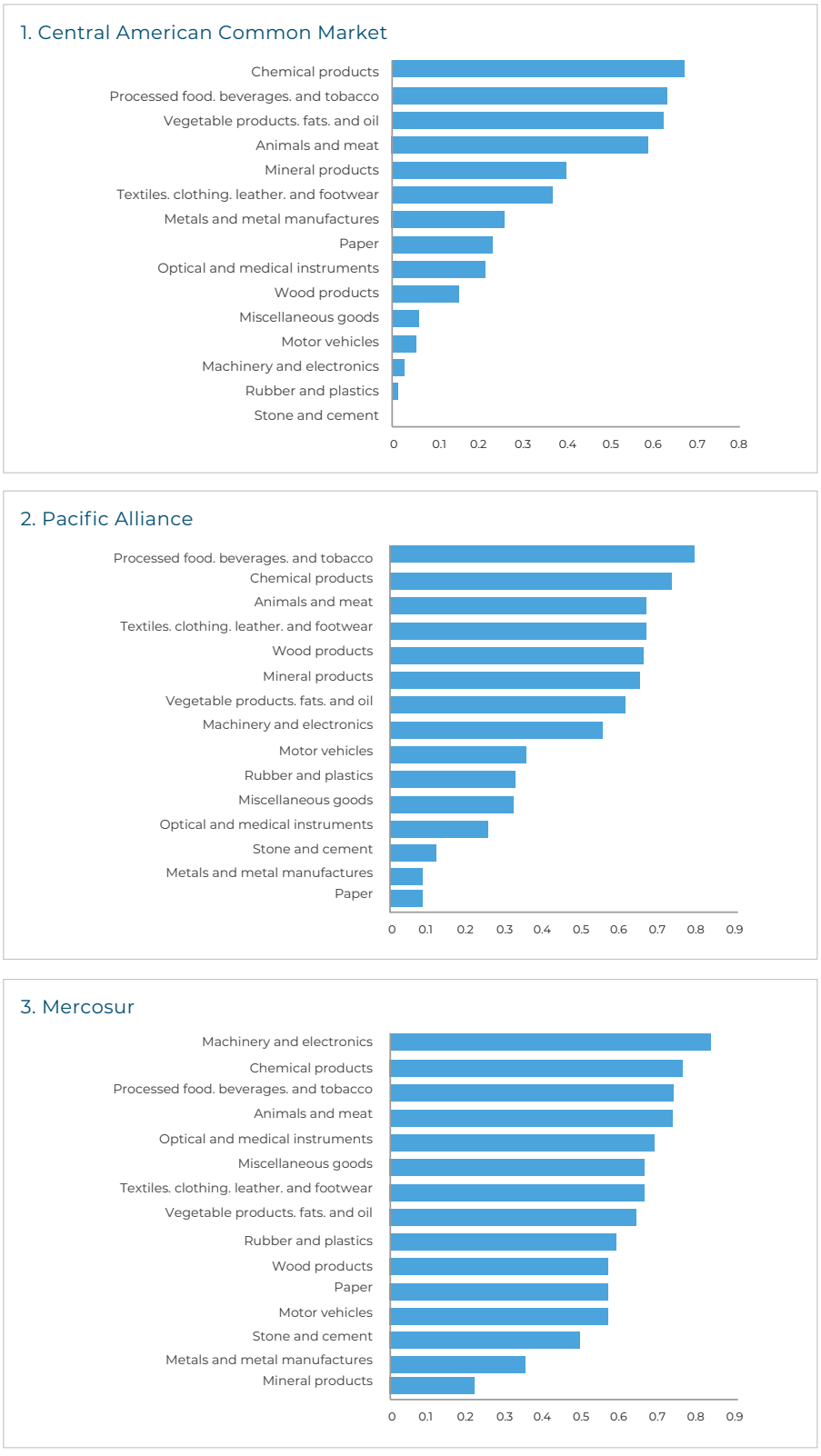


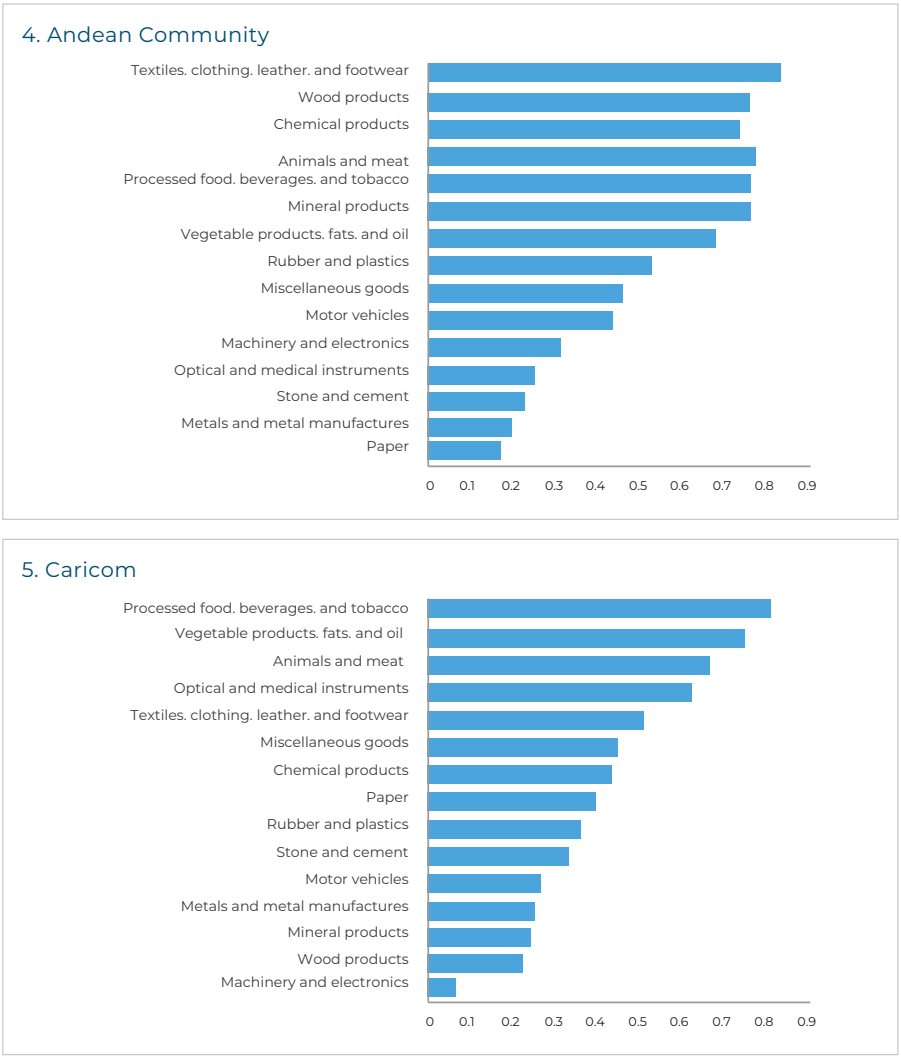

**Source:** IDB calculations.

In figure 2.5, the units in the horizontal axis correspond to regulatory distance. For instance, the bar for CACM means that an average 35% of the technical measures imposed by these countries are dissimilar; in the case of MERCOSUR, this average is 65%.

Figure 2.5 presents regulatory distances measured as an average across all sectors. However, there is great heterogeneity across sectors within each trade bloc, as figure 2.6 shows. The various panels again show regulatory distances among the countries of each bloc, but these are disaggregated at the sectoral level. Even for blocs whose average regulatory distances are small, like the CACM, the distances are quite large in some sectors.

