



# **INVESTING IN INTEGRATION**

## **The Returns from Software- Hardware Complementarities**

**Inter-American  
Development Bank**

Integration and Trade  
Sector

**POLICY BRIEF**

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Policy Discussion Brief

# Investing in Integration

The Returns from *Software-Hardware* Complementarities



Fourth Meeting of Ministers of Finance of the Americas and the Caribbean

Calgary, Canada ■ March 26, 2011





# **FOURTH MEETING OF FINANCE MINISTERS OF THE AMERICAS AND THE CARIBBEAN**

**POLICY DISCUSSION BRIEF**

**INVESTING IN INTEGRATION**  
**The Returns from *Software-Hardware* Complementarities**

**Calgary, Canada, March 26, 2011**

This policy discussion brief is a joint Inter-American Development Bank (IDB), World Bank, and United Nations Economic Commission for Latin America and the Caribbean (ECLAC) response to a request made by Ministers during the Third Meeting of Finance Ministers of the Americas and the Caribbean, held in Lima, Peru, on May 28, 2010.

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The Integration and Trade Sector of the IDB, acting as the Technical Secretariat of the Meeting of Finance Ministers of the Americas and the Caribbean, coordinated the production of this brief and provided other technical support to the process.

The opinions expressed in this policy discussion brief are those of the authors and do not necessarily represent the views of the Inter-American Development Bank, the World Bank, the United Nations Economic Commission for Latin America and the Caribbean, or their member countries.

## EXECUTIVE SUMMARY

### **The Regional Finance Ministers' Integration Agenda: From Lima to Calgary and Beyond**

The Finance Ministers of the Americas and the Caribbean have agreed to hold an annual policy dialogue to discuss selected long-term development issues that are common to the region and hold the potential to promote economic integration and cooperation.

During the Third Meeting in Lima, Peru, on May 28, 2010, Ministers discussed the conclusions of a policy brief titled *Bridging Integration Gaps: Scenarios and Policy Recommendations to Promote Physical Infrastructure and Reduce Intra-Regional Trade Costs*. They endorsed the assessments and recommendations put forward in the policy brief and agreed that (i) the integration agenda needs to blend investment in integration *software* (policy and regulatory framework) and *hardware* (physical infrastructure) and (ii) with respect to the development finance supply side, a new operational compact is needed to channel additional resources to sustain the integration process.

The Ministers manifested an interest in pursuing an in-depth, outcome-oriented discussion of issues related to the integration and cooperation agenda and in focusing on concrete implementable measures.

The present policy brief builds on this mandate:

Section I uncovers the value of complementarities between integration *software* and *hardware*, based on new estimates of their joint trade creation potential. Evidence suggests that:

- In a postcrisis environment, in which the sources of global demand have shifted towards the developing world, the value of doing business within the Western Hemisphere is increasing;
- On average, the region is realizing only 50 percent of its intrahemispheric trade potential: that is, the still imperfect trade integration architecture (*software*) and the regional infrastructure gap (*hardware*) contribute to explaining why intrahemispheric trade is lower than the East Asian benchmark;
- A key strategic action plan lies in harnessing the complementarities between investment in *software* and *hardware*: the marginal value of simply signing agreements will decrease over time, whereas increasing returns can be found in coupling investments in regional physical connectivity with trade and regulatory policy reforms in key infrastructure sectors.

Section II outlines the key interventions of a policy menu for deepening integration. It details the actions needed in the following areas:

- *Trade architecture*: the region needs to advance in the completion and convergence of trade agreements;
- *Trade regulations*: policy action needs to tackle the growing costs caused by nontariff barriers;
- *Trade facilitation, logistics, and trade and investment promotion*: the region needs to invest and build capacity so as to progress towards the implementation of good practices that have already been identified and hold the potential to foster private sector internationalization;
- *Physical integration*: the region needs to move from identification to implementation of investment projects for regional connectivity, particularly in road transport infrastructure, upgrade of ports and maritime services, air cargo regulatory reforms, and telecommunications.

Section III appraises the expected returns by 2020 of an ambitious program of reforms and investment in integration, based on a new set of policy simulations. It highlights that:

- Investment in transport networks that are the lifeline of regional trade will require the mobilization of additional resources equivalent to 1.1 percent of regional GDP annually over the next decade;
- The estimated overall returns on an integration investment program are sizeable (a 47 percent increase in intra-LAC exports by 2020) and almost equally distributed between the *software* and *hardware* components of the agenda;
- The estimated average rate of return on investment in transport infrastructure stands at 70 percent; such investment would also generate higher fiscal income and sizeable cuts in the implicit regressive tax on the poor caused by logistical inefficiencies.

Section IV discusses an operational framework for locking in investment in integration projects, arguing that:

- Aligning *software* and *hardware* investment within “sustainable integration corridors” is an operational framework suitable for maximizing the returns on investment in integration, as demonstrated by recent initiatives undertaken in other developing regions;
- A comprehensive investment program in integration needs to be designed according to principles of regional efficiency that explicitly consider cross-border externalities; supported by an adequate system of incentives, as well as by effective regional institutional platforms; and based on the willingness of individual countries to prioritize and support regional projects;
- Financing investment in integration needs to overcome obstacles created by the low level of public investment in infrastructure—2 to 3 percent of GDP in Latin America and the Caribbean compared to 6 to 10 percent in East Asia—as well as the selective interest of the private sector in investing in a limited number of countries and sectors.

The overall conclusion is that in order to harvest the significant potential gains that a new generation of integration policy reforms and investment may deliver to countries in the region, governments are well advised to lock in an investment strategy that tackles both the *software* and the *hardware* components within an integrated regional strategic plan. The role of the private sector is essential for succeeding in this agenda. Multilateral development institutions and donors should also be ready to support the region in this endeavor.



## I. The Increasing Returns from *Software-Hardware* Complementarities

New empirical evidence produced for this policy brief supports the conclusion that in a postcrisis environment, the value of integration is increasing. Meanwhile, Latin America and the Caribbean (LAC) operates below its long-term integration potential. Going forward, integration policies may generate additional trade, growth, and welfare, provided that policymakers harness greater complementarities between the *software* and *hardware* components of the agenda, that is, they undertake policy and regulatory reforms coupled with regionally coordinated investments. But why is integration more valuable today than it has been in the past? Further, what exactly are these *software-hardware* complementarities in investment?

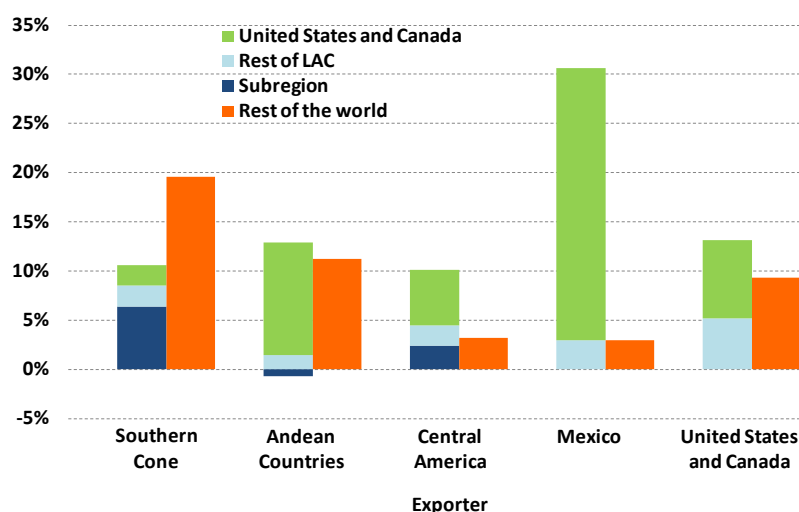
### The Strategic Role of Integration after the Crisis

One of the most relevant consequences of the global financial crisis of 2008–2009 is the shift of the most dynamic sources of global demand towards the developing world. Such a shift urges the countries of the Americas in general, and those of LAC in particular, to reassess their global and regional integration strategies.

The potential strategic value of the Latin American and Caribbean market is likely to increase over time. If, as expected, LAC countries keep growing at a 5–6 percent rate over the next few years—a rate comparable to that of Asia and much higher than that of the industrialized economies—the value of doing business with the developing world, including within the region, will increase.

**Figure 1. Drivers of Export Growth**

(Contribution to export growth by selected export destinations in 2010, in percentage points)



Source: IDB Integration and Trade Sector based on INTradeBID and official national and regional data.

Note: 2010 exports are calculated on the basis of partial year data.