**Figure 2.6** Average regulatory distance within trade blocs, by sectors

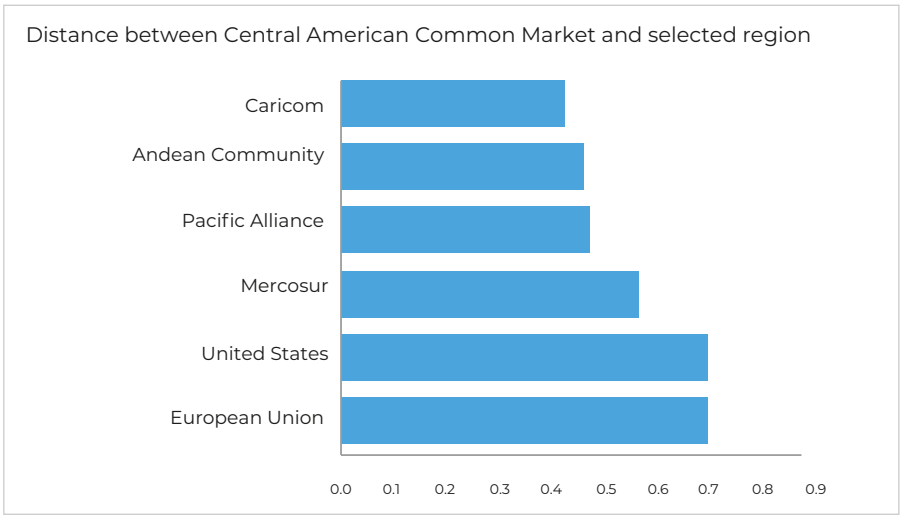


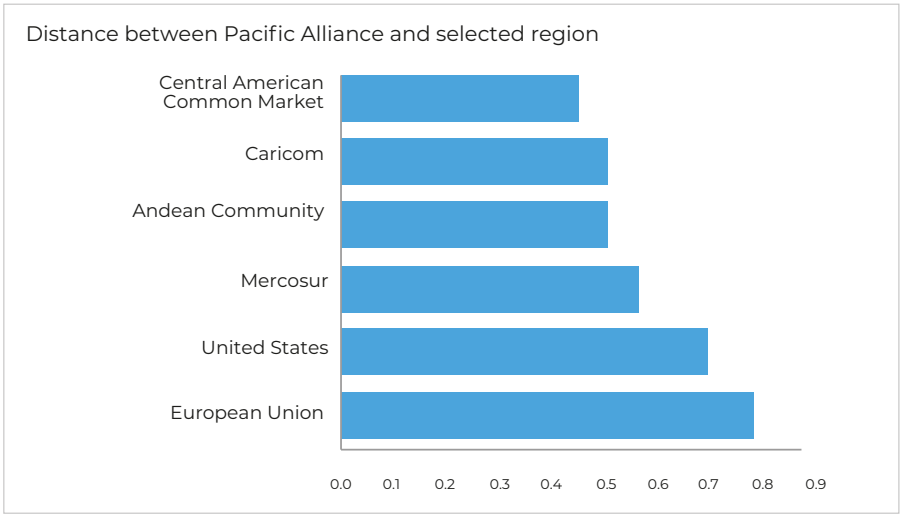


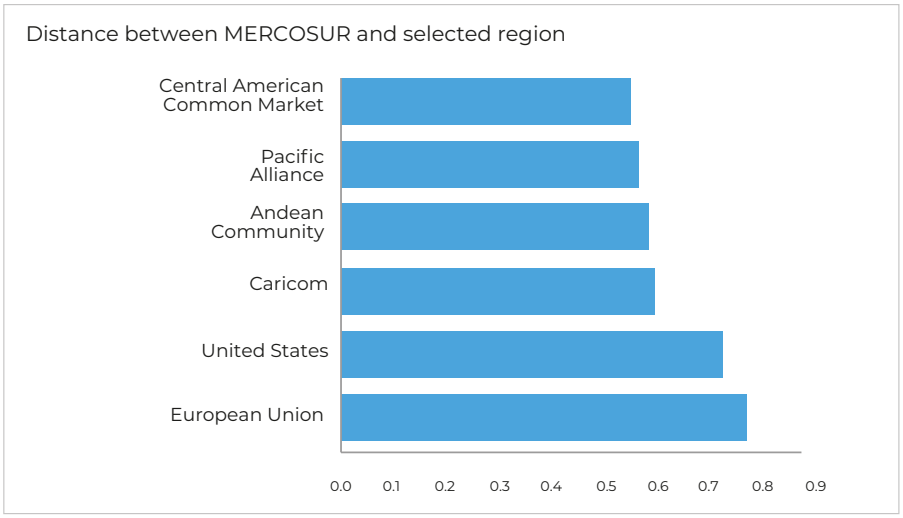

**Source:** IDB calculations.

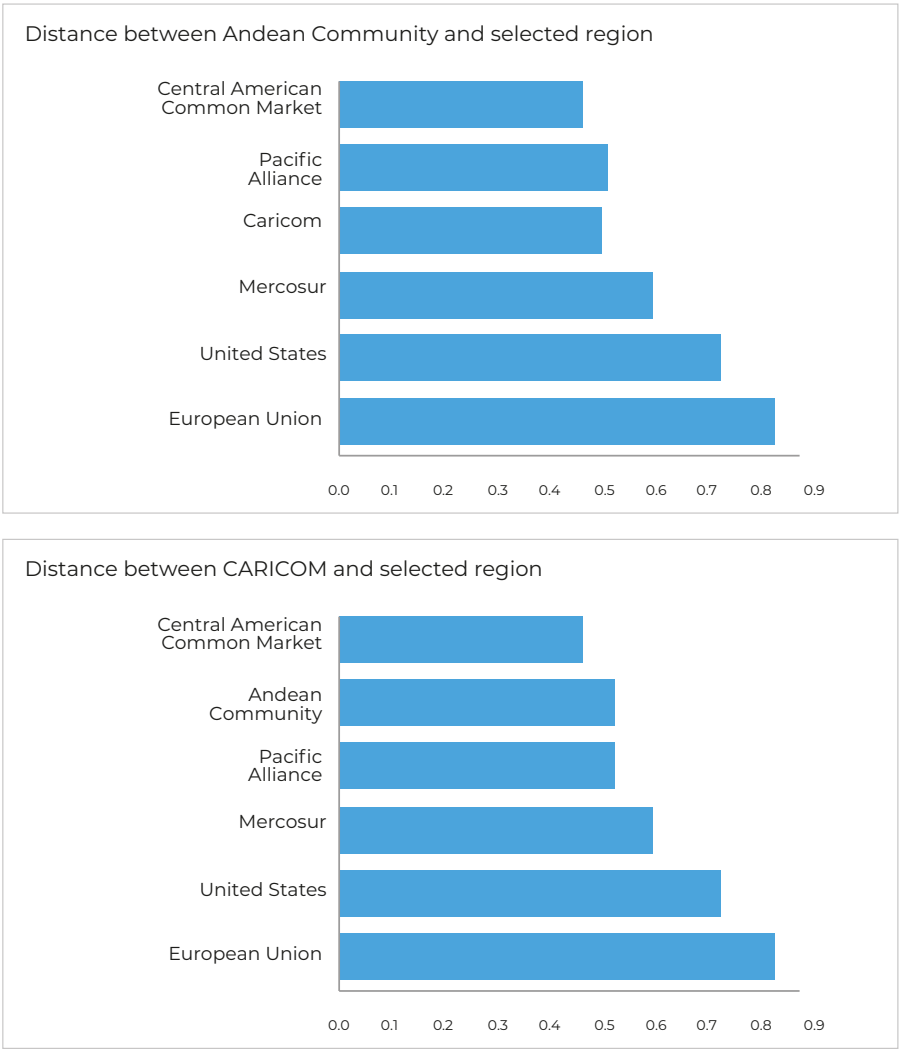
Interestingly, there are some common patterns among most preferential trade agreements (PTAs). For instance, large regulatory distances are usually observed in the following sectors: i) processed food, beverages, and tobacco, ii) vegetable products, and iii) chemical products. In most countries, products in these sectors tend to be highly regulated, particularly for health and sanitary reasons. It is therefore unsurprising that some of the largest disparities in technical requirements are observed in these sectors. Other sectors with large regulatory distances are machinery and electronics (especially for the MERCOSUR countries) and textiles, clothing, leather, and footwear (for the Andean Community).

**Figure 2.7** Average regulatory distance between trade agreements



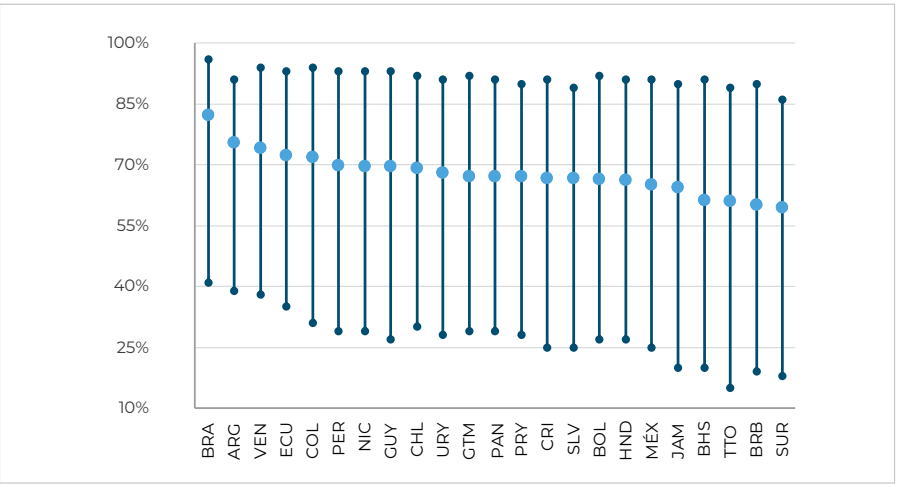



**Source:** IDB calculations.

The regulatory distance between blocs can also be measured. This is shown in figure 2.7: each panel shows the regulatory distance between a given LAC PTA and each of the others and compared to the EU and the United States. The commonality that these panels reveal is that regulatory distances between the region's trade blocs are always smaller than between them and the EU or the United States. In other words, when it comes to technical measures, the LAC PTAs are more similar to each other than to the EU or the United States. On average, the gap between LAC and the EU is somewhat wider than with the United States. Within the region, the CACM appears to be closest to all other PTAs, while MERCOSUR is furthest away.

While the regulatory distance index shows the extent to which technical measures differ between two countries (or regions), reducing these distances is not necessarily equally difficult for each party. For example, for a producer in a country with many requirements, exporting to another country with few requirements may not be a significant burden. But for the producers in the latter country, accessing the market with many requirements can be quite challenging. To examine this issue, we employ a measure of regulatory overlap. Specifically, the measure of regulatory overlap is the share of a country's technical measures that apply to a product to which another country already applies domestic requirements. Taking Brazil and Uruguay as examples, one can calculate the share of Brazil's technical measures that are already present in Uruguay for a specific product. One can also calculate the share of Uruguay's technical measures that are already present in Brazil for that product. These two numbers are not necessarily the same—in fact, they rarely are. These measures provide information on the regulatory gap between two countries and the difference that each must address to close it. Appendix B explains the calculation in detail.

**Figure 2.8** Average regulatory overlap




**Source:** IDB calculations.

Figure 2.8 shows the results for all the LAC countries in the sample. To construct the figure, we calculate the regulatory overlap for each country relative to every other country across all products and then take the

average, shown by the light blue dots. We also include the minimum and maximum overlap.

We can use Peru to illustrate the findings. The results for Peru show that, on average, 70% of the technical measures applied by other countries in LAC are already present in Peru. However, this is only an average—there is still a lot of dispersion in the overlaps between Peru and all the other countries. The maximum overlap for Peru is 93%, meaning that 93% of the measures imposed by one country in the region (in this case, Suriname) are already present in Peru. Conversely, the minimum overlap is 29%, meaning that only 29% of the measures imposed by another country in the region (in this case, Argentina) are already present in Peru. Therefore, while on average Peruvian firms must comply with numerous domestic regulations that they are also likely to encounter in other markets, this is not the case in some specific markets where the level of overlap is very low. In fact, the countries with which Peru has a high degree of overlap tend to be those that impose very few regulations, such as Suriname, so a significant portion of these regulations are likely to already exist in Peru. On the other hand, the countries with which Peru has little overlap apply a large number of regulations, such as Argentina or Brazil. Exporting to these countries may be more challenging for Peruvian companies, as they typically do not face such extensive requirements in their own domestic market.

Of all the countries in figure 2.8, Brazil has the largest average regulatory overlap. As Brazil imposes multiple technical requirements, many of the regulations that Brazilian firms encounter in other markets are already present at home.

In general, the countries on the far right of figure 2.8 are likely to face the greatest average burdens when meeting the technical requirements of other countries in the region. Nevertheless, all countries have at least some markets with which they have very little overlap, including those on the left of the figure, meaning that entering these markets is likely to be challenging.

i

# 3

# The Impact of Technical Measures on International Trade

- **Price effects**
- **Quantity effects**
- **Evidence from a survey of companies**

Technical measures can have different effects on international trade, so separating them into effects on prices and quantities is useful.

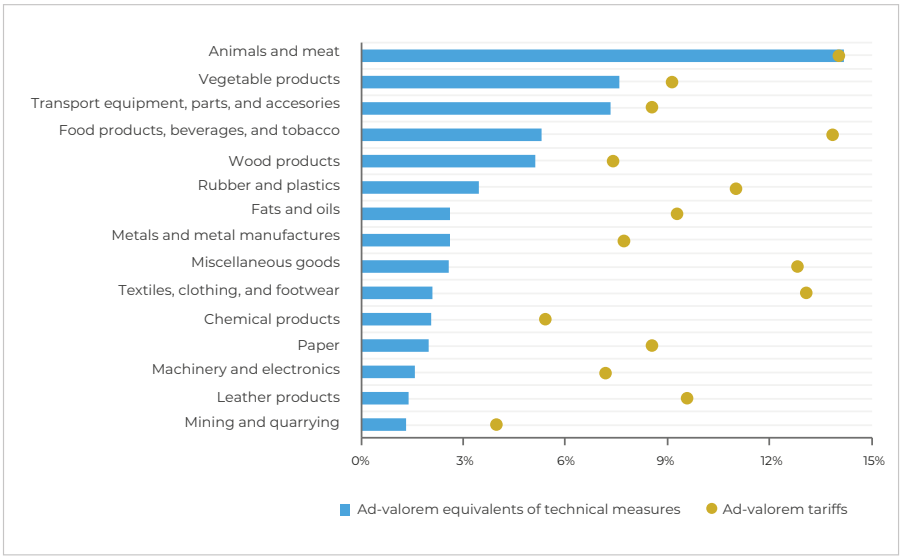
## Price effects

In general, the theory predicts that technical measures will increase the price of a product that is traded across borders either because of the additional costs to the exporter (identification, specification, and conformity assessment costs) or because the price signals an upgraded product with higher quality or performance after meeting the regulation (Cadot and Gourdon, 2016). The prediction that prices will increase tends to be supported by the available empirical evidence (Kee et al., 2022; Cadot and Gourdon, 2016; Cadot et al., 2018).

In this section, we present the price effect of technical measures on the imports of LAC countries. The bars in figure 3.1 show average ad-valorem equivalent rates across broad sectors.[9] The numbers they represent can be thought of as the ad-valorem tariff rate that would cause the same increase in the price of the import as the presence of the technical measures.

[9] For each importing country, estimations of ad-valorem equivalent rates are aggregated at the sectoral level based on the total value of trade of the importer in each product within the sector. The regional average for each sector is the simple average for 15 LAC countries.

**Figure 3.1** Technical measures and tariff rates - LAC average country




**Source:** IDB calculations based on data from UNCTAD, TRAINS, and Teti (2020).

**Notes:** The figure shows the ad-valorem equivalent rates of technical measures and ad- valorem applied tariff rates. The numbers are simple averages for 15 LAC countries for 2019.

The price increases caused by technical measures are generally significant and are particularly high in some sectors. These price effects are in addition to the increase in the cost of imports due to tariffs, which have been falling in LAC but remain high (tariffs are represented by the circles in the figure).[10] For instance, when the effects of technical measures and tariff rates on imports are combined, we see double-digit price increases in almost every sector in the figure. Some notable examples occur in the following sectors: animals and meat (28%), vegetable products (17%), and food products and beverages (19%). The significant increases in import prices in these sectors caused by the combined effects of technical measures and tariff rates constitute a challenge to using international trade to promote food security.

10 Ad-valorem tariffs correspond to average applied tariff rates. For each country, tariff rates are aggregated at the sectoral level based on the imports of each product within the sector. The regional average for each sector is the simple average for 15 countries in LAC.

## Quantity effects

While technical measures are expected to raise unit prices, their impact on import quantities is less obvious. On the one hand, as shown in figure 3.1, technical measures can increase the costs of imports, as exporters face costs associated with identifying, complying with, and demonstrating compliance with the appropriate regulations in the destination country and tend to pass these on to the final price. An increase in the price of the good acts like a tariff in that it lowers both demand for the good and imports of it.[11] On the other hand, technical measures can act as trade facilitators by providing information on the intrinsic characteristics of the product and its quality, thus building trust, facilitating comparisons, reducing uncertainty, and signaling that the product is safe to consume. Other things being equal, these factors may increase demand for the product and thus imports of it.[12] Accordingly, the net effect of the regulations on trade quantities is ambiguous, in principle, and depends on the relative magnitude of these opposing forces.

Indeed, the available empirical evidence shows mixed results: the association between international trade and the number of technical measures is found to be negative in some studies (e.g., Ghodsi et al., 2017; Dolabella, 2020) but positive in others (e.g., Crivelli and Groschl, 2016; Dolabella, 2020).

The evidence is more consistent regarding the trade effects of differences in technical measures between importing and exporting countries. In general, this line of literature finds that differences in technical measures between countries are associated with negative impacts on trade flows (Franssen and Solleder, 2016; Nabeshima and Obashi, 2019; Korwatanasakul and Baek, 2020; Inui et al., 2021; Lombini, 2021).

11 This is an upward movement along the demand curve.
12 This is an outward shift in the demand curve.

We analyze the trade impact of countries having different technical measures using the measure of regulatory distance introduced in the previous chapter. Specifically, we estimate whether greater regulatory distances between countries are associated with less trade between them (see appendix C for details of the estimation).

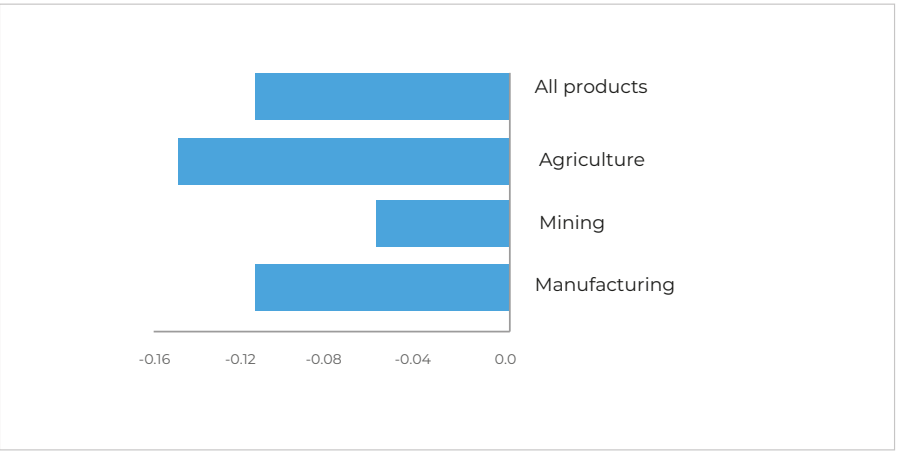
We start by evaluating the effect of regulatory distance on the probability of trade occurring between countries, technically known as the extensive margin. Given the nature of technical measures, examining this margin is essential. Unlike tariff rates, technical measures may involve both variable and fixed costs that may be high enough to impede trade. Moreover, even if exporters meet all the requirements associated with the technical measures in a foreign market, accessing that market may not be automatic as, for example, it may take several years before certification is finally granted. Consequently, it is important to begin by exploring the impact of regulatory distance on the probability of trade between countries.

Figure 3.2 shows the results. Regulatory distance exerts a negative impact on the probability of trade between countries. In other words, the larger the regulatory distance between the two countries, the lower the probability that trade will be observed. This effect is large: a mere 10% increase in regulatory distance between countries reduces the probability of entry by 1.18 percentage points. This is equivalent to a 25% reduction in the probability of a product from Latin America entering the average world market or a 16% reduction in the probability of a product from Latin America entering the average market in the region.[13]

13 The average probability of entry of Latin American exports in world markets is equal to 4.61%. The negative effect of a 10% increase in regulatory distance is a reduction in the probability of entry by 1.18 percentage points. This implies a 25% reduction in the probability of entry in world markets: -1.18/4.61 = -25.5%. Similarly, the average probability of entry of Latin American exports within Latin American markets is equal to 7.36%. This implies: - 1.18/7.36 = -16%.

The lower bars in figure 3.2 show the impact by main sector. The negative impact is largest for the agriculture sector, smallest for mining, and very similar to the average effect for the manufacturing industry.

**Figure 3.2** Impact of regulatory distance on import entry



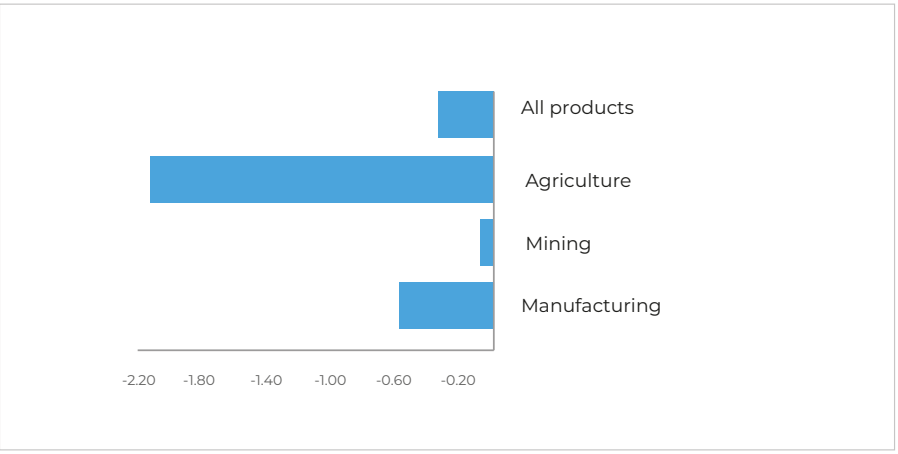

**Source:** IDB calculations.

**Notes:** The figure shows coefficient estimates of regressions of the probability of import entry on (the natural logarithm of) the regulatory distance between countries and a battery of fixed effects. See appendix C for details.

Having shown the effect of regulatory heterogeneity on the probability of entry, we now examine its effect on import volumes. In technical jargon, this is called the intensive margin. Figure 3.3 shows that this impact is also negative. The first bar indicates that a 10% increase in regulatory distance is associated with a reduction in import volumes of around 3.5%. This effect is also significant. As mentioned above, the average regulatory distance between a typical LAC country and its counterparts in the region is 58%. Comparing exports to a market with a regulatory distance of 25% (a low value) with exports to a market with a regulatory distance of 58% (the average), the estimation implies that

exports to the second market are 46% lower.[14] Moreover, an increase in the regulatory distance from 58% to 75% (a high but not uncommon value) is associated with an additional 10% reduction in trade volumes.[15] Examining impacts across sectors again reveals that agriculture experiences the largest effects, followed by manufacturing and finally mining.[16] The impact on agriculture is particularly significant: a 10% increase in regulatory distance is associated with a reduction in import volumes of around 21%.

**Figure 3.3** Impact of regulatory distance on import volumes




**Source:** IDB calculations.

**Notes:** The figure shows coefficient estimates of regressions of (the natural logarithm of) import volumes on (the natural logarithm of) the regulatory distance between countries and a battery of fixed effects. See appendix C for details.

14 The result is derived as follows: (0.58/0.25-1)*100 * (-0.345) = -45.5%.

15 The result is derived as follows: (0.75/0.58-1)*100 * (-0.345) = -10.1%.

16 The impact on mining is not statistically significant.

Figures 3.2 and 3.3 show that trade in agricultural products is relatively more sensitive to regulatory distance than trade in other sectors. One possible explanation for this finding is the number of regulations. For example, the regulatory distance between two countries in an agricultural product may involve many more regulations than the same distance in manufacturing or mining, which may lead to less trade.[17] Indeed, agricultural products tend to be more heavily regulated than manufacturing or mining products. For example, among Latin American and Caribbean countries, the average agricultural product is subject to ten technical measures (both SPS and TBT measures), while the average manufacturing product is subject to four technical measures, and the average mining product is subject to three.[18]

The general message from figures 3.2 and 3.3 is that differences in technical measures between countries have a negative effect on international trade. When technical measures differ, exporters face additional costs from having to identify, comply with, and demonstrate compliance with regulations in foreign markets in addition to domestic ones. These negative trade effects may even be greater when the countries do not share the same language. This is illustrated in figure 3.4, which focuses on the effects on probability of market entry.[19] The estimates indicate that the negative impact of regulatory heterogeneity on market entry is 80% larger when countries do not share the same language.

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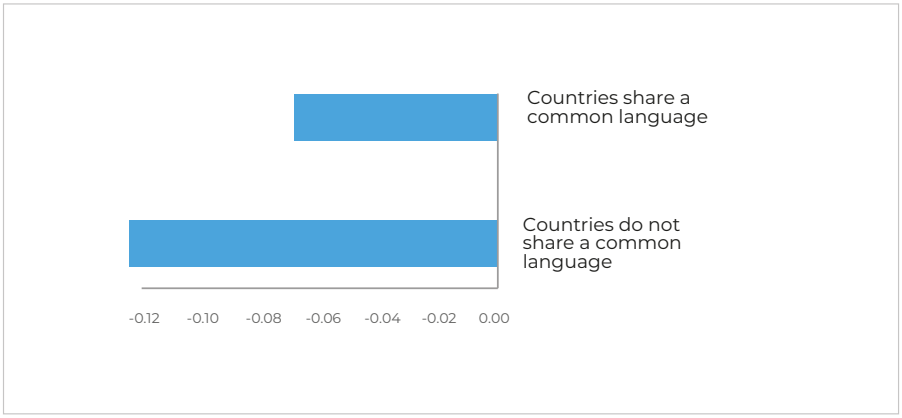
17 As explained before, regulatory distance measures the percentage of regulations that are different between two countries. For instance, if the number of regulations that two countries impose on a product is 4, and 2 of them are not similar, the regulatory distance is 50%. But if the number of regulations that the two countries impose on a product is 40 and 20 of them are not similar, the regulatory distance is also 50%. In the first case, however, firms that want to export to the other market need to face only 2 new regulations that are different from those at home, while in the second case they need to face 20. The measure of regulatory distance is the same in both cases but the number of regulations underneath these measures are very different.

18 Another potential explanation relates to types of technical measure. For example, if the regulatory distances associated with agricultural products involve technical measures that are more stringent than the technical measures underlying the regulatory distances in other sectors, then trade in agriculture will be more sensitive to regulatory heterogeneity than trade in other sectors. Comparing the stringency of regulations can be quite difficult and is subject to a large degree of discretion. The simplicity of the regulatory distance measure lies in the fact that it is agnostic about the type of the regulation in question, although this is also a limitation.

19 We find that the negative effects of regulatory distance on import volumes remain the same regardless of whether countries share a common language.

**Figure 3.4** Impact of regulatory distance on import entry




**Source:** IDB calculations.

**Notes:** The figure shows coefficient estimates of regressions of the probability of import entry on (the natural logarithm of) the regulatory distance between countries and a battery of fixed effects. See appendix C for details.

Technical regulation documents can be quite cumbersome, and exporters often need to consult with local agents on the details of the requirements. The results of figure 3.4 indicate that not sharing the same language can further complicate the process of dealing with technical measures that are different from those applied in the exporting country, resulting in a lower likelihood of entering the foreign market.

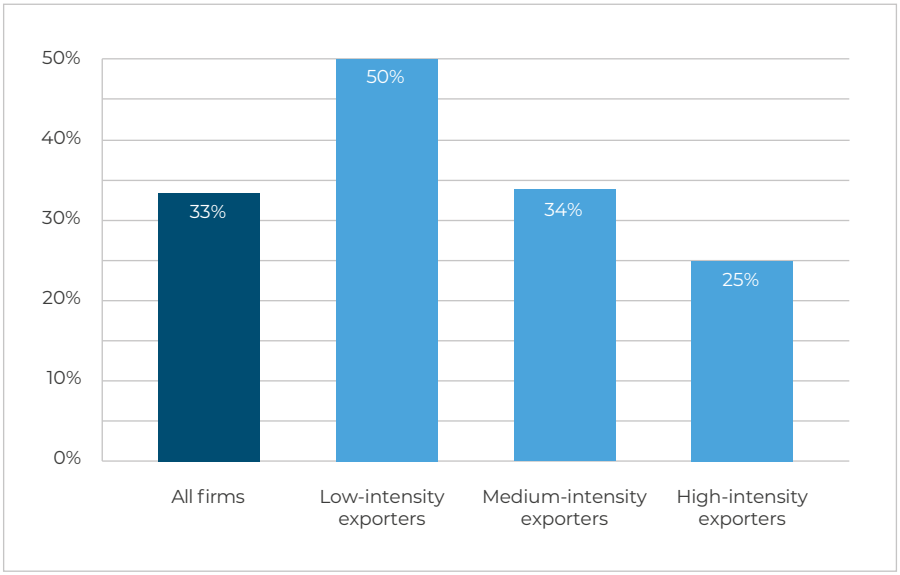
## Evidence from a survey of companies

The trade impacts of technical measures presented so far have been based on empirical estimations using trade flow data. In this section, we supplement the evidence with data from an IDB survey of 259 firms in 16 LAC countries. The survey, which is described in detail in Appendix D, provides a window into the nuances of how technical measures affect the prospects of firms in the region participating in international trade.

The survey looks at the issue of technical measures from the point of view of exporting firms in LAC that must deal with these regulations to enter foreign markets. In this sense, the questions focus on understanding how the technical measures imposed abroad affect companies' export performance.

Figure 3.5 shows the responses to the question of whether technical measures applied by LAC countries limit or prevent firms from exporting to intraregional markets. It is interesting to note that 33% of the firms responded in the affirmative to this question—in other words, a third of the sample reported that technical measures were an obstacle to exporting within the region.

**Figure 3.5** Technical measures in LAC limit/prevent expansion of exports

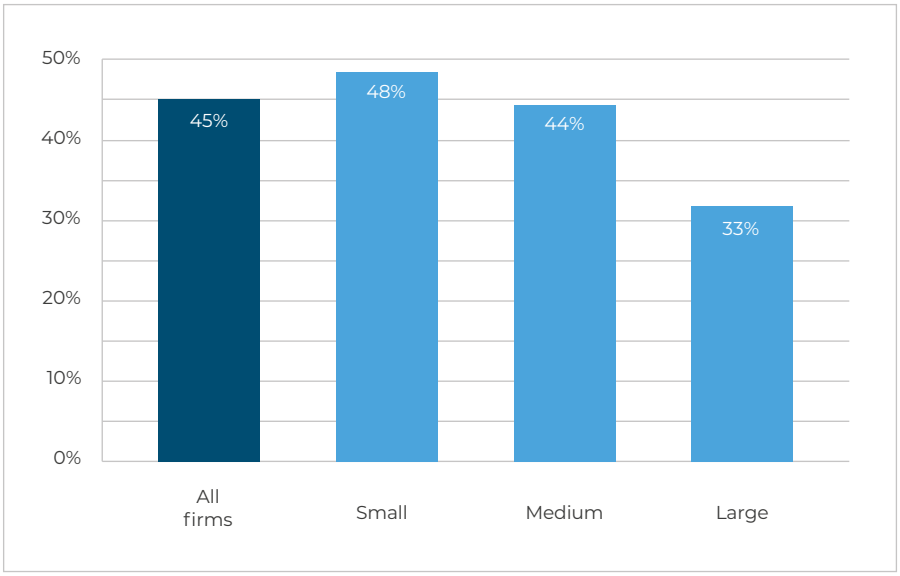



**Source:** IDB survey.

Firms' perceptions of the impact of technical measures vary greatly. For example, among firms with low export levels (those whose exports represent less than 30% of total sales), 50% said that technical measures limit their exports. Many factors can prevent a company from exporting to other markets, including tariff barriers, transportation costs, or poor logistics infrastructure. It is thus interesting to note that half of the companies with low export levels identified technical measures as an obstacle to exporting. Indeed, even among the companies with high export levels (those whose exports represent more than 70% of total sales), a significant share (25%) thinks that technical measures in LAC hinder their exports.