Indeed, intrahemispheric trade flows have made a considerable contribution to the recovery of the region's exports following the global financial crisis (see Figure 1). The Inter-American Development

Bank (IDB) estimates that all things being equal, that is, without implementing any of the policy reforms considered in this brief or experiencing unexpected macroeconomic shocks, just as a result of vibrant growth expected in the coming years, intraregional exports will grow by US\$9 billion each year, and exports from the United States alone to the region will grow by US\$26 billion per year.<sup>1</sup>

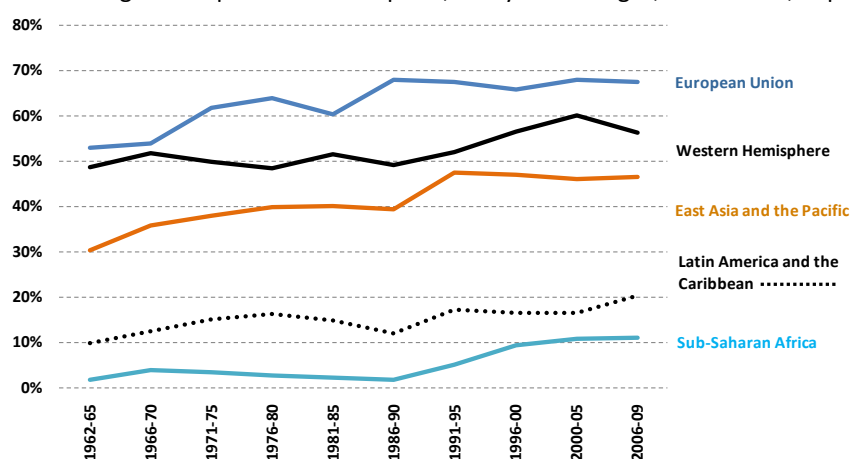
Although intraregional trade growth may be positive in itself, its long-term benefits may be significantly greater when regional integration is placed in the context of global integration. Most LAC countries export the bulk of their manufactures to the regional market. Deeper integration among these countries is strategic, as it would help to balance an Asian demand intensive in commodities, thereby sustaining sophisticated sectors and reducing exposure to terms-of-trade volatility. Moreover, regionally integrated value chains, cross-border movements of skills and capital, and a more efficient use of transport infrastructure and energy hold the potential to boost productivity and LAC's long-term capacity to compete globally.<sup>2</sup>

### Assessing the Intraregional Trade Potential

How does LAC compare with Asia in terms of regional integration? A key feature of the East Asian economic growth model in the past fifty years has been a consistent increase in trade integration. In 2006–2009, intraregional exports in Asia reached 46 percent of the region's total exports. This trend has been driven by an increasing regional fragmentation of production value chains, whereby countries exchange components of more sophisticated goods that are assembled and exported overseas. In LAC, intraregional trade integration has been much lower—up to 20 percent of total exports in 2006–2009—and not driven by regional production sharing, but rather dominated by the exchange of finished goods (Figure 2).

**Figure 2. The Intraregional Trade Gap**

(Share of intraregional exports in total exports, five-year averages, 1962–2009, in percent)



Source: IDB Integration and Trade Sector, based on IMF-DOTS.

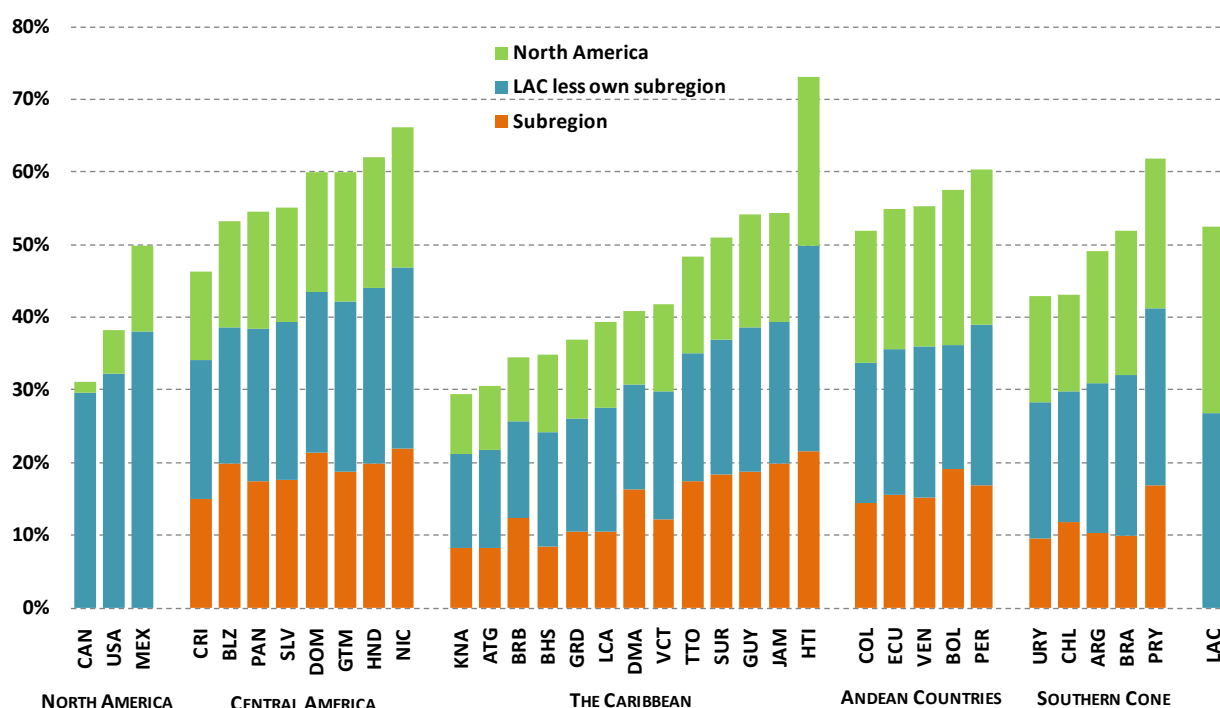
<sup>1</sup> According to IDB estimates, a 1 percent growth in LAC's GDP translates into a 1.23 percent increase in intra-LAC exports and a 1.67 percent rise in U.S. exports to the region. The export-to-income elasticity is estimated using a panel data gravity model (Moreira and Hueser, 2011).

<sup>2</sup> For a set of proposals aimed at strengthening regional integration and cooperation in a postcrisis environment, see ECLAC (2010).

This observation raises the following question: how much can intra-LAC and intrahemispheric trade grow? Figure 3 reports the estimated export potential of each of the region's 34 countries with respect to their own subregion, the rest of LAC, and North America.<sup>3</sup> On average, LAC is estimated to be at only 50 percent of its trade potential: that is, full trade integration (*software*) and bridging the infrastructure gap with the United States (*hardware*) may double the level of intrahemispheric trade. This estimated export potential is, on average, equally distributed between the intra-LAC market and North America. Results by country suggest that the potential is substantial in all cases, ranging from 30 to more than 70 percent.

**Figure 3. Export Potential in the Western Hemisphere**

(Unrealized share of total potential exports attainable under optimal scenario, in percent)



Source: IDB Integration and Trade Sector, based on a cross-country gravity model for the period 2000–2009.

<sup>3</sup> The results are extrapolated from a gravity model of global trade, in which the export potential corresponds to the percentage difference between the predicted level of exports under an optimal scenario and the current observation (fitted). In the optimal scenario, two assumptions hold: (i) the bilateral free-trade agreement (FTA) network is fully completed among all hemispheric partners, and (ii) all countries converge to the U.S. endowment of infrastructure in per capita terms. The model explains bilateral trade as a function of GDP, total population, a dummy variable that captures the existence of bilateral FTAs, and the stock of infrastructure. The FTA dummy, taken from the IDB INTradeBID database, has global coverage and includes all bilateral trade agreements that grant preferences to at least 80 percent of tariff lines. The infrastructure stock is proxied by the number of telephone lines, which is highly correlated (92 percent) with the cross-country principal component of a set of 29 infrastructure variables. The model is estimated for the period 1988–2006 to obtain coefficients that capture the structural relationship over time between trade performance, country-specific conditions, and policy variables. Predicted and fitted values are calculated using 2000–2009 averages. Although the robustness of the results may be subject to further sensitivity analysis, the order of magnitude and distribution across countries may be considered an insightful approximation of the potential benefits of intrahemispheric integration.

## Lessons Learned from Past Episodes of Regional Integration

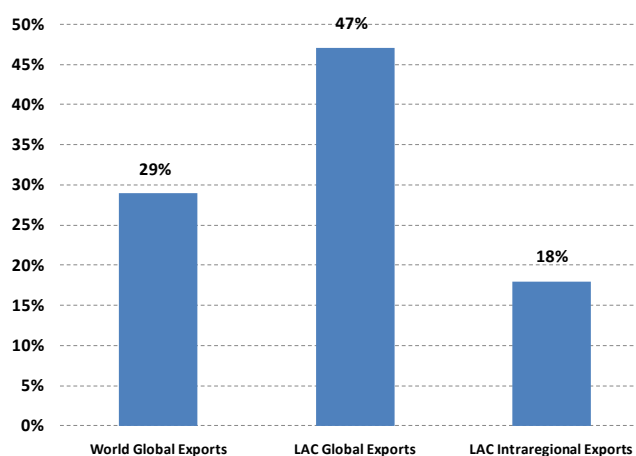
If regional trade integration in LAC is low, and there is a significant potential for further trade expansion in the region, what can be learned from five decades of integration policies?

The first lesson is that, to be sustainable, regional integration needs to target market opening and economic efficiency. In LAC, the policy framework has shifted radically from the *old regionalism* of the 1950–1960s based on state-led import substitution to the *new regionalism* of the 1990–2000s based on global and regional trade liberalization.<sup>4</sup>

Indeed, whereas the old free-trade agreements (FTAs)<sup>5</sup> had no significant trade impact, under the new regionalism, FTAs contributed to an estimated average export growth of 29 percent worldwide between the late 1980s and the middle of the last decade. The region was a top performer in this regard: FTAs boosted total LAC exports by 47 percent over the same period (Figure 4).<sup>6</sup>

**Figure 4. Export Returns of FTAs**

(1988–2006, in percent)



Source: IDB Integration and Trade Sector, based on a cross-country gravity model for the period 1988–2006.

The second lesson to be taken from prior experience with integration policies is that in LAC, under the new regionalism, the export generation capacity of intraregional FTAs trailed that of North-South FTAs: whereas the full set of Latin American and Caribbean FTAs generated 47 percent more exports over the period, the gains from intraregional FTAs were limited to 18 percent. These results confirm that integration agreements create more trade when they contribute to economic openness and that there is scope to deepen the potential of intraregional integration.

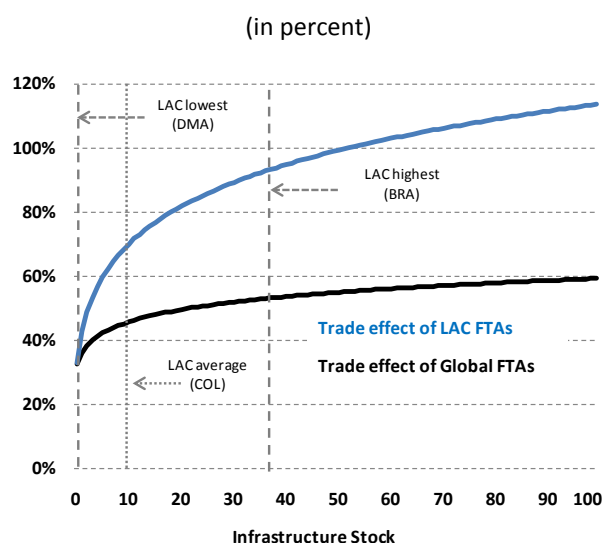
<sup>4</sup> For an assessment of the two models see ECLAC (1994), Devlin and Estevadeordal (2001), and Devlin and Giordano (2004).

<sup>5</sup> Throughout this brief, the abbreviation FTA generically refers to regional integration agreements as well as to bilateral preferential trade agreements.

<sup>6</sup> The result is the percentage value of the dummy associated with membership in a regional/bilateral trade agreement in the gravity model for the period 1988–2006. When the same model specification is used for the period 1962–1987 (old regionalism), the dummy is not statistically significant. In the results for the period 1988–2006 (new regionalism), all coefficients are significant at the 99 percent level of confidence.

The third lesson from prior integration policy experience (not shown in the figures) is that after the initial FTAs are signed, the signing of each subsequent agreement brings decreasing returns. This does not mean that entering new agreements is not desirable; rather, it simply reflects the fact that the marginal value of signing agreements decreases as preferences are eroded and new partners are progressively less significant, in terms of potential trade gains from tariff reductions, than the old ones. This has an important implication: it suggests that potential export gains become fewer with the negotiation of each new FTA and instead lie more in the implementation and utilization of existing FTAs, that is, the whole set of *software* policy issues, explored in subsequent sections.

**Figure 5. Export Returns of FTAs Complemented with Infrastructure Endowments**



Source: IDB Integration and Trade Sector, based on a cross-country gravity model for the period 1988–2006.

Note: The infrastructure stock is proxied by the number of telephone lines, which is highly correlated (92 percent) with the cross-country principal component of a set of 29 infrastructure variables.

A final lesson from prior experience with policy integration in the region is that there is evidence that the interaction of *hardware* (physical integration) and *software* (trade regulations) matters for regional trade performance. Figure 5 highlights the impact on exports when FTAs are coupled with infrastructure endowments.<sup>7</sup> Two powerful policy conclusions emerge from these results.

First, there are substantial complementarities between the *software* and the *hardware* of integration: the trade expansion effect of FTAs grows when the stock of infrastructure is higher, and the two advance in tandem. Second, this expansionary effect depends on initial conditions. Considering that compared to the rest of the world, LAC is a region with an above-average *software* base and a

<sup>7</sup> The result refers to the coefficient of the FTA-infrastructure interacted variable in the global gravity model for the period 1988–2006. The coefficient of the interacted variable, as well as those of all the other control variables of the model, is statistically significant at the 99 percent level of confidence.

suboptimal stock of infrastructure, it is likely that investing in *hardware* in the region will help reverse the declining returns from signing FTAs, and to a greater degree in LAC than in the rest of the world.

LAC's experience with regional integration sends a clear message: high returns on exports may be obtained if the regional integration strategy moves on two coordinated tracks—shifting the focus from negotiation to implementation on the trade regulations *software* side, and stepping up investment in infrastructure, while taking advantage of the complementarities between *hardware* and *software*. Such a multitrack policy agenda requires action on several interconnected fronts, which are explored in the next section.

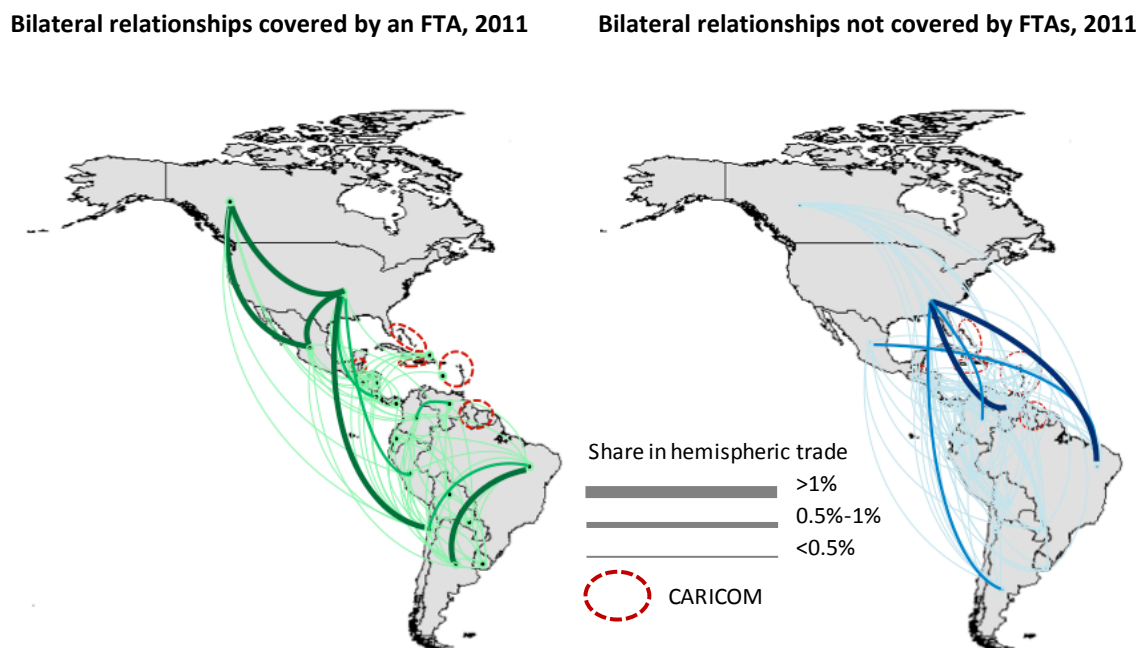
## II. Framing the Policy Agenda: The *Software-Hardware* Investment Menu

Defining and implementing a renewed integration agenda in LAC requires an in-depth diagnosis of the principal gaps in and obstacles to the integration process in the region. The main components associated with advancing the integration agenda on the *software* side are related to the overall trade architecture, trade regulations, trade facilitation, and export and investment promotion. On the *hardware* side, overcoming the infrastructure gap and improving connectivity should contribute to reducing transport costs and raising competitiveness.

### ***Trade Architecture: Progressing towards Completion and Convergence***

Over the past two decades, regional integration agreements and FTAs have contributed to lowering trade barriers, particularly tariffs. Although this process has covered and promoted a large part of current intraregional trade flows, about 60 percent of bilateral relationships in the region are still excluded.<sup>8</sup> The majority of these “missing links” involve Mexico, Central America, and the Caribbean vis-à-vis South America (Figure 6). At the hemispheric level, several trade relationships among the larger countries are likewise not yet covered.

**Figure 6. The Spaghetti Bowl and the Missing Trade Links**



Source: IDB INTradeBID database.

Note: Based on agreements in effect as of January 1, 2011, and 2009 trade figures. CARICOM = Caribbean Community.

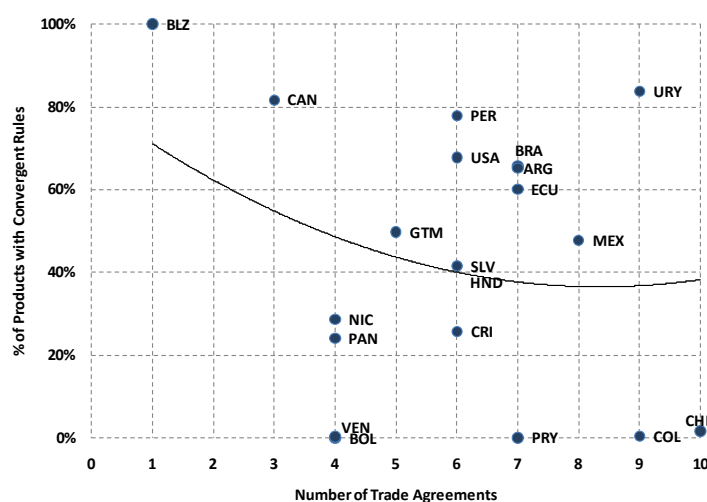
<sup>8</sup> Currently, there are 462 bilateral relationships covered by FTAs among 34 countries in the region. These represent 41 percent of the 1,122 possible bilateral relationships among these countries. Many of these relationships are governed by partial-scope agreements, but as these do not cover more than 40 percent of tariff lines at most, they are not considered here as comprehensive agreements.