Figure 3.6 shows that companies find gathering information about technical measures in LAC challenging. Around 45% of respondents said it is difficult to identify the relevant regulation in the destination market, and this share increased to 48% for small firms (firms with fewer than 50 employees). As mentioned in chapter 1, if information on technical measures is opaque and ambiguous and responsibility for regulations is scattered across different authorities, identifying the necessary requirements can be costly for firms. This often leads to uncertainty for exporters regarding the requirements that need to be met in the other market, thus creating a barrier to exports. This problem may be greater for small companies, as shown in figure 3.6, because they have fewer resources to identify regulations.

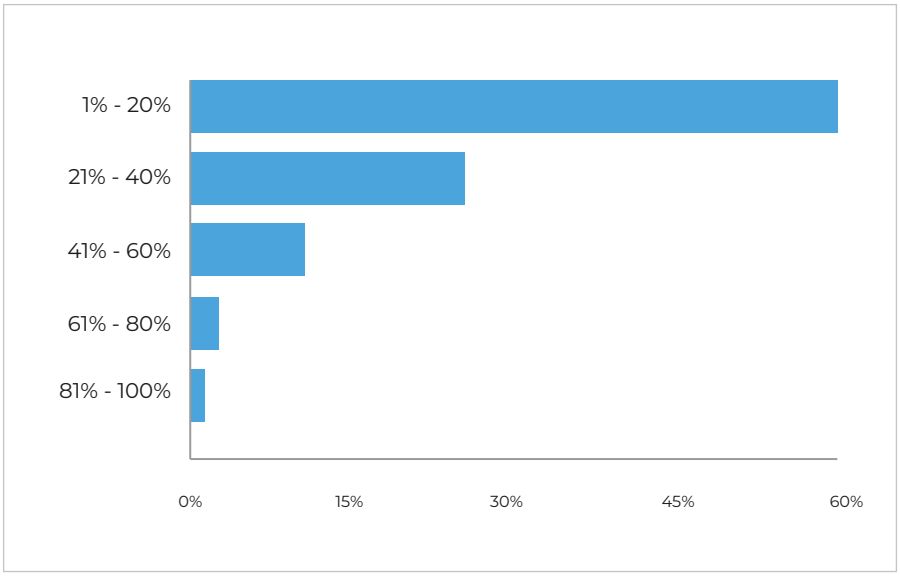
**Figure 3.6** It is difficult to find information on technical measures in LAC




**Source:** IDB survey.

Figure 3.7 provides information on the cost of dealing with technical measures. About 60% of firms acknowledged that these costs represent 1%–20% of total sales each year; for 26% of firms, they represent 21%–40% of total sales; and for the remaining 14%, they are equivalent to more than 40% of total sales. For many companies, dealing with technical measures is clearly costly.

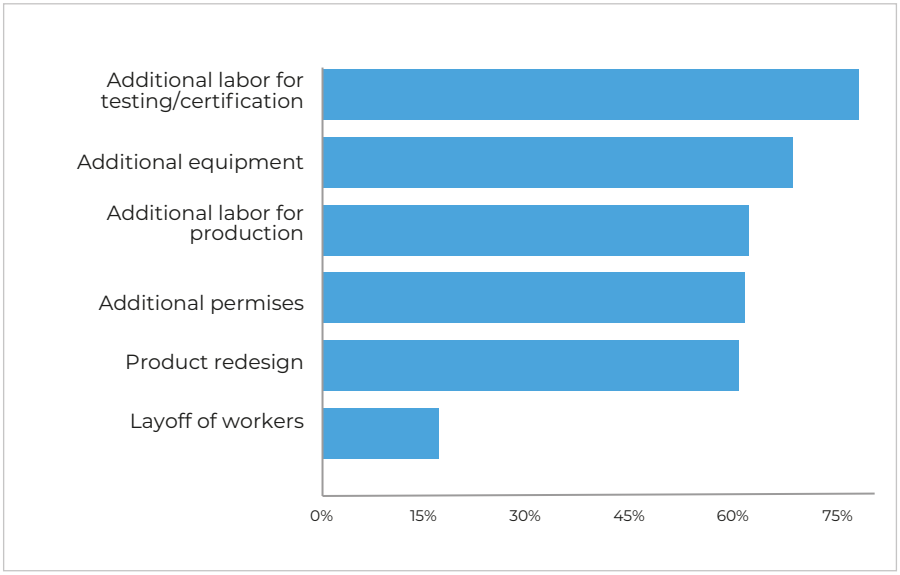
**Figure 3.7** Annual cost of investments to meet technical measures, as a percentage of total sales




**Source:** IDB survey.

Among the types of investments that firms make to address technical measures, hiring additional personnel for testing and certification is the most common response, with 78% of firms doing so (see figure 3.8). This is followed by purchasing equipment (68% of enterprises) and hiring staff to change product specifications (62%). Interestingly, a significant number of companies (17%) report having laid off workers to cover the costs of complying with technical measures.

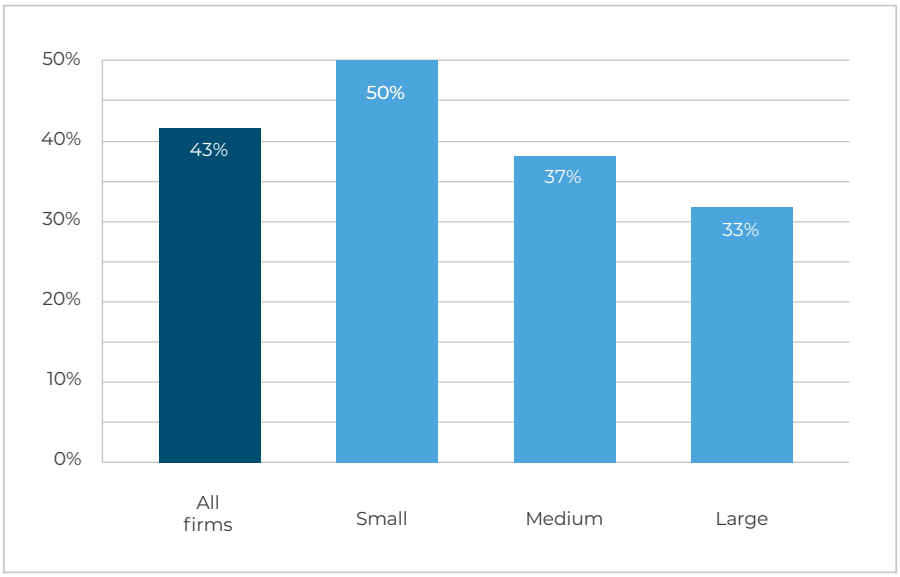
**Figure 3.8** Type of investments to comply with technical measures




**Source:** IDB survey.

The survey also explores the issue of regulatory heterogeneity and its impact on exports. Firms were asked if they had a product that was subject to different regulations in different LAC countries. Some 57% of firms answered in the affirmative, of which 43% said that this situation results in high costs due to significant changes in production and/or testing to satisfy each destination market (see figure 3.9). This percentage increases to 50% for small firms. This result supports the econometric findings presented earlier, according to which regulatory heterogeneity has a negative impact on international trade. The result also suggests that a reduction in regulatory heterogeneity could lower the costs of dealing with technical measures when serving multiple markets, and this may be particularly helpful for small exporters. This is discussed in the next section.

**Figure 3.9** High duplication costs to export to LAC




**Source:** IDB survey.

# 4

# Toward Greater International Regulatory Cooperation

- **Approaches to international regulatory cooperation**
- **Selected international regulatory cooperation case studies in Latin America**
- **Lessons from the regulatory cooperation case studies**
- **Regulatory convergence in which direction?**

Reducing the trade costs associated with technical measures is important in a world where market access frictions are increasingly driven by regulatory factors. However, unlike tariffs, regulations cannot simply be removed, as they usually serve legitimate national policy objectives. In modern societies, technical measures coexist with international trade, but the guiding principle should be to avoid unnecessary obstacles to international trade when drafting these regulations.

Technical measures can create unnecessary obstacles to international trade when information on technical measures is opaque, ambiguous, and scattered, when regulations are much stricter than necessary, and when the requirements for evaluating compliance are excessive.

Countries have a menu of options for reducing the trade obstacles associated with technical measures. These options are generally referred to as international regulatory cooperation and are explained below. Before describing the different options in detail, it is worth emphasizing that there are theoretical arguments and strong empirical support for the notion that countries should engage in international regulatory cooperation. The theoretical arguments are based on trade- related welfare gains that would be difficult to achieve if national regulations responded solely to national considerations (see box 4.1 for more details). In terms of empirical support, a growing body of research shows that international regulatory cooperation is associated with positive trade impacts (see, for example, Baller, 2007; Reyes, 2011; Schwarzer, 2017; Fernandes et al., 2021). By way of illustration, box 4.2 describes the trade benefits of a recognition agreement between Mexico, Canada, and the United States in the electrical and electronics industry.

The results of the empirical analysis presented in chapter 3 can be used for a back-of-the-envelope calculation about the potential trade effects of reducing regulatory heterogeneity.

For example, if regulatory distances between LAC countries were reduced by 50%, the results suggest that the average probability of entry into Latin American markets would increase by 81% and intraregional trade flows by 17%.[20] Likewise, if regulatory distances between LAC countries and the rest of the world were reduced by 50%, the probability of entry into world markets would increase by an average 143% and trade flows by 17%.[21]

**Box 4.1: The Logic that Justifies Participation in International Regulatory Cooperation**

In the absence of international trade—a situation generally referred to as autarky—there is an optimal regulation that addresses the market failures in a country and satisfies the preferences of society within that country. This optimal regulation in one country may not be the same as the optimal regulation in another country, as there may be different social preferences. Accordingly, there is likely to be regulatory heterogeneity across countries. However, when countries trade, there will be trade costs associated with the fact that regulations are different (see chapter 1), and this leads to economic losses that reduce welfare. These economic losses can take the form of higher import prices, lower availability of imported varieties (welfare effects from changes in consumer surplus), or higher costs faced by domestic firms when exporting to other markets (welfare effects from changes

20 For the extensive margin: the average probability of LAC exports entering other LAC markets is equal to 7.36%. This implies: (((0.1189*0.5*100+7.36)/7.36)-1)*100 = 81%. For the intensive margin: 0.3455*0.5*100= 17%.

21 For the extensive margin: the average probability of LAC exports entering other rest of the world is equal to 4.15%. This implies: (((0.1189*0.5*100+4.15)/4.15)-1)*100 = 143%. For the intensive margin: 0.3455*0.5*100= 17%.

in producer surplus). Accordingly, when countries do engage in international trade, the regulation that would maximize welfare under autarky is no longer necessarily optimal. This situation gives rise to cooperation incentives. The decision to cooperate depends on the scale of the welfare losses caused by deviation from the autarky-based regulation compared to the scale of the welfare gains caused by the reduction in trade costs.

More specifically, changing the current regulation reduces domestic welfare because it deviates from the optimal regulation established when only domestic factors were considered (autarky). But when countries trade, there are economic losses from regulation-related trade costs; accordingly, changing the regulation reduces these trade-related economic losses and increases welfare. The net impact on welfare is determined by the relative size of these two forces. If the domestic welfare losses from changing the current regulation are large and the economic gains from reducing trade costs are very small, the incentives to engage in international cooperation will be small. But if the economic gains from reducing trade costs are large relative to the domestic economic losses of changing the current regulation, there will be incentives to cooperate.[22]

**Source:** IDB based on material from von Lampe, M., K. Deconinck and V. Bastien (2016)

22 For a detailed exposition of these welfare gains and losses, embedded in a game theory framework, see von Lampe, M., K. Deconinck and V. Bastien (2016)

**Box 4.2: The Trade Effects of a Recognition Agreement for Conformity Assessment**

In September 2010, a mutual recognition agreement for conformity assessment of electrical and electronic products entered into force between Mexico, Canada, and the United States. Through the agreement, Mexico accepted the conformity assessments of the certification bodies of its North American partners for three Mexican safety standards: i) NOM-001-SCFI-1993, (ii) NOM-016-SCFI- 1993, and (iii) NOM-019-SCFI-1998. These standards were mandatory: products to which they applied that entered Mexico from anywhere in the world needed to have a certificate of compliance issued by a body certified by the Mexican authorities.