A number of countries may still benefit from the completion of the intraregional FTA architecture (Estevadeordal et al., 2009). For example, Mexico and Peru have not upgraded their partial-scope agreement into a comprehensive FTA, and the relationship between Mexico and the Common Market of the South (MERCOSUR) is still regulated by sector-specific partial-scope agreements. The planned Brazil-Mexico FTA holds the potential to cover the main intraregional “missing link,” and its openness to membership by other parties may turn it into a magnet for the regional rationalization of trade rules. Likewise, the recently announced Deep Integration Area (*Área de Integración Profunda*) being sought by Chile, Colombia, Mexico, and Peru is also open for regional membership and goes beyond the standard FTA approach by regulating the movement of services, capital, and persons, in addition to trade in goods.

Meanwhile, existing FTAs set divergent trade regulations among signatory countries, in particular rules of origin (RoO).<sup>9</sup> The divergence of RoO regimes across sectors and FTAs entails significant costs for traders. Figure 7 illustrates the negative relationship between number of agreements and level of convergence: the more agreements a country enters into, the more difficult it becomes to ensure coherence of rules across agreements, and the more likely trade gains will be foregone.

**Figure 7. Proliferation of Trade Agreements and Divergence of Rules of Origin**

(Level of convergence of rules of origin, in percent, vs. number of intrahemispheric agreements in force in 2010)



Source: IDB INTradeBID database.

Note: Rules for a product are considered convergent if the same rule is specified for at least half of a country's agreements.

As countries seek to reduce trade costs, it has become necessary to promote the convergence of rules in existing FTAs.<sup>10</sup> Convergence provisions negotiated in various configurations of countries have the

<sup>9</sup> Rules of origin restrict preferential trade to products originating in signatory countries. Their restrictiveness refers to the degree to which they deny eligibility for preferences to goods with material inputs from countries not party to the agreement.

<sup>10</sup> Prominent regional efforts in RoO convergence are the Latin American Pacific Basin Initiative (*ARCO del Pacífico Latinoamericano*), the “Free Trade Space” being discussed in the Latin American Integration Association (ALADI), and the “Unique FTA” negotiations among Mexico and the Central American countries. At the bilateral level, recent Canadian agreements with LAC countries have included forward-looking clauses that



potential to reduce the costs entailed by the “spaghetti bowl” of trade preferences among negotiating parties and to extend the benefits of the underlying agreements to third parties as well.<sup>11</sup> Although it is not strictly necessary to harmonize rules of origin among various agreements, lack of convergence can cause distortions in trade and generate administrative costs for traders. To be effective, efforts at convergence should seek to tailor trade rules in such a way as to promote the development of intraregional supply chains without choking off access to global production networks.

However, if the strategic goal is to create incentives to productive integration and to harness regional integration to compete globally, trade rules need to be integrated in the widest possible regional market. Therefore, the pending tariff liberalization agenda on the “missing links” needs to be completed. Completion and convergence go hand in hand.

### ***Trade Regulations: Focusing on Rationalization and Harmonization***

Improvement of the regional trade architecture also requires a coordinated approach to the management of a wider set of regulations that are emerging as growing obstacles to regional and global trade integration. What are these new trade barriers? How restrictive are they and what can be done about them?

Nontariff barriers (NTBs), or trade regulations governments put in place to respond to legitimate safety and security concerns, can be used as grey-area protectionist devices in place of declining tariffs. NTBs consist primarily of sanitary and phytosanitary (SPS) measures and technical barriers to trade (TBT), but include other measures such as product safety regulations, nonautomatic import licenses, trade remedies, and outright import bans. There are also a growing number of private standards that may prevent products from entering the primary retail distribution channels, even if exports comply with FTA rules or other national requirements.<sup>12</sup> As an illustration of this trend, Figure 8 shows that the annual number of NTB notifications to the World Trade Organization has grown substantially in the last fifteen years.

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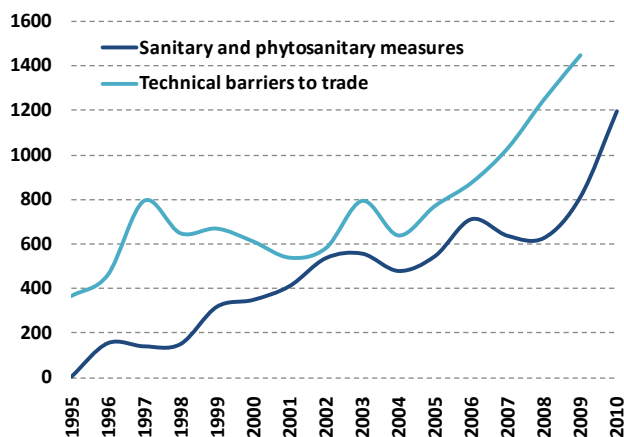
allow signatory parties to source from other countries with which both they and Canada have FTAs. This flexibility is referred to as “extended cumulation.”

<sup>11</sup> For example, the CAFTA-DR agreement between the U.S. and Central America and the Dominican Republic, in the limited context of woven apparel, includes an extended cumulation clause that encompasses Mexico, subject to quantitative restrictions. The agreements between MERCOSUR and the countries of the Andean Community also provide for cumulation among all parties. However, as the rules of origin have been negotiated on a bilateral basis, there is uncertainty as to which rules apply to the materials to be cumulated, hampering the full use of this flexibility.

<sup>12</sup> Private standards are certification schemes created by the private sector, usually retailers that certify compliance with environmental and social practices. It is currently common for retailers and supermarkets to require private food certification of their suppliers in other countries to ensure that the products they import are safe and sustainable (Almeida, 2008).

**Figure 8. Growing Incidence of Nontariff Barriers in World Trade**

(Annual number of SPS and TBT notifications to the World Trade Organization, 1995–2010)

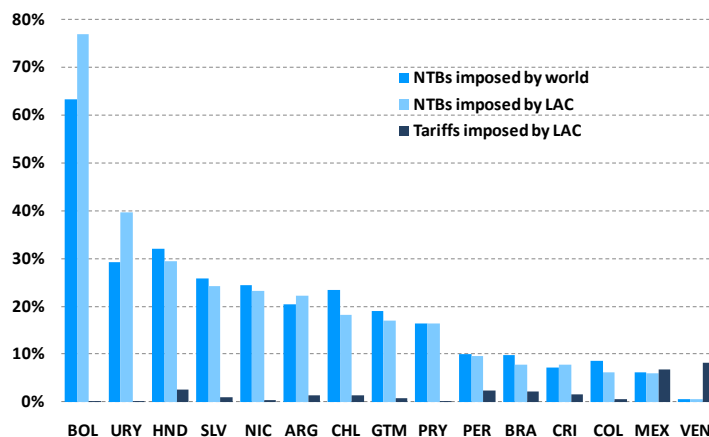


Source: IDB INTradeBID database, based on World Trade Organization data.

NTBs create additional costs for exporters. Even when traders can comply with product requirements, the administrative costs of doing so can be prohibitive, particularly for smaller firms.<sup>13</sup> As NTBs are less transparent than tariffs, they generate uncertainty for businesses regarding their capacity to timely penetrate foreign markets and often are subject to administrative arbitrariness. Furthermore, NTBs are an inefficient protection device for governments, because although they may provide levels of protection equivalent to those offered by tariffs, they do not generate revenue for the government, as import-competing producers capture all rents.

**Figure 9. Restrictiveness of Nontariff Barriers and Tariffs**

(Trade-weighted ad valorem NTBs and tariffs encountered in regional and global trade, by selected LAC exporters, 2008, in percent)



Source: IDB INTradeBID database, based on Kee, Nicita, and Olarreaga (2009).

<sup>13</sup> The costs of compliance with NTBs can be divided between those associated with ensuring that the product in question meets the standard embodied in the NTB, and administrative costs related to demonstrating to the satisfaction of the relevant authorities that the standard has in fact been met. A multiplicity of standards across countries and markets prevents producers from benefiting from economies of scale and requires investment in capacity to demonstrate standards compliance in multiple markets.

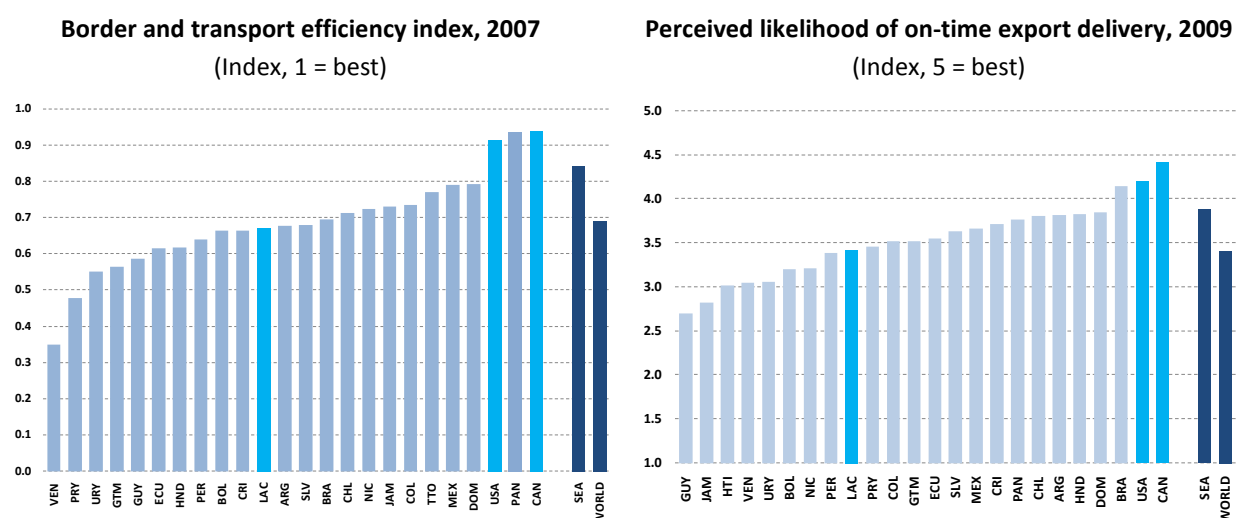
Figure 9 compares the incidence of tariffs and NTBs faced by LAC exporters in extra- and intraregional markets.<sup>14</sup> It shows that the restrictiveness of NTBs dwarfs the effects of residual intraregional tariff protection, as well as the lack of significant differences between the high levels of NTBs faced by LAC exporters in the world and in the region, suggesting that there is ample space for regional collective action in this area.

Regional policymakers have the power to reduce the restrictiveness of NTBs in regional trade. Reform of these measures does not require fiscal outlays, but rather political commitments, a sound and comprehensive regional institutional framework, and technical capacity. The time required to implement reform may be far shorter than that needed for infrastructure investments, yet the potential benefits in terms of cost reduction for exporters may be sizeable.

### ***Trade Facilitation: Making Business across Borders Easier***

Governments can take active steps to streamline international trade operations, even within the current normative framework. Trade facilitation measures encourage the efficient flow of goods across borders by focusing on the rationalization, standardization, and harmonization of trade-related procedures. How cumbersome is trading across borders in LAC? What are good practices for improving trade facilitation? What remains to be done in the region?

**Figure 10. Cross-Border Trade Performance**



Source: Portugal-Perez and Wilson (2010).

Note: SEA = Southeast Asia. The border and transport facilitation efficiency indicator is a composite (principal factor) index of the number of documents and days required to export and import.

Source: World Bank (2010a).

Note: SEA = Southeast Asia.

Interventions in the area of trade facilitation can serve three principal objectives for policymakers: efficiency, security, and integration.

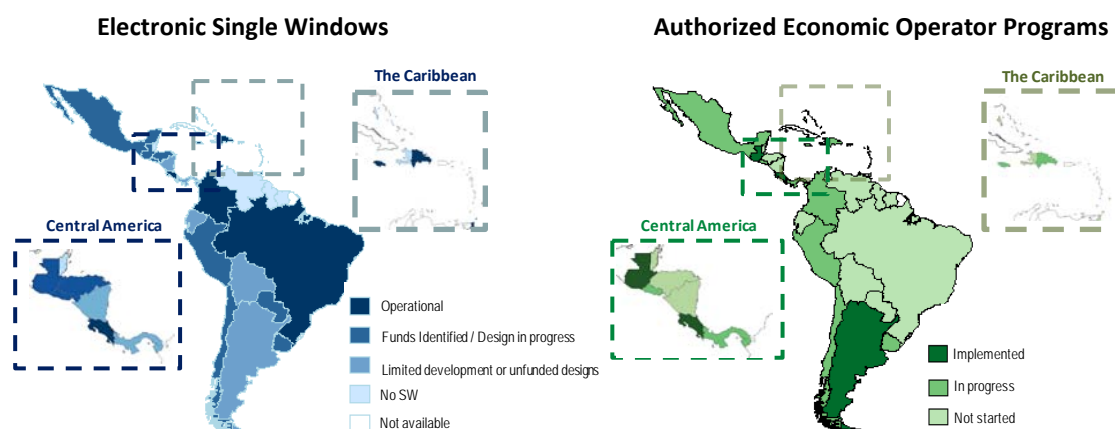
<sup>14</sup> The statistical methods for estimating these values account for the impact of the measures on trade flows and infer the equivalent price change that would bring about the same effect. See Kee, Nicita, and Olarreaga (2009) for details.

Increasing efficiency through core customs modernization remains a priority for the region, but other border agencies, including, inter alia, agriculture, quarantine, health, immigration, and police, need to follow suit. Modern information and communications technology infrastructure is a necessary, but not a sufficient, trade-enhancing solution, as technological upgrades need to be complemented by corresponding changes to organizations and procedures.<sup>15</sup> Figure 11 shows uneven progress in the adoption of two good practices in this area.

The Electronic Single Window environment is a cross-border facility that allows parties involved in transport and trade to lodge standardized information, mainly electronic, with a single entry point to fulfill all import, export, and transit-related regulatory requirements (UN/CEFACT, 2005). Implementation of an Electronic Single Window can make record keeping and searching more efficient, thereby reducing costs and increasing transparency.

Authorized Economic Operator programs encourage private sector trade operators to partner with the public sector to make trade secure, by means of accreditation programs that certify traders as reliable and standardized risk management procedures. These programs boost competitiveness as they reduce physical inspections at the border in favor of a greater focus on risk analysis principles. This makes trade more secure, reduces discretion on the part of government authorities, and expedites customs clearance. The value of these programs has increased as trade security has become a more visible issue, as volumes and associated risks have grown and so has control at borders.<sup>16</sup>

**Figure 11. Status of Implementation of Selected Trade Facilitation Programs in LAC, 2011**



Source: IDB (2010).

Source: IDB Integration and Trade Sector.

Regional integration and coordination of trade facilitation initiatives provide cost-saving synergies. Joint customs control at border crossings can eliminate redundancies. Regional cooperation can also improve

<sup>15</sup> At the same time, the broadband infrastructure required to carry out upgrades in information and communications technology must be taken into account, as a clear example of the complementarities between trade *software* and *hardware*.

<sup>16</sup> Based on the World Customs Organization's Framework of Standards (SAFE), a number of countries have implemented their own Authorized Economic Operator programs, including the U.S. Customs-Trade Partnership Against Terrorism (C-TPAT), the European Union Authorized Economic Operator (AEO), and Canada's Partners in Protection (PIP). Negotiations to reach Agreements of Mutual Recognition between programs are in progress.

in-transit freight circulation by enabling customs clearance to be performed within a country instead of at the border (Sarmiento, Lucenti, and Garcia, 2010). As an example, the Mesoamerican International Transit of Merchandise (TIM) relies on information-technology-based interagency and intercountry coordination for integrated customs traffic management<sup>17</sup> and can be expanded to other countries and other modes (ports and air), as well as to other issues/disciplines via its information technology platform.

Despite successful pilot projects, the generalization of trade facilitation good practices faces several challenges in LAC. First, border agencies have traditionally focused on revenue collection, national security, and community protection, whereas facilitating legitimate trade requires a broader (yet not inconsistent) vision. Second, policy dialogue and cooperation between national agencies requires the development and implementation of incentives for engaging in such dialogue and cooperation. Finally, there is a need to secure investment resources, as trade facilitation reforms are more effective when accompanied by physical infrastructure and automated regional information-sharing platforms.

### ***Export and Investment Promotion: Fostering Private Sector Internationalization***

In addition to trade facilitation, private sector internationalization can be fostered through other nondistortive, proactive measures. However, in practice, how can governments help firms navigate the growing tangle of trade regulations? What are the most effective institutions and policies?

Through export promotion agencies, be they public or mixed, governments can help firms overcome information barriers that prevent the identification of export opportunities. A recent IDB impact assessment of six such agencies in LAC reports significant effects measured in terms of export volumes and market diversification (Volpe, 2010). In most cases, exports increased by more than 10 percent, and the number of export markets increased by more than 5 percent, among firms assisted by the efforts of these agencies (Figure 12).

How can export promotion agencies maximize these gains? First, as relatively small firms with limited previous involvement in international markets benefit more from export assistance than larger firms they should be targeted as a priority. Providing support to larger, experienced firms only yields results when those firms can generate positive reputation effects that benefit other firms that enter the same market.