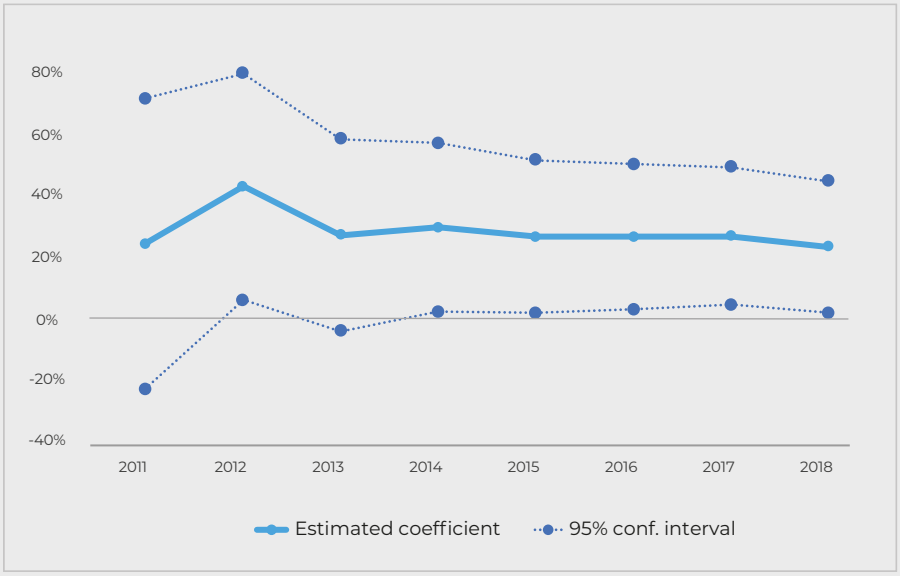
However, under the recognition agreement, Mexico accepted the conformity assessments used in Canada and the United States for the products associated with the Mexican standards mentioned above. Therefore, products that had been tested and certified in Canada and the United States did not need to be retested and certified in Mexico.

The empirical strategy for estimating the trade effects of this agreement is to compare exports to Mexico of products covered by the agreement with exports of other electrical and electronic products that were required to meet other Mexican safety standards but were not covered by this agreement. The comparison uses the exports from Canada and the United States and exports from other countries to Mexico. The estimation involves comparing countries (Canada and the United States versus the rest), products (those affected and not affected by the agreement), and changes over time (before and after the agreement).[23] The results of the estimations are illustrated by the middle line of figure B.4.2. On average, exports of products covered by the agreement increased by around 23.3% relative to those that were not covered by it. The figure also shows that

[23] In technical terms, this is called a triple difference-in-difference estimator.

the effect for 2011 was not statistically significant, indicating that it took at least one year for traders to react to the regulatory changes; however, after one year, the impact became significant and the average effect remained positive, albeit with a slight downward trend.

**Figure B.4.2** Change in exports




**Source:** Based on material from Blyde (2023).

## Approaches to international regulatory cooperation

Countries have a menu of options for engaging in international regulatory cooperation. The options range from shallow to deep cooperation. In general, a shallow approach does not seek to change national regulations substantially, and the institutional costs are relatively low. The opposite is true for a deep approach. The main options are as follows:

**Consultation, dissemination of information, and promotion of transparency.** Promoting transparency, conducting consultations, and using mechanisms that enable the flow of information can improve the efficiency of regulatory administration. These are shallow approaches with low institutional setup costs. Ensuring that information on technical measures is centralized, up-to-date, and easily accessible can help reduce the identification costs associated with these regulations, particularly for small and medium-sized enterprises.

**Adoption of international standards.** As mentioned above, countries are encouraged by the WTO to use international standards as a guide for their national regulations. When countries use international standards in their own regulations, they are effectively reducing regulatory heterogeneity across all the participating countries. For example, standards from the International Electrotechnical Commission (IEC) are widely used in many countries to regulate electrical safety and electromagnetic compatibility in the production of domestic appliances (Fliess et al., 2010).

Adopting international standards reduces the specification costs faced by exporters in that a single product specification or small variations on this may be sufficient to satisfy many destination markets that follow the same standard. Adopting international standards can also reduce conformity assessment costs, provided that conformity issues are also part of the international standard.

**Mutual recognition of rules.** The recognition of rules entails a country accepting imports that comply with another country's regulations as being equivalent to its own. These agreements are often (although not always) reciprocal in nature, hence the name "mutual recognition." A given country's exporters do not face additional information, specification, or conformity assessment costs to enter the destination market, as they only need to comply with their domestic regulations. This effectively eliminates any trade costs associated with regulatory heterogeneity that exporters would face in the absence of the agreement (see chapter 1).

The most prominent example of mutual recognition of rules is the EU single market, which combines mutual recognition of rules with other forms of international cooperation (this will be examined in more detail below). Another example is the EU–US organics equivalence, under which the EU and the US allow each other's products to be marketed as "organic" in their respective markets.

**Mutual recognition of conformity assessments.** Mutual recognition of conformity assessments is an arrangement that is less ambitious than the mutual recognition of rules but more common (Correia de Brito et al., 2016). Under this arrangement, exporters must comply with destination market regulations, but conformity assessments for this compliance can be conducted according to the requirements of the exporting country. As mentioned before, when countries establish technical measures, they tend not only to include the regulations that a product must comply with but also to specify how compliance with those regulations must be demonstrated, including the types of testing that are accepted, the certified laboratories that can be used, or the approval processes that must be followed. Sometimes, these requirements for demonstrating compliance can be very demanding. Accordingly, mutual recognition of conformity assessments seeks to eliminate this second part of the requirements for demonstrating compliance. Such arrangements primarily reduce conformity assessment costs for exporters but do not necessarily bring down specification costs.

In these arrangements, the importing country is accepting conformity assessments carried out by other countries rather than by itself, which implies a risk of accepting products that fail to comply with its own domestic requirements. Accordingly, countries choose this option when they have sufficient confidence in the technical and institutional capacity of the partner country carrying out the assessment. Recognition of conformity assessments can be facilitated if the exporting country's conformity assessment bodies are recognized by international organizations, such as the International Laboratory Accreditation Cooperation (ILAC), the International Accreditation Forum (IAF), or the Inter-American Accreditation Cooperation (IAAC), among others.

**Harmonization.** This is the most demanding approach, as it requires uniformity of rules among all participating parties, a process that can involve long and complex negotiations. Harmonization may apply to rules, conformity assessment requirements, or both.

Full harmonization may encounter resistance from regulators facing legal constraints who do not have the flexibility to modify their regulations and thus may favor some of the more flexible approaches presented above. The EU is an example of combining full harmonization with more flexible approaches. A brief overview of the EU experience follows.

Initially, the EU sought to achieve full harmonization of all national regulations that might impede the free movement of goods. However, the initial harmonization process required unanimity among the representatives of all EU member states, which made community decision-making long and difficult. In addition, the drafting of harmonization directives was a highly technical process, and the European Commission did not have all the necessary resources to implement this for all sectors. Consequently, only a limited number of regulations were fully harmonized, resulting in single regulations in sectors such as food, pharmaceuticals, or chemicals, which were selected based on their level of risk.

In 1985, a new approach to harmonization was adopted to avoid the burden of the full harmonization method. The new approach was implemented in such a way that harmonization no longer had to include detailed technical specifications but was limited only to "essential requirements," typically related to health, safety, and environmental protection. Beyond this, few other areas have been harmonized. Technical specifications are left to (voluntary) compliance with the industry standards developed by European standards bodies. The key aspect of the harmonization system in the EU is thus that the harmonization process is limited to the harmonization of "essential requirements" and not to all technical specifications. At the same time, as mentioned above, the EU applies the principle of mutual recognition of national regulations. Accordingly, in the cases where there is no harmonization, the principle of mutual recognition applies.

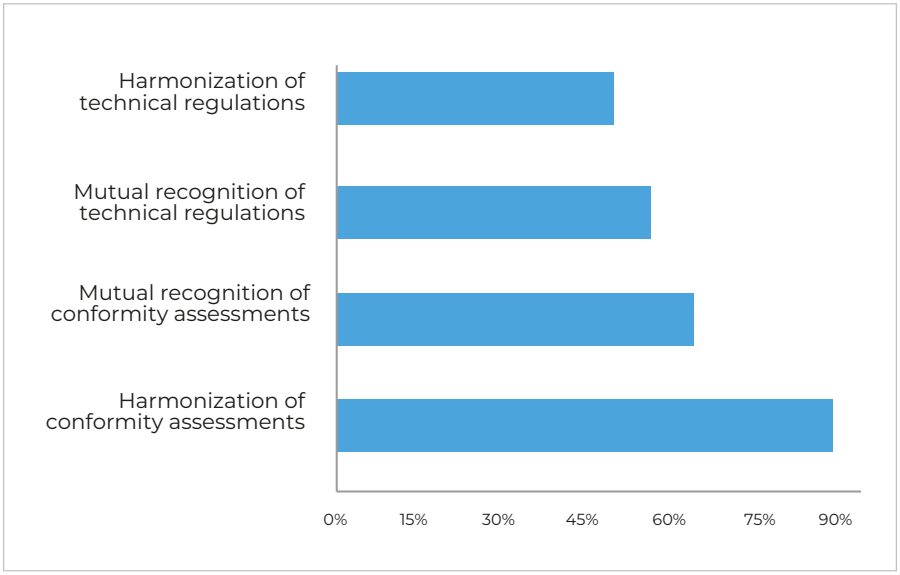
**Regulatory provisions in trade agreements.** Many trade agreements contain SPS and TBT chapters with guidelines for reducing regulatory heterogeneity among member countries. Some agreements mention specific provisions that members should pursue, including mutual recognition of regulations, mutual recognition of conformity assessments, harmonization of regulations, or harmonization of conformity assessments. However, the SPS and TBT chapters in trade agreements are generally frameworks that "encourage" countries to seek international regulatory cooperation in certain directions. The actual work of reducing regulatory heterogeneity is usually carried out separately.

International regulatory cooperation can be pursued without a trade agreement being in place. Nevertheless, implementing a trade agreement could provide support and momentum for negotiations on technical measures.

Figure 4.1 shows the extent to which the trade agreements signed between LAC countries contain provisions on technical regulations. Only a minority of trade agreements signed by countries in the region include provisions that encourage some form of regulatory convergence

in technical regulations. For comparison, the EU integration process and the United States-Mexico-Canada Agreement (USMCA) include provisions in all the areas presented in figure 4.1. The information in the figure is based on the text of the trade agreements in question. As mentioned above, trade agreements usually only provide a framework for countries to coordinate technical measures. In most cases, the actual work is done separately and requires additional negotiations. Progress in this area has been relatively slow among LAC trade agreements.

**Figure 4.1** Percentage of intra-LAC trade agreements with provisions related to regulatory convergence




**Source:** IDB calculations with data from Espitia, Pardo, Piermartini, and Rocha (2020).

## Selected international regulatory cooperation case studies in Latin America

Although international regulatory cooperation within trade agreements has not progressed rapidly in LAC, there have been some successful experiences. This section reviews three of these cases that took place in the CACM, MERCOSUR, and the PA. The main objective is to highlight policy lessons that may be useful for other initiatives in the future.

### Case Study 1:
### Regulatory cooperation in the Central American Common Market

**Background**

The CACM is a regional integration agreement between Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama. Under the CACM, the coordination of regulatory convergence processes is the responsibility of the ministries of foreign trade or the economy, with the support of the Secretariat for the Economic Integration of Central America (SIECA).

**Regulatory cooperation initiative**

The selected regulatory cooperation initiative concerned the processed food and beverages sector through a mechanism known as the Procedure for the Recognition of Sanitary Certification for Processed Foods and Beverages.[24]

The mechanism has been in force since 2012 and is based on a set of minimum requirements that must be met in any country for sanitary certification to be granted, such that this certification will be recognized by the other member countries. Each country can grant its own certificates, but these are automatically recognized by the other member countries because they meet a set of common requirements.

24 This case study is based on material from Monge-Gonzalez (2022) prepared for this report.

**Situation prior to regulatory cooperation**

Before the mechanism came into force, requirements were established in accordance with each country's domestic legislation. An exporting firm thus had to register its product not only in its own country but also in each of the other countries it wanted to export to. There were significant differences between the technical requirements CACM member countries requested to grant the sanitary certificates. In most cases, this information was not systematized, and requirements were a diverse, fragmented set of regulations that were sometimes difficult to identify.

Before the cooperation mechanism, exporting firms had to contact an importer in other CACM countries where they wanted to sell their product to get help locating information on technical requirements. Sanitary certification took a long time (12–18 months) and generated a lot of legal uncertainty. According to the interviewees, this situation implied high transaction costs and long waiting times, which had a negative impact on trade flows.

**Benefits of the cooperation agreement**

The regulatory cooperation process implies that once a product has been certified in one CACM member country, exporters can request that this certification be recognized in the other member countries.

According to the firms interviewed, handling the sanitary certification process in CACM member countries now takes considerably less time than before. In addition, by removing a number of requirements that were previously in place in some countries, such as sending product samples to destination markets, the cost of the procedure has been considerably reduced. There is a consensus that implementing the system has increased legal certainty and reduced the discretionary factors that previously affected national regulations.

**Relevant factors for the success of the process and lessons learned**

The initial proposal consisted of a simple mutual recognition mechanism. However, this option did not prosper because many companies argued that recognizing sanitary certification from other countries that did

not meet the specifications that local producers had to comply with generated unfair competition. Part of the initiative's success owes to the establishment of a set of common requirements in the mutual recognition mechanism, thus incorporating the principle that domestic and foreign products would have to meet similar requirements. This eliminated private-sector opposition to the initiative.

In parallel with the negotiations on the sanitary certification initiative, the CACM countries negotiated an association agreement with the EU that included the principle of mutual recognition of technical measures. This served to "push" issues that were on the negotiation tables between the CACM countries. Once mutual recognition of sanitary certification had been completed within the CACM countries, the scheme was extended through the EU-Central America Association Agreement to cover food products originating in Europe. This suggests that outside stakeholders may be able to play a role in expediting regulatory cooperation negotiations, especially when these are not advancing as fast as expected.

Over time, the CACM countries have gradually added requirements to those originally set forth in the agreement, which has begun to undermine the regulatory cooperation mechanism.

In general, technical requirements in any sector may change over time as new empirical evidence on the effects of a product becomes available or as social preferences change. One approach to handling such situations is to include periodic reviews in the agreement, such that adjustments can be made if necessary.

## Case Study 2:
## Regulatory cooperation in MERCOSUR

**Background**

MERCOSUR is a regional integration agreement between Argentina, Brazil, Paraguay, and Uruguay. Within MERCOSUR, work on regulatory convergence issues falls to the Technical Regulations and Conformity Assessment Subgroup and the Health Subgroup.

**Regulatory cooperation initiative**

The selected regulatory cooperation initiative concerns the pharmaceutical sector.[24] In order to sell a pharmaceutical product in the MERCOSUR countries, at least two things are required: a Certificate of Good Manufacturing Practices (GMPs)—a document issued to the requesting company—and a registration of each drug to be marketed. This example of regulatory cooperation focused on the certificate of GMPs.

The mechanism came into force in 2009 and consisted of establishing common technical requirements for granting companies certificates of GMPs. Consequently, the importing country's regulatory authority can accept certification granted by the exporting country's regulatory authority. Before the regulatory cooperation process was implemented, the usual mechanism was for officials from the importing country's regulatory authority to visit and inspect the company's facilities in the exporting country and then decide whether to grant a certificate of GMPs. The cooperation mechanism also establishes a standard procedure through which the regulatory authorities interact to request and submit relevant certificates and to handle possible contingencies, including requesting additional documentation and/or clarifications and the deadlines for responding to these requests.

**Situation prior to regulatory cooperation**

According to the companies interviewed, before the cooperation mechanism came into force, the process of exporting pharmaceutical products within MERCOSUR was very inconvenient because there were large discrepancies between each country's requirements for granting a certificate of GMPs and because discretionary factors in each country generated uncertainty around the possibility of obtaining certification, thus limiting access to markets, often for several years.

24 This case study is based on material from Vaillant (2022) prepared for this report.

**Benefits of the cooperation agreement**

Responses from both companies and regulators indicate that the new process has saved time and resources by eliminating the need for officials from importing countries to travel to the exporting country to conduct inspections. This further reduces the possibility of certification being used as a technical barrier to trade. In essence, the mechanism has reduced the discretionary nature of obtaining certification and thus the uncertainty of market access. For regulators, the process has been a step forward in building mutual trust.

**Relevant factors for the success of the process and lessons learned**

In any regulatory cooperation process involving several countries, it is to be expected that there will be differences in the capacities of the regulatory agencies involved and the levels of their international accreditation. These disparities can pose challenges to progress. In the case of the MERCOSUR pharmaceutical certification process, these differences made it impossible to use a simple mutual recognition agreement. Despite this difficulty, it was decided to level the playing field by homogenizing the criteria for applying the rules. To this end, the entire process was preceded by shared training courses for inspectors from all countries. These were based on international standards on GMPs and their application in the region. This helped to establish common criteria and create a network between those responsible for applying the regulations. These ties helped build trust between the agencies involved.

Another factor in the initiative's success was the direct participation of the regulatory agencies involved, both at the general level of the MERCOSUR Health Subgroup and, more specifically, in the specialized Health Products Commission (COPROSAL). The direct involvement of the agencies was not an afterthought but was fundamental to the management of the entire process.

Although the regulatory convergence process was successful, it was limited to GMP certificates. As noted above, the commercialization of pharmaceutical products in MERCOSUR also requires compliance with other technical measures, such as product registration.

Differences between countries regarding these registrations might still be limiting trade flows. Focusing solely on GMP certificates was a first step, but much remains to be done in this sector to achieve a more comprehensive regulatory scheme.

## Case study 3:
## Regulatory cooperation in the Pacific Alliance

### Background

The Pacific Alliance is a regional integration agreement between Colombia, Chile, Peru, and Mexico. The Committee on Technical Barriers to Trade coordinates regulatory cooperation between the bloc's member countries.

### Regulatory cooperation initiative

The selected regulatory cooperation initiative concerned the cosmetics sector.[26] This is the most advanced of the PA's regulatory convergence initiatives: negotiations have concluded, and the agreement text is currently being in the implementation stage in the member countries.

The agreement was negotiated in 2015 and includes the convergence of various technical measures in the sector, specifically: i) the harmonization of the definition of a cosmetic product; ii) the elimination of the sanitary registry and prior authorization for cosmetics, replacing it with market surveillance schemes and the establishment of a risk-based surveillance system; iii) the harmonization of the ingredient review system and the adoption of expedited mechanisms to include, prohibit or restrict ingredients; iv) the elimination of the certificate of sale; v) the harmonization of the labeling of cosmetic products, and vi) the harmonization of GMP requirements in accordance with international standards.

The PA countries have not yet implemented the agreement as they must adapt their domestic regulations based on the commitments they have taken on by signing it. All four countries have modified their domestic

26 This case study is based on material from Rebolledo (2022) prepared for this report.

regulations, but regulatory aspects still need to be modified to make the agreement fully operational.

**Current situation and potential benefits of the cooperation agreement**

According to analyses carried out by the private sector, it takes firms 3–11 months to complete the procedures required to export a cosmetic product within the PA, with an average of 7 months. These same studies estimate that these times could be reduced to less than half when the mechanism becomes operational.

**Relevant factors for the success of the process and lessons learned**

Although the PA countries have not yet adopted the agreement, some important lessons can be drawn from the negotiation phase. The negotiations were based on a roadmap of pre- established criteria, which proved to be a crucial tool throughout the discussions, providing certainty about the process and serving as a guide for all stakeholders.

An important aspect of the negotiation process was the support provided by the private sector, particularly the Business Committee of the Pacific Alliance (CEAP), an umbrella organization of companies from the four PA countries, and the Council of Latin American Cosmetic Industry Associations (CASIC), which brings together the main cosmetics companies with a presence in the region, as well as the national chambers of the cosmetics industry. During the negotiation process, the CEAP and CASIC engaged in fluid, permanent dialogue with the governments and with the formal instances of the PA. This helped them exchange information with regulators on the impact of technical measures in the sector.

This experience confirms the importance of interacting with the different stakeholders, especially those that are subject to regulations and have a practical vision of the main regulatory barriers they face both internally and abroad.

Additionally, working with an organization like CASIC (a council of chambers) can help reduce the risk of capture. In any industry, there are usually stakeholders who are committed to opening markets and others

who seek protection. An organization that brings together many firms in the industry from several countries can arbitrate the different preferences of a large number of players, reducing the possibility of capture by a small group.

Today, the PA countries are still adjusting their regulations to comply with what was negotiated. The time that has elapsed since the signing of the agreement and the uncertainty that still surrounds its entry into force could play against it if momentum is not maintained.

One approach to avoiding such situations is to establish a committee that provides guidance and certainty on the application of the agreement and helps address possible difficulties in implementing it.

**Lessons from the regulatory cooperation case studies**

The three initiatives studied provide some lessons that may be useful for similar processes in the future. The lessons are general enough to apply to all regulatory agreements, regardless of whether they take place within trade agreements.

**Establish a roadmap for the negotiation process.** Promoting regulatory cooperation can be a complex task. On the one hand, the substance of the negotiations can be quite technical and tends to be more difficult than agreeing on the level or reduction of a tariff rate. On the other hand, negotiations may involve bringing a diverse group of regulators from various countries to the table, along with trade ministries. Having a roadmap that includes pre- established criteria can provide certainty about the procedure as a whole and serve as a guide for all the actors during the negotiation period.

**Ensure the direct participation of regulatory agencies.** The stakeholders responsible for drafting the regulations should be at the heart of the regulatory coordination process. This seems like an obvious lesson, but some regulatory cooperation initiatives within the region's trade blocs have progressed more slowly than expected because the relevant working subgroups did not involve the competent authorities directly from the outset.

**Ensure the participation of the private sector.**
A country's regulators typically have a mandate to protect the health of its citizens or some other objective within its own borders but may be unaware of the trade implications of their regulations or the potential benefits of coordinating regulations with other nations. The involvement of private-sector representatives is important as they provide a practical view of the effects of these measures, particularly their cross-border impacts.

**Business associations with broad membership can reduce the risk of capture.** Within any industry, some stakeholders are committed to opening markets while others seek protection. Ensuring the involvement of umbrella organizations that bring together many industry players from various countries can help arbitrate the different preferences of a large group of players, thus reducing the possibility of the process being captured by a small group.

**Avoid mechanisms with conditions that appear to be disadvantageous for one of the parties.**
Simple mechanisms such as accepting another country's regulations may provoke opposition from companies in countries with stricter regulations. The latter might argue that this approach would create unfair competition by allowing products from countries with laxer regulations to compete with local products. One way of avoiding this situation is establishing essential requirements, wherein a minimum of common obligations is agreed upon.

**External factors can accelerate the negotiation process.**
The complexity of a regulatory cooperation negotiation can prove exhausting over time, and the process can lose momentum.
External factors can help counteract this tendency. One external incentive could be the need for a group of countries to coordinate their regulations as a preliminary step toward moving forward on negotiations with other regions. Another incentive could be access to concessional funds (e.g., from multilateral organizations) that can be disbursed as milestones are reached.

**Level the playing field to establish trust between agencies.** In any regulatory cooperation process, it is to be expected that there will be differences in the capacities of the regulatory agencies involved. These disparities can pose challenges to progress. Additionally, for countries with fewer regulations—and potentially lower levels of stringency—the convergence process might require them to increase their regulation levels, while for countries that already apply a large number of regulations, the convergence process might require them to reduce or maintain these levels, a much easier task.

As part of the coordination process, it may be necessary to improve the regulatory system of a country or group of countries, including their regulatory bodies, metrology, and laboratories. Countries with lower regulatory capacities are good candidates for assistance from the international community, including technical support from countries with more robust regulatory systems.

**Incorporate an instrument for the implementation of agreements.** Many regulatory agreements are negotiated but are not then implemented. Agreements could incorporate a follow-up instrument to be implemented after negotiations, such as a committee that provides certainty regarding the application of the agreement, coordination, and guidance on solving possible implementation-related problems.

**Agree to have periodic reviews of the cooperation mechanism.** Technical requirements may change over time, such as when new empirical evidence on the effects of a regulation emerges. To address this possibility and prevent countries from making unilateral decisions after signing their commitments, parties can agree to periodic reviews of the mechanism (e.g., every five years, or less for specific sectors) that include the possibility of adjusting the mechanism if necessary.

### Regulatory convergence in which direction?

In most international regulatory cooperation initiatives in which countries seek to reduce the heterogeneity of their technical measures, one underlying issue concerns the direction in which the resulting regulations

converge. This matter is more relevant for arrangements that seek to change the national regulations of the countries involved, such as the harmonization of rules or conformity assessments. However, it may also be important in other schemes, such as mutual recognition agreements, which sometimes incorporate minimum essential requirements and thus imply some modification of the original national legislation.

On this topic, certain conceptual issues may provide valuable information as to possible patterns of convergence, and there also are some practical considerations that should be discussed. On the conceptual issues, as was mentioned above, the incentives for countries to engage in international regulatory cooperation derive mainly from trade-related welfare gains that would be difficult to achieve if national regulations responded solely to domestic considerations (see box 4.2). Accordingly, the decision to cooperate and deviate from the national regulations depends on the size of the welfare gains from reducing the trade costs. This implies that the country in the agreement with the largest potential gains from trade may have more incentives to deviate from its national regulations than the country with the lowest potential gains. In this situation, the cooperation process would tend to converge closer to the regulations of the second country's regulation.

Based on this framework, it is reasonable to expect, for example, that a regulatory cooperation process will converge closer to the countries within the group that have more regulations and to larger countries. The following example illustrates this point.

Country A applies more technical regulations to a particular product than country B. It will thus be easier for exporters in A to access the market in B than vice versa. This is because firms in A already have to comply with multiple domestic requirements, so exporting to B does not represent an additional regulatory burden. By contrast, a firm in B is likely to find it harder to upgrade its product to meet the additional requirements of country A's market. This is the same reasoning employed in chapter 2 to introduce the regulatory overlap measure. In general, for countries with more regulations, access to a less regulated market is already a relatively easy process. As a result, these countries may not stand to make many

more trade gains through convergence and thus have little incentive to change current regulations. The opposite is true for countries with fewer regulations, which will likely achieve substantial trade gains by altering their regulations. In these circumstances, it is reasonable to expect the regulatory agreement to converge closer to the regulations of the country with more regulations.