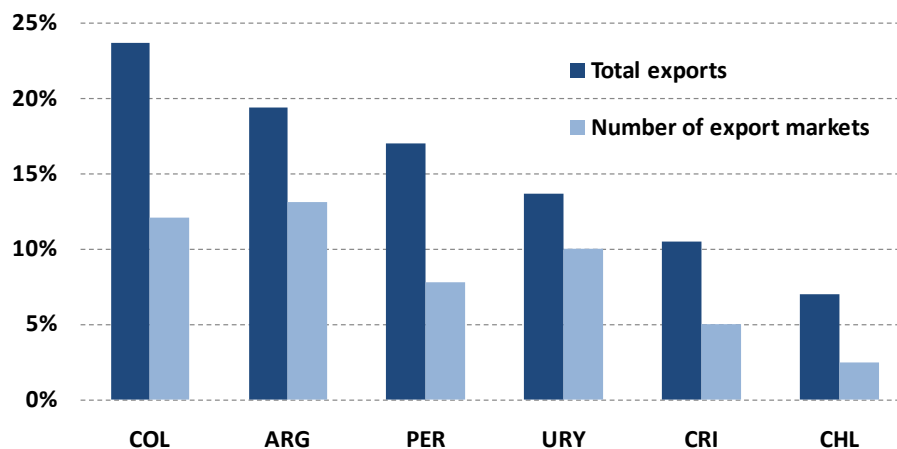
Second, a critical mass of services is necessary. Bundled services provided throughout the export process—from the initiation of commercial contacts to the establishment of business relationships—are more effective in enhancing firms' export prospects than individual actions, such as trade fairs with no follow up. Agencies must have a minimum scale and a comprehensive business strategy to support the internationalization process in its entirety. In some cases, charging fees for services or requiring payment of membership may help the agencies to reach an optimal scale.

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<sup>17</sup> In a pilot benchmark project undertaken at the El Amantillo border between El Salvador and Honduras, the TIM has reduced the crossing time for goods in transit from 62 minutes to an average of 8 minutes and decreased the number of documents that need to be submitted.

**Figure 12. Impact of Export Promotion Agencies on Firms' Performance**

(Increase compared to firms not assisted by agencies, in percent)



Source: Volpe (2010).

Note: Data are treatment effects for varying periods between 2000 and 2007.

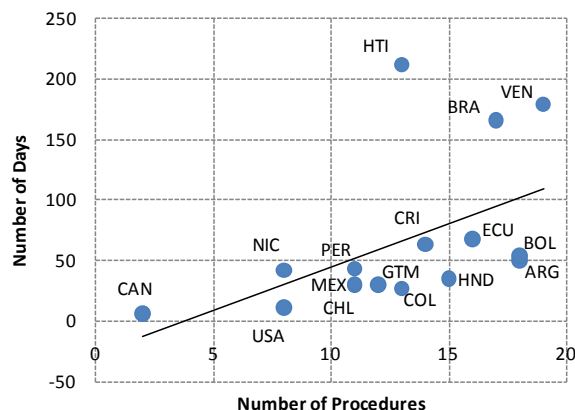
Third, because export promotion agencies are most successful when they have a foreign presence, their effectiveness can be increased by setting up a local branch of the promotion agency in a target export market. This is associated with an increase in exports five and a half times larger than that associated with adding a new diplomatic representation there, as such representations do not always have export-promotion-specific expertise.<sup>18</sup>

Finally, as firms' internationalization depends less on arm's-length trade and more on their capacity to integrate regional and global value chains, the ability to attract investment from abroad becomes a key component of any internationalization support strategy. Governments can improve the capacity to attract foreign investors by streamlining procedures for establishing businesses and by facilitating cross-border financial operations through international agreements. Figure 13 reports the number of procedures and number of days needed for a foreign entity to start a business in selected countries in the region and shows the scope for simplification and rationalization at the national level.

<sup>18</sup> The same result could potentially be achieved by properly strengthening trade competencies in diplomatic representations, increasing incentives of the officials tasked with export promotion, and improving articulation between these representations and their countries' export promotion organizations.

**Figure 13. Complexity of Procedures to Start a Foreign Business**

(Time and number of procedures to start a foreign business, 2010)



Source: World Bank (2010b).

At the regional level, much as in the case of trade agreements, there is ample room for filling in missing links as well as convergence and harmonization of investment rules. LAC has advanced in the negotiation of bilateral investment treaties (BITs) and agreements on double taxation (ADTs).<sup>19</sup> Yet most existing BITs or investment provisions included in FTAs regulate cross-border investment with the United States and/or Canada or are limited to the traditional subregions (Caribbean Community [CARICOM], MERCOSUR, Central American Common Market), as shown by Figure 14. The network of ADTs follows similar patterns and is even less dense than that of BITs.

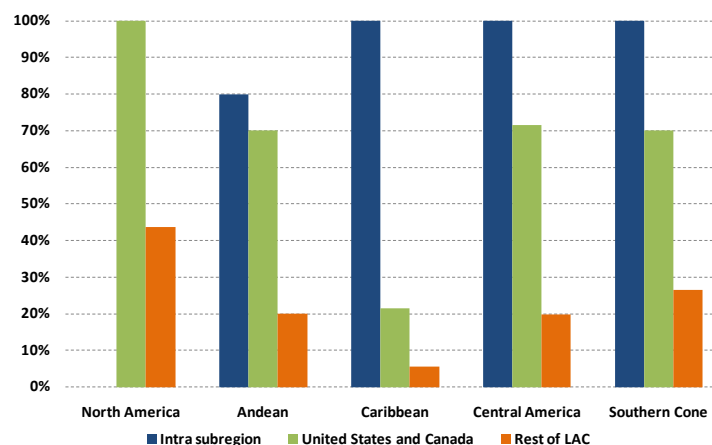
The incompleteness of the web of bilateral frameworks to support foreign investment is at odds with the growing trend toward large Latin American and Caribbean firms, known as Multilatinas, which frequently start cross-border operations as a first step preceding global ventures. It also limits the internationalization potential of smaller firms, which cannot venture beyond the subregional markets where they find greater familiarity with cultural and economic idiosyncrasies and critically rely on intraregional BITs and ADTs to expand their business across borders.

Bilateral agreements, however, are of decreasing value to the regional architecture because investment, like trade, increasingly seeks to benefit from linking the comparative advantages of multiple countries—hence the value of a broader regional approach that would bridge the traditional bilateral and subregional agreements into a coherent set of hemispheric rules (Lee, 2008).

<sup>19</sup> BITs supplement national regulations and provide investors with a degree of certainty regarding the regulatory framework for international investment. ADTs regulate the taxation of income, including investment income, when the income earner may be subject to taxation in more than one international jurisdiction. These agreements seek to prevent taxation of investors' income twice by defining which income is taxable in each signatory country and thereby removing a disincentive to investment by entities from one country in the other.

**Figure 14. Incomplete Network of Investment Agreements**

(Coverage of bilateral investment treaties and investment provisions in FTAs, 2011, in percent)



Source: IDB Integration and Trade Sector, based on UNCTAD and OAS.

Note: For each subregion, the bar represents the coverage of BITs and/or bilateral FTA investment provisions, as a share of all possible bilateral country relationships. Mexico is included in North America and as a partner country in “Rest of LAC” as well. Central America includes Panama and the Dominican Republic.

Moreover, in practice, a number of issues regarding foreign investment deserve consideration: convergence of the regional regulatory investment framework should address not only the coverage, but also the quality, of the regulations, as much has changed since many of the existing agreements were negotiated; designing a modern investment architecture needs to be supplemented with capacity building to ensure efficient implementation and administration; and finally, there is a need to reduce the cost of and facilitate access to effective investor-state dispute settlement mechanisms, through the establishment of a regional advisory center, as in Central America.

### ***Infrastructure Investment: Bridging Gaps to Improve Connectivity***

Although the agenda of policy reforms and regulatory upgrades outlined so far may certainly contribute to greater trade integration, additional benefits are realized when complemented with investment in infrastructure. Infrastructure, particularly in transport, is indeed the lifeline of trade, and firm-level surveys across LAC show that (i) quality and access to infrastructure remains a top concern for most of the region’s businesses,<sup>20</sup> and (ii) the perception is that infrastructure quality throughout the region is poor (Schwab, 2010).

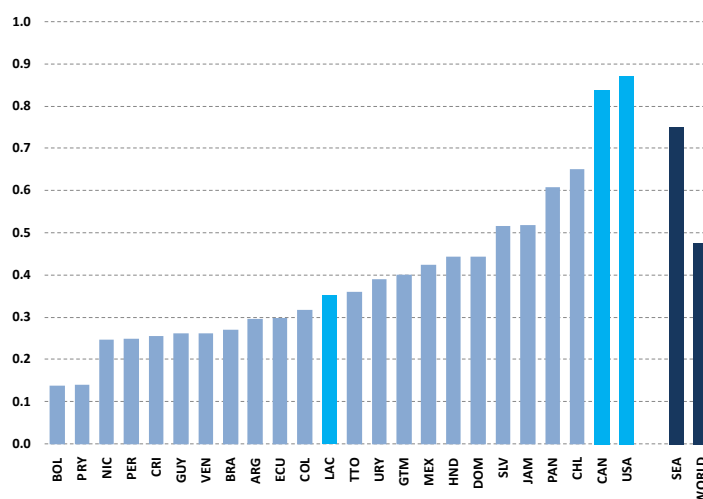
Transport infrastructure receives particularly low rankings, and quantitative analysis supports these perceptions: LAC’s highway densities, port capacities, and railway penetration levels are all lower than those in benchmark regions, and logistics costs as a share of GDP are multiples higher in LAC compared to member countries of the Organization for Economic Co-operation and Development (OECD).

<sup>20</sup> In a World Bank survey of firms in fifteen Latin American and Caribbean countries, “infrastructure” was identified as the third most important constraint on doing business, behind only “regulations” and “rule of law,” but ahead of “finance” and “labor” constraints (World Bank, 2008).



Although some countries in the region have begun to address these perceptions, others have not. Figure 15 illustrates that, on average, LAC trails—by a considerable margin—OECD countries, Southeast Asia, and the world average for overall quality of transport infrastructure.

**Figure 15. Overall Transport Infrastructure Quality in LAC and Comparator Countries and Regions**  
(Composite index; 1 = best, 2007)



Source: Portugal-Perez and Wilson (2010).

Note: Composite (principal-factor) index of the quality of ports, airports, roads, and railroad infrastructure. SEA = Southeast Asia.

Not only is LAC far below benchmarks, but the dispersion of country rankings *within* LAC highlights an additional challenge for the region's trade: the poorest, most-isolated, and largest countries are at the low end of LAC's transport infrastructure rankings. These are the countries that are most dependent on efficient access to markets. With the exception of Chile, the regional leader, the top performers in infrastructure are transshipment economies and small countries where density of transport infrastructure is easier to achieve.

The state of national transport, maritime, and air infrastructure assets does not, however, tell the entire story. Regional infrastructure assets and multinational corridors also define firms' ability to access markets, agglomerate cargo at transshipment centers, and achieve economies of scale in shipping.

### Road Transport Networks and Services: Need for Investment and Competition

Since the region is highly dependent on road-based transportation, a rededication of resources to the road transport sector is essential. Spatial coverage of the road network in the region is below the world average, and where roads do exist, they are often unpaved or lack proper maintenance.<sup>21</sup> Furthermore, there is a pronounced deficit of interfaces between the road network and ports.

<sup>21</sup> Indicators show a world average of 241 km of road network per 1,000 km<sup>2</sup> of surface, whereas in LAC the coverage is about 156 km<sup>2</sup> (Barbero, 2010).

Although road infrastructure plays a key role in access to markets, services delivered over that infrastructure are also of major concern to LAC's trade competitiveness, in particular, trucking services.<sup>22</sup> Enterprise surveys reveal a high reliance on "own equipment" among the region's cargo owners, with only 30–40 percent of businesses reporting reliance on third-party service providers for hauling cargo. The percentages are roughly reversed for OECD countries. This is, in part, the result of anticompetitive arrangements among LAC trucking companies that hold monopoly rights over key routes and restrict free entry to other service providers. Poor sector performance is also due to excessive regulation, lack of long term transport service contracts, lack of incentives for fleet renovation, and poor transport industry practices.

Planning the development of regional road networks has been more successful than improving regulations. For example, the Pacific Corridor, part of the overall Mesoamerica Project, will improve the integration of road corridors from the city of Puebla in Mexico all the way to Panama City and will serve as an efficient means for the spatial integration of the Mesoamerican region, reducing the road travel distance between Puebla and Panama by about 300 kilometers. However, the project still faces the challenge of securing finance and regional technical coordination to move from planning to execution.

Whereas resources for road transport infrastructure remain low, regional commitments show promise (see Box 2 in Section IV). However, in order to maximize the gains from infrastructure investment, governments need to show greater leadership in complementing investment with *software* reforms, such as customs modernization or liberalization and mutual recognition of trucking services regulations.

### **Seaports and Maritime Services: Improving Regional Efficiency to Lower Costs**

Despite a global financial crisis compounded by volatile energy prices, a depressed U.S. dollar, and increased threats to security, the maritime transport sector has shown resilience (UNCTAD, 2010). More than 80 percent of world merchandise traded (by volume) is transported by sea. The globalization of shipping trade has catalyzed the modernization of port infrastructure, led to a reduction in port handling charges, and in the overall cost of exporting, thereby enhancing the overall competitiveness of goods and services.

In this context, LAC ports face a double challenge: first, to expand capacity in view of growing trade volumes, and second, to improve their efficiency. Although the needs for port expansion are perhaps greatest in absolute terms for South America, where port capacities must keep pace with growing demand for agricultural and mineral exports,<sup>23</sup> smaller countries in Central America are seeing their capacities constrained as well. However, a regional approach to the expansion of the subregion's competing terminals may be needed to ensure that public investments are carried out according to efficiency criteria, as it is unlikely that additional potential traffic justifies the simultaneous expansion of all existing facilities.

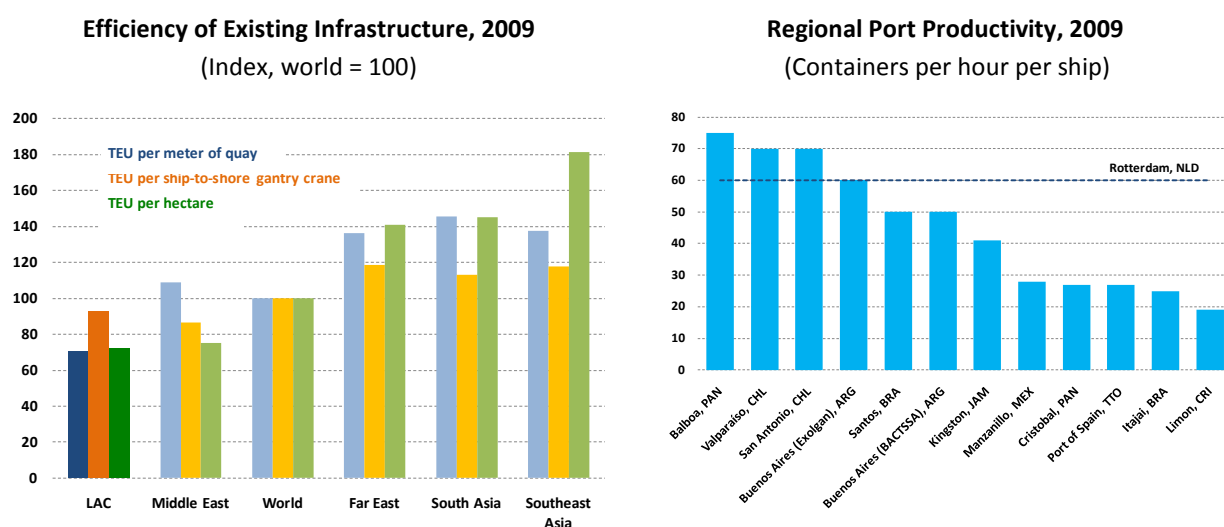
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<sup>22</sup> According to Hine (2007), trucking accounts for, in general, around 70 percent of the total volume and 80 percent of the total value of domestic freight transportation in developing countries.

<sup>23</sup> For example, Brazil is expanding port capacity to ensure continuing strong export performance by initiating a plan to double the port capacity at Santos, deepening the port drafts in Salvador and Aratu, and constructing new facilities at Tubarão, near Vitória. Expansions are also planned for Callao, Peru, which is operating above nominal capacity (UNCTAD, 2010).

Port reforms are crucial for LAC's capacity to compete in the global marketplace. Port handling costs are significant drivers of ocean shipping costs, which in turn affect the costs of delivered goods, particularly food products. In fact, ocean shipping costs can contribute 10 to 15 percent to the delivered price of a good.<sup>24</sup> The productivity of Latin American and Caribbean ports has improved as the result of decentralization and concessioning programs that have provided incentives for major private sector investments and increased interport and interterminal competition. Governments in the region have also undertaken more modest improvements to port-inland connections and harbor-deepening projects. For those ports that have been successfully reformed, a positive cycle of effects helps to drive down ocean freight rates.<sup>25</sup> However, global standards on efficiency and investments are increasing, and LAC ports continue to underperform (Figure 16).

**Figure 16. Comparative Performance of Ports**



Source: IDB Integration and Trade Sector, based on Drewry Shipping Consultants (2009).

Note: TEU = twenty-foot equivalent unit (a measure of container capacity).

Source: ECLAC.

Note: BACTSSA = Buenos Aires Container Terminal Services S.A.

The modernization of maritime transportation services can complement efficiency gains accrued through investments. Maritime services are heavily influenced by the containerization process, which has favored a concentration of global carrier companies and port operators and increased the capital-intensive character of the activity (Barbero, 2010). The industry has evolved in two ways: through mergers and acquisitions (and other cooperative mechanisms), which have allowed shipping companies to benefit from economies of scale, and through the evolution of hub-and-spoke feeder models, which has created competition among countries and service providers to capture the lucrative hub and

<sup>24</sup> According to econometric modeling, for each increase of 10 percent in the bulk shipping index, the estimated impact on commodity prices is on the order of 1.5 percent (Schwartz et al., 2009).

<sup>25</sup> These effects include increases in connectivity and agglomeration of cargo, resulting in the achievement of scale economies in shipping as cargo seeks the more efficient terminals. Increases in port infrastructure and efficiency, too, are important for achieving reductions in ocean freight rates, since they result in faster turnaround times for vessels, faster cargo throughput, and quicker amortization of investment costs for port investors.

transshipment traffic. Transshipment business helps ports and shipping lines generate economies of scale, which can expand a port's market and lower its costs. For those countries astride major trade routes, transshipment of foreign cargo can be a major part of operations (as shown in Box 1). In some cases, shipping lines have established their own port terminals and are providing intermodal transport services and complementary logistics services.