Country size has a similar effect. Large countries tend to have low trade-to-GDP ratios, which means that domestic considerations are likely to play a larger role than the trade costs associated with different regulations. For these countries, the domestic welfare losses from changing the current regulations may be larger than the trade gains, so these countries may be less willing to change their national regulations substantially. The opposite may be true for small countries, which tend to have large trade-to-GDP ratios. For these countries, the trade gains from changing the regulation may be significant, so they will generally be more willing to cooperate. In this case, the regulatory agreement is more likely to converge closer to the regulations of the larger country.[27]

These theoretical predictions are mainly useful for understanding some of the forces behind the negotiations in regulatory agreements, but whether negotiations converge according to such patterns will depend on the particularities of each case.

Beyond these conceptual issues, there is a practical aspect that any regulatory cooperation initiative in LAC must take into account: the direction of the convergence process must not lose sight of the regulatory situation outside the region. Engaging in regulatory cooperation processes within the region or its subregions without looking at what is happening in the rest of the world could be problematic. After all, exporting firms from LAC have potential markets not only within the region but also in other parts of the world. There are potential gains from reducing regulatory differences with these other markets, too. For

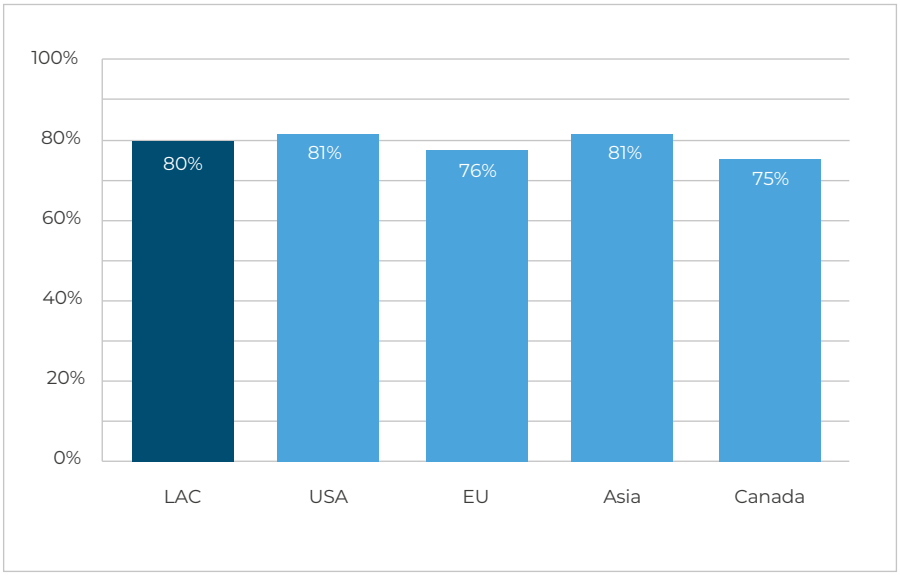
27 La discusión de estas cuestiones conceptuales se basa en material de von Lampe, M., K. Deconinck y V. Bastien (2016).

instance, we pointed out earlier that if regulatory distances between LAC and the rest of the world were reduced by half, the probability of entry into the average world market would increase by 143% and trade flows by 17%.

Our survey also confirms these potential gains. In it, we asked whether firms thought that a regulatory coordination agreement could help improve their export participation in the market of the country with which the agreement is signed. We asked this regarding regulatory cooperation agreements between firms' own countries and other LAC countries, but also between the former and the US, the EU, Canada, and the Asian countries, respectively.

Their responses are presented in figure 4.2. Around 80% of firms said a regulatory agreement with other LAC countries would improve their export participation in regional markets. Similarly, many companies indicated that regulatory agreements with other regions would help improve their export participation in those destinations. The results suggest that it would not be desirable to reduce regulatory heterogeneity within the region if this meant increasing it with the rest of the world. In other words, intraregional regulatory cooperation processes should not be carried out in a vacuum, in isolation from the regulatory developments in the rest of the world.

**Figure 4.2** A regulatory convergence agreement with the destination market would improve export participation




**Source:** IDB survey

A general principle for LAC countries to engage in intraregional regulatory cooperation is to adopt international standards as much as possible, as encouraged by the WTO. Adopting international standards may limit the likelihood of drifting away from the rest of the world when reducing regulatory heterogeneity within the region.

The use of mutual recognition agreements with other countries may also be a viable option in combination with regulatory agreements within the region to ensure that the latter do not lead to isolation from the rest of the world. The EU, for example, has a long history of using mutual recognition agreements with non-EU countries (Cernat, 2022). These agreements are particularly useful given the impossibility of harmonizing rules with multiple external regions simultaneously.

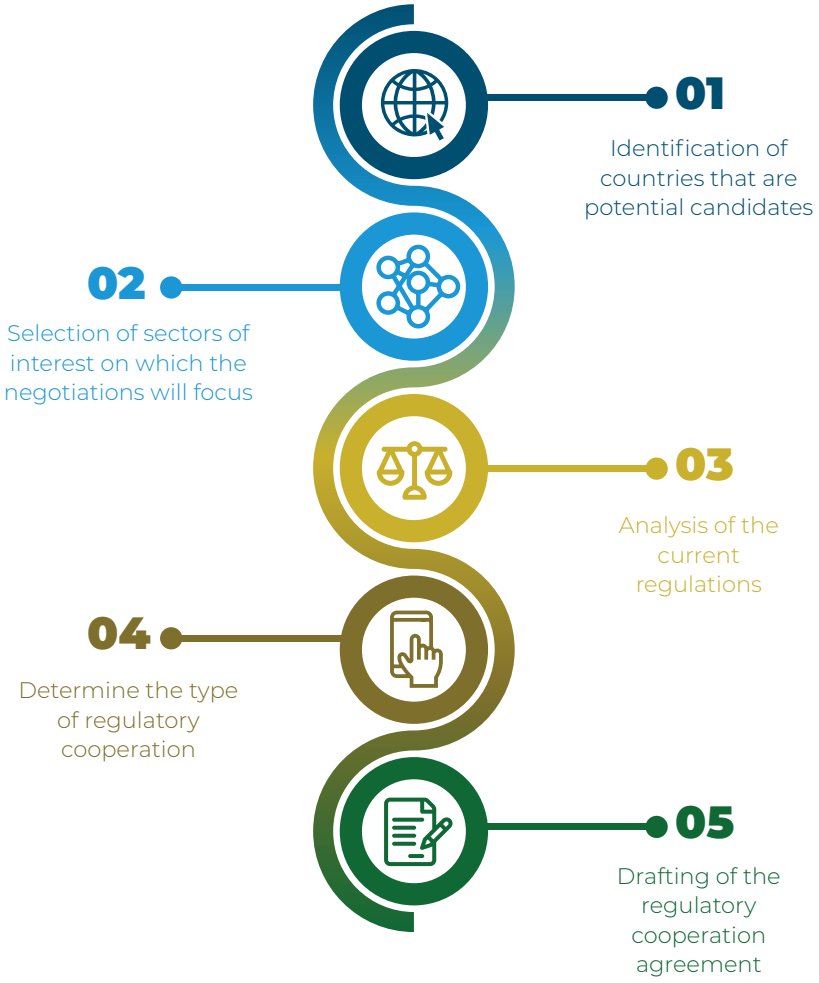
There is also a link between the two approaches. The more international standards are used as a guide for international regulatory cooperation within LAC, the greater the possibility of establishing mutual recognition agreements with third regions, since the differences between the respective regulations are likely to be smaller.

# 5

# How Do We Move Forward?

Given the benefits of participating in international regulatory cooperation mechanisms, the question is how best to move forward. Box 5.1 outlines the main stages in the process, which are described in detail below.

**Box 5.1** Roadmap for International Regulatory Cooperation



**1. Identification of countries that are potential candidates for regulatory cooperation.** The success of the regulatory convergence process depends on there being strong interest from the countries involved in bringing their regulatory schemes closer together. Although this is not a necessary condition, there may be some affinity between the countries taking part in a given cooperation process, such as having large trade flows, being part of an integration agreement (free trade area, customs union, common market), or sharing another scheme that provides a legal framework for bringing regulatory schemes closer. Conversely, the candidate countries may have low trade flows because the existing regulatory differences have impeded the growth or realization of trade, which may be the motivation behind a regulatory cooperation initiative.

**2. Selection of sectors of interest for regulatory cooperation on which the negotiations will focus.** UA fundamental aspect of the regulatory cooperation process is the definition of the sector(s) of interest. Regulatory cooperation is rarely sought in all sectors simultaneously, as doing so can be extremely complex. Indeed, the content of negotiations on technical measures can be quite complex, so the relevant government agency must be directly involved. Depending on the product, these might include sanitary and phytosanitary control agencies, health authorities, ministries of agriculture, ministries of fisheries and aquaculture, ministries of mining and energy, ministries of industry and commerce, or ministries of the environment. Conducting negotiations involving all these authorities simultaneously would be extremely hard. Focusing on a single sector (or a handful of these) is more conducive to progress.

At this stage, different stakeholders (public authorities, the private sector) can be surveyed to determine their interest in simplifying regulations in specific sectors. For example, sectors/products with high rejection rates at the border due to noncompliance with conformity assessments may be good candidates. The survey can be complemented by a forum involving public authorities and the private sector in focus groups to identify or validate the desire to move forward in specific sectors.

Once a sector with the potential for regulatory cooperation has been identified, there will be more clarity as to which authorities need to be fully involved in the process. These authorities must be invested in the negotiations and be convinced that regulatory convergence will guarantee the legitimate objectives of their original national regulations.

**3. Analysis of the current regulations.** When the sector and the competent authorities have been defined, the regulatory scheme currently applied in the countries must be studied.

Once the information on the regulations applied in each country has been gathered, an analysis must be carried out to identify common patterns, similarities, differences in requirements, and conformity assessment procedures and even levels of market surveillance. The objective of this stage is to gain clarity on the similarities and differences between the existing regulations and to identify the degree of regulatory overlap that exists. This comparison should result in the construction of regulatory overlap indices similar to those presented in chapter 2, but that contain much more detail.

At this stage, it is important to involve the private sector to get a better idea of what is happening on the ground regarding regulatory compliance and to identify the parts of the regulation that are having the most adverse effects on trade flows between countries.

Based on these different types of information, the process should result in a clear picture of the similarities and differences between the countries' regulations and possibly identify which parts of the regulations should be prioritized for the cooperation agreement, if necessary.

**4. Determine the type of regulatory cooperation.** At this stage, the negotiating parties should choose the coordination scheme that they consider most appropriate to guarantee that the traded product is safe and/or of appropriate quality. Given that there are different ways of achieving regulatory coordination (see chapter 4), this stage involves weighing up the advantages and disadvantages of each potential scheme and choosing the one on which there is the most consensus.

As indicated in the case studies section, the decision on the coordination scheme should also consider the different capacities and levels of international accreditation of the regulatory agencies involved. At this point, the negotiations may decide that in order to move forward with a particular coordination scheme, it is also necessary to improve some parts of the regulatory system of a country or group of countries. Commitments to achieve this can be worked on in parallel with the agreement.

**5. Drafting of the regulatory cooperation agreement.** Once the coordination scheme has been chosen, the agreement must be drafted. It should be based on a legal framework that gives the authorities the power to regulate the chosen sector and should have a well-defined structure to ensure that its scope and application are viable.

The agreement should include a follow-up mechanism, such as a committee that provides guidance and certainty on the application of the agreement and helps address possible difficulties in implementing it. The agreement should also contain a clear provision for periodic reviews Finally, the agreement must be notified by at least one of the countries to the WTO TBT Committee (Art. 10.7) or to the WTO SPS Committee (Art. 7).

The entire process can be demanding. Some countries may need assistance from the international community to reduce the institutional costs associated with the negotiations by providing technical and financial support at various stages.

Some countries may also need technical and financial support to strengthen different components of their regulatory system, including regulatory bodies, metrology, laboratories, and accreditation and certification authorities, in order to raise the level of the regulatory system and to be able to comply with what was agreed on during negotiations.

# A

# Appendix A: Datasets and Sources

Analyzing technical measures is challenging. Like other nontariff measures (NTMs), technical measures are not easy to observe, as is the case with tariff rates. There is no perfect data set for NTMs—each data set has its own advantages and limitations. In this report, instead of using one NTM data set, we use a number of them, depending on the particular issue we are addressing.

To calculate the prevalence and evolution of technical measures in LAC, we use an NTM data set from the Vienna Institute for International Economic Studies. It is based on the information on measures notified to the WTO from the Integrated Trade Intelligence Portal (I-TIP) but has been cleaned up and improved substantially, including the imputation of missing product codes (see Ghodsi et al., 2017). The authors construct a panel structure in which each SPS and TBT measure is distinctly assigned to products according to the Harmonized System (HS).

To calculate the regulatory distance between countries, we use an NTM data set collected by the United Nations Conference on Trade and Development (UNCTAD). This data set has the advantage of grouping the almost infinite variations on NTMs into 178 different categories. This approach is called the UNCTAD MAST classification and it makes it much easier to compare regulations across countries.

The trade data set is the BACI International Trade Database from CEPII, and the tariff rate data set combines data from Teti (2020) and the Trade Analysis Information System (TRAINS). We also use the UNCTAD ad valorem equivalents of NTMs.

B

# Appendix B: Calculation of Regulatory Distances

Measuring the distance in technical measures between countries is a complex task. Many different regulations can apply to a single product, which may vary across countries. Comparing these measures for a single product can imply a great deal of work. One way to simplify the task is to use the UNCTAD MAST classification mentioned in appendix A.

Cadot et al. (2015) use the UNCTAD MAST classification to derive a methodology for measuring distance in technical measures, known as "distance in regulatory structures" or simply "regulatory distance." The methodology is as follows: $N_{ijmkt}$ is a dummy variable equal to 1 if country i applies technical measure m to imports of product k from country j in year t. Similarly, $N_{jimkt}$ is a dummy variable equal to 1 if country j applies technical measure m to imports of product k from country i in year t. The regulatory distance between countries i and j for measure m on product k is given by the absolute value of the difference:

$$R_{ijmkt} = abs\ (N_{ijmkt} - N_{jimkt})$$

If both countries apply the same measure, the regulatory distance is 0; otherwise, the equation yields 1. To analyze regulatory patterns, the regulatory distance is aggregated across measures. Accordingly, the regulatory distance between countries i and j in product k in a given year is:

$$R_{ijkt} = \frac{\sum_m abs\ (N_{ijmkt} - N_{jimkt})}{M}$$

**In other words, the regulatory distance between countries i and j in product k** $(R_{ijmkt})$ is the sum of all regulatory distances across all measures m, divided by the total number of measures (M) applied by both countries (without double counting). Analogously, the overall regulatory distance between countries i and j can be calculated as the average regulatory distance across all products. We use this methodology to measure the regulatory distance of technical measures between each pair of countries in LAC and between LAC and other regions.

If the technical measures between countries i and j are the same (in which case the index of regulatory distance is equal to 0), we can say that producers from country i will face no additional burden when exporting to country j and vice versa. However, if the technical measures are different, exporters will face additional burdens.

When technical measures are different and exporters face additional burdens, it is also important to understand that bridging the distance between countries i and j is not equally difficult for the two countries. Intuitively, if country i applies more technical measures than country j, it may be easier for exporters in i to access the market in j than vice versa. Since exporters in i have to comply with multiple domestic requirements, exporting to j may be less of an additional burden. Conversely, if there are fewer domestic regulations in country j, it is likely to be more difficult for a producer there to adapt its product for the market in country i.

This issue regarding the "difficulty" of bridging the gap between regulations can be examined by a second measure, the regulatory overlap measure, which is the share of country i's technical measures already existing in country j (and vice versa). More specifically, regulatory overlap is calculated as follows:

$$R_{ijkt} = \frac{\Sigma_m \ (N_{ijmkt} \times N_{jimkt})}{M}$$

where M is now the total number of measures imposed by importing country i (when calculating the regulatory overlap faced by exporters in country j) or the total number of measures imposed by importing country j (when calculating the regulatory overlap faced by exporters in country i). Unlike the regulatory distance measure presented above, the regulatory overlap measure is asymmetric.

To calculate the regulatory distance and overlap measures, we use the UNCTAD MAST data set. For each of the nearly 6,000 products in the Harmonized System (6-digit level), the UNCTAD MAST data show which of the 178 NTMs are applied by each country. Of these 178 NTMs, we will use the subset of SPS and TBT measures (48 measures in total). The data set is available from 2009 to 2019.

i

C

# Appendix C: Estimation of the Impact of Regulatory Heterogeneity on International Trade

The analysis follows Lombini (2021) in using the workhorse empirical model in international trade—the gravity equation—to analyze the impact of regulatory distance between two countries on trade. Specifically, our baseline specification is a standard gravity equation that takes the following form:

$$M_{ijkt} = exp[\beta_1 \cdot \ln(1 + R_{ijkt}) + \beta_2 \cdot \ln(1 + tar_{ijkt}) + \beta_3 \cdot \ln(d_{ij}) + \bar{Z}_{ij} \cdot \gamma + \theta_{ikt} + \theta_{jkt}] * \varepsilon_{ijkt}$$

where $M_{ijkt}$ rerepresents the imports (in volume) of country i from country j of product k (at the HS 6-digit level) in year t; $R_{ijkt}$ esis the regulatory distance between countries i and j for product k in year t, as defined in appendix B; $tar_{ijkt}$ is the import tariff rate that country i applies to product k from country j in year t; $d_{ij}$ is the physical distance between the two countries; and, $Z_{ij}$ es is a vector that includes the usual dyadic trade cost components: common language, contiguity, and colonial ties. Finally, $0_{ikt}$ and $0_{jkt}$ are fixed effects by country-industry-year that control for multilateral resistance terms (Hummels, 2001; Feenstra, 2016). [28]

To account for the presence of zero trade flows, a Poisson pseudo-maximum likelihood (PPML) estimator is usually used when estimating the gravity equation. We follow the same practice in this analysis. We are also interested in evaluating the effect of regulatory distance on the probability of trade occurring between the countries in question (the extensive margin). Accordingly, in addition to using the PPML estimator, we also estimate a linear probability model where $M_{ijkt}$ is a dummy variable that is equal to 1 if trade is positive.

As mentioned in appendix A, the data on bilateral imports (volumes) is from CEPII, the data on the tariff rates is from Teti (2020) and from the TRAINS database, and the data used to calculate regulatory distances is from UNCTAD. The calculation of regulatory distances is explained in appendix B. The analysis is applied to 89 countries, including 17 LAC countries, for 2016–2020. In all the

28 An alternative specification of the gravity equation includes a country-pair fixed effect to capture distance and other time-invariant bilateral trade costs (Egger and Nigai, 2015; Agnosteva et al., 2014). We explicitly keep these bilateral trade cost variables in the model (and therefore do not use the country-pair fixed effect) as we want to explore the interaction effects between some of the dyadic trade cost components and regulatory distance. Specifically, we examine whether sharing a common language affects the impact of regulatory distance on trade.

models we use lagged values of the regulatory distance and tariff variables. The empirical results of the estimations are presented in tables C.1-C.3.

**Table C.1** Impact of regulatory distance on bilateral trade

| | PROBABILITY OF ENTRY (1) | IMPORT VOLUME (2) |
|---|---|---|
| Regulatory distance | -0.1189*** (0.0001) | -0.3455*** (0.0985) |
| Tariff | -0.0442*** (0.0003) | -1.6520*** (0.2412) |
| Distance (physical) | -0.0512*** (0.0001) | -1.2321*** (0.0344) |
| Common language | 0.0089*** (0.0001) | 0.4035*** (0.0496) |
| Contiguity | 0.0533*** (0.0001) | 0.9101*** (0.0522) |
| Common colony | -0.0011*** (0.0001) | 0.7794*** (0.1447) |
| IMPORTER-SECTOR-YEAR FIXED EFFECT | ✓ | ✓ |
| EXPORTER-SECTOR-YEAR FIXED EFFECT | ✓ | ✓ |
| $R^2$ | 0.542 | 0.951 |
| OBSERVATIONS | 86.961.391 | 33.446.214 |

**Note:** Each column reports results from a regression over the period of 2016 to 2020. The dependent variable in column (1) is a dummy variable that is equal to 1 if there is positive trade between country i and j in good k in year t, and zero, otherwise. The dependent variable in column (2) is the volume of the imports of country i from country j of good k in year t, where the value is equal to zero when there is no trade. The main explanatory variable is the the regulatory distance between countries i and j in good k in year t (in logs). Other controls include the applied tariff rate that country i imposes on the imports of good k from country j in year t (in logs); the distance between countries i and j (in logs), and dummy variables for common language, contiguity and common colony. Additional controls are fixed effects for importer-sector-year, and for exporter-sector-year. Robust standard errors in parentheses. The model in column (1) is estimated using a linear probability model, while model in (2) uses a Poisson pseudo-maximum likelihood (PPML) estimator. Both models drop observations due to singletons or separated by a fixed effect. The number of drops is larger under the PPML estimation.

***, **, and * significant at the 1%, 5%, and 10% level respectively.

**Table C.2** Impact of regulatory distance on bilateral trade, by sectors

| | PROBABILITY OF ENTRY (1) | IMPORT VOLUME (2) |
|---|---|---|
| Regulatory distance, agriculture | -0.1552*** (0.0004) | -2.1435*** (0.1599) |
| Regulatory distance, mining | -0.0627*** (0.0006) | 0.0888 (0.1743) |
| Regulatory distance, manufacturing | -0.1188*** (0.0001) | -0.5820*** (0.0456) |
| Tariff | -0.0395*** (0.0002) | -1.3857** (0.2330) |
| Distance (physical) | -0.0507*** (0.0001) | -1.2224*** (0.0341) |
| Contiguity | 0.0537*** (0.0001) | 0.9111*** (0.0516) |
| Common colony | -0.0010*** (0.0001) | 0.7859*** (0.1433) |
| IMPORTER-SECTOR-YEAR FIXED EFFECT | ✓ | ✓ |
| EXPORTER-SECTOR-YEAR FIXED EFFECT | ✓ | ✓ |
| $R^2$ | 0.542 | 0.951 |
| OBSERVATIONS | 86.961.391 | 33.446.214 |

**Note:** Each column reports results from a regression over the period of 2016 to 2020. The dependent variable in column (1) is a dummy variable that is equal to 1 if there is positive trade between country i and j in good k in year t, and zero, otherwise. The dependent variable in column (2) is the volume of the imports of country i from country j of good k in year t, where the value is equal to zero when there is no trade. The main explanatory variable is the the regulatory distance between countries i and j in good k in year t (in logs). Additional controls include the applied tariff rate that country i imposes on the imports of good k from country j in year t, by sectors (in logs); the distance between countries i and j (in logs), and dummy variables for common language, contiguity and common colony. Additional controls are fixed effects for importer-sector-year, and for exporter-sector-year. Robust standard errors in parentheses. Model in column (1) is estimated as a linear probability model, while model in (2) uses a Poisson pseudo-maximum likelihood (PPML) estimator. Both models drop observations due to singletons or separated by a fixed effect. The number of drops is larger under the PPML estimation.

***, **, and * significant at the 1%, 5%, and 10% level respectively.

**Table C.3** Regulatory distance and common language

| | PROBABILITY OF ENTRY (1) | IMPORT VOLUME (2) |
|---|---|---|
| Regulatory distance | -0.1253*** (0.0001) | -0.3621** (0.1018) |
| Regulatory distance x common language | 0.0556*** (0.0002) | 0.1067 (0.1372) |
| Tariff | -0.0429*** (0.0002) | -1.6534*** (0.2404) |
| Distance (physical) | -0.0509*** (0.0001) | -1.2308** (0.0346) |
| Common language | -0.0145*** (0.0001) | 0.3645*** (0.0475) |
| Contiguity | 0.0557** (0.0001) | 0.9126*** (0.0529) |
| Common colony | -0.0003* (0.0001) | 0.7816*** (0.1449) |
| IMPORTER-SECTOR-YEAR FIXED EFFECT | ✓ | ✓ |
| EXPORTER-SECTOR-YEAR FIXED EFFECT | ✓ | ✓ |
| $R^2$ | 0.542 | 0.951 |
| OBSERVATIONS | 86.961.391 | 33.446.214 |

**Note:** Each column reports results from a regression over the period of 2016 to 2020. The dependent variable in column (1) is a dummy variable that is equal to 1 if there is positive trade between country i and j in good k in year t, and zero, otherwise. The dependent variable in column (2) is the volume of the imports of country i from country j of good k in year t, where the value is equal to zero when there is no trade. The main explanatory variable is the regulatory distance between countries i and j in good k in year t (in logs) and its interaction with the dummy of common language. Additional controls include the applied tariff rate that country i imposes on the imports of good k from country j in year t (in logs); the distance between countries i and j (in logs), and dummy variables for common language, contiguity and common colony. Additional controls are fixed effects for importer-sector-year, and for exporter-sector-year. Robust standard errors in parentheses. Model in column (1) is estimated as a linear probability model, while model in (2) uses a Poisson pseudo-maximum likelihood (PPML) estimator. Both models drop observations due to singletons or separated by a fixed effect. The number of drops is larger under the PPML estimation.

***, **, and * significant at the 1%, 5%, and 10% level respectively.

# D

# Appendix D: IDB Survey on Technical Measures and International Trade

Previous studies have attempted to identify the trade impacts of technical measures using firm surveys. For example, the OECD conducted a survey of 55 companies in the US, Japan, the UK, and Germany to assess the extent to which technical measures and conformity assessment procedures restrict international trade. The survey focused on three sectors: telecommunications equipment, dairy products, and automotive components (Spencer and Loader, 2000).

Another example was a World Bank survey designed to examine how technical measures in developed countries affect export opportunities in developing countries (Wilson and Otsuki, 2003). The survey included 689 firms in 17 developing countries (4 from LAC: Argentina, Chile, Honduras, Panama), averaging 40 firms per country.

The IDB survey is a nonprobability survey of 259 respondents from 16 LAC countries (Argentina, Bahamas, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, Guatemala, Jamaica, Mexico, Paraguay, El Salvador, Trinidad and Tobago, and Uruguay).

The survey was conducted online, in English, Spanish, and Portuguese, between July 29 and September 13, 2022. To be eligible to participate, respondents needed to understand the company's business strategies, particularly its production and trade-related operations.

The survey was based on convenience sampling. The sample was built from an email list obtained from public databases of exporting firms in LAC countries. As with the other surveys mentioned above, the sample size makes it unfeasible to achieve results that are representative of the population of exporting companies in the countries covered. Instead, the results are merely indicative of the trade barriers relating to technical measures faced by companies in the region.

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