### **Box 1. Regional Maritime Transport in the Caribbean**

CARICOM member states are faced with the consequences of operational inefficiencies at their ports, low intraregional connectivity of the maritime transport system, and limited integration of the Caribbean into the global transport network. The global shipping industry is driven by efficiency, scale, and technological sophistication, all of which challenge the Caribbean region.

Low port productivity, small and uneconomical vessel fleets, and one-way cargo contribute to freight rates in the Caribbean that are 20 percent higher than those in the rest of the world. Low trade volumes and distance prevent individual countries from benefiting from economies of scale and participating in regional and global value chains. In addition, constant competition during the winter cruise season, when cruise ships are guaranteed priority berthing and cargo ships are forced to work during overtime hours, increases stevedoring costs and times. This has important implications for the Caribbean region's ability to trade competitively and to capitalize on the trade agreements to which it is party.

The principal challenge is the policy focus on intrabloc competition, particularly for lucrative transshipment traffic and cruise shipping. In addition, varying levels of commitment to and capacity for investment in port infrastructure among Caribbean nations and resistance to the development of a hub-and-spoke network are further constraints. However, the Caribbean region could also do more in terms of *software*, including harmonizing the legal framework for regulation of the shipping industry, and in particular, ratifying or acceding to international treaties and implementing the regional transport policy, especially as it relates to cruise shipping and enforcement.

Modernization of port infrastructure can help raise the standard for LAC ports vis-à-vis world averages and increase opportunities to capture lucrative shipping supply chains. However, a regional approach will require a collective effort and an efficient institutional framework to prioritize investments.

### **Air Services: Focusing on Regulatory Reforms**

Only a small fraction of LAC's total exports—less than 5 percent in value terms—is currently transported by air shipment. Cargo origin-destination flows are heavily concentrated in the largest economies of South America and Mexico,<sup>26</sup> and regional trade is characterized by significant physical imbalances, with the bulk of freight being transported northbound to Miami, the main export gateway (Figure 17).

Despite rather modest air cargo flows, the intra-LAC market is still about 50 percent larger than the intra-European market.<sup>27</sup> Moreover, the past five years have seen a relatively strong growth in intraregional cargo traffic among carriers composing the Latin American and Caribbean Air Transport Association (ALTA), with the pace of increase exceeding that observed in other regions. The payoff for improving air cargo efficiency will thus increase over time.

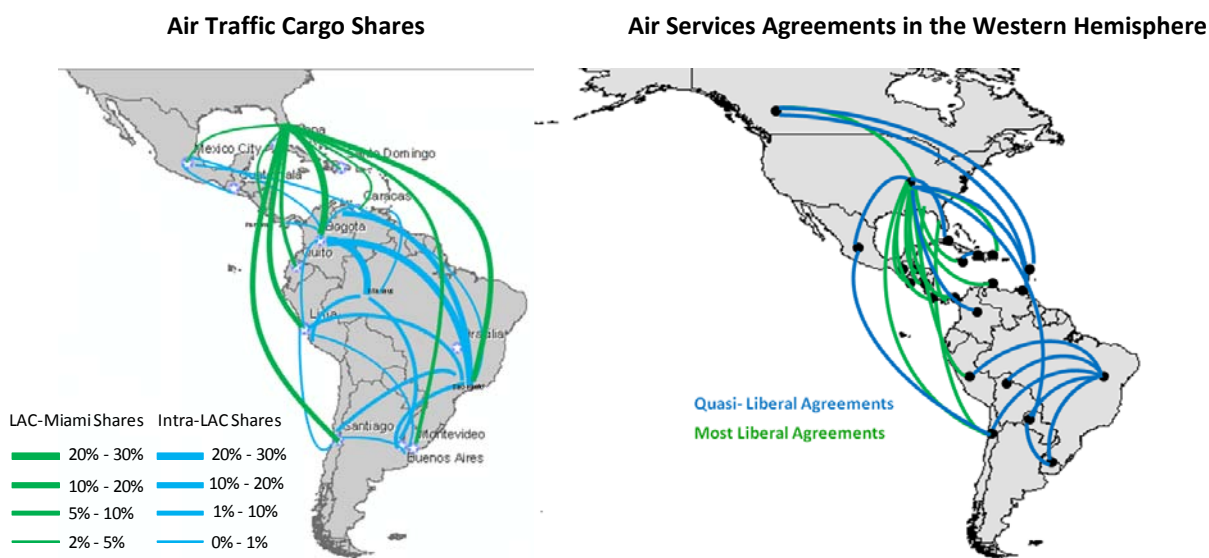
<sup>26</sup> Brazil is the largest cargo market in the region (with 32.7 percent of cargo traffic), followed by Colombia (17.9 percent) and Mexico (16.0 percent).

<sup>27</sup> This is mostly explained by Europe's smaller area, better road infrastructure, and extensive railroad network, which make surface transportation there more practical and economical than in LAC.

In terms of the physical diagnostics of the region's airport infrastructure, the quality appears to be reasonably high overall,<sup>28</sup> albeit with distinct challenges evident at individual airports. However, the air cargo market in LAC would benefit from increased availability of competitively priced ancillary services, such as ground handling, which at some airports are driven by a monopoly-type operational structure. Likewise, access charges or royalties levied by airport operators on service providers should also be examined, as these are passed on to the airlines and subsequently to customers (importers/exporters).

Hence, policies to improve the efficiency of the air cargo market in the region need to focus on the regulatory (*software*) constraints, in addition to those related to physical infrastructure (*hardware*). Figure 17 shows not only the limited coverage of air services agreements in LAC (right panel), but also their inadequacy for servicing the main cargo routes (left panel). Regional approaches, including perhaps the adoption of a multilateral Open Skies agreement, would effectively eliminate those aspects of the bilateral agreements that currently prevent open and unrestricted market access and would help improve the regulatory structure of the air cargo market and foster its development and growth.

**Figure 17. Cargo Flows and Air Services Agreements in the Western Hemisphere**



Source: IDB Integration and Trade Sector, based on Serebrisky, Schwartz, and Pachón (2010) and International Civil Aviation Organization data.

Source: IDB Integration and Trade Sector, based on WTO (2010).

In summary, in most LAC countries, both the physical infrastructure and the services over this infrastructure need investment in order to reach regional and global benchmarks. In addition, regulatory reforms are often necessary to complement these investments, thereby laying the ground for an efficient and competitive infrastructure sector. The following section appraises the potential returns on investment in infrastructure and policy reforms needed to deepen LAC integration.

<sup>28</sup> In a survey carried out by ALTA, even the worst-rated airports in LAC received an acceptable score in absolute terms (at least 3.1 on a 1–5 scale).

### III. Measuring the Returns on Investment in Integration

The previous sections provide evidence that LAC's trade engine is operating below its potential and that a number of policy reforms and investments in the *software* and *hardware* of integration hold promise for stimulating trade and integration. Yet how can the potential benefits be appraised? How do the payoffs from the *software* and *hardware* components of the integration agenda compare? Given their implementation costs, what is their respective cost-effectiveness?

Answering these counterfactual questions is a daunting task, the more so because consistent data on all segments of the agenda are hard to find and because of the methodological challenge of comparing the effects of policy reforms and investments. However, an ongoing research effort by the IDB, in part building on United Nations Economic Commission for Latin America and the Caribbean (ECLAC) and World Bank data, has made it possible to arrive at some consistent estimates.

The body of evidence presented by these estimates overwhelmingly suggests that the returns on investment in integration are not only substantial, but also equally distributed along the *software-hardware* continuum, highlighting the need to address reforms and investment with a comprehensive policy package that leverages the complementarities between the two tracks of the agenda.

#### Tracking the Economy-Wide Effects of Integration Investments

The ex ante estimates of the effects of integration investments presented in this brief are drawn from simulations based on the IDB Integration and Trade Sector (IDB-INT) computable general equilibrium (CGE) model.<sup>29</sup> Four alternative policy scenarios have been evaluated:

- i) **Full tariff liberalization:** elimination of intraregional residual tariffs.<sup>30</sup>
- ii) **Trade facilitation:** a 2-percentage-point reduction in intraregional transport costs.<sup>31</sup>
- iii) **Reduction of intraregional NTBs:** a 30 percent decrease in the bilateral ad valorem equivalent restrictiveness effect of NTBs.<sup>32</sup>
- iv) **Investment in infrastructure:** an average 1.1 percent of regional GDP invested annually in transport infrastructure development and maintenance.<sup>33</sup>

The first three scenarios decompose the expected impact of *software* integration policy reforms; the last corresponds to the *hardware* investment dimension of the agenda. In all cases, simulations have been performed for the 2008–2020 period.<sup>34</sup>

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<sup>29</sup> The CGE model used is multiregional, trade-linked, and dynamic recursive. Benchmarked for the year 2008, it includes the sixteen Latin American countries for which disaggregated data are available. Compared to other available techniques, the CGE analysis is preferred when policy reforms and investment effects materialize through various transmission channels, as in the case of the policy menu analyzed here. In particular, the recursive dynamic structure of the model, in which the equilibrium achieved in any given year's simulation feeds the next year's simulation as an exogenous shock, is suited to assessing the impact of investment in integration *hardware*.

<sup>30</sup> Scenario based on the elimination of intraregional residual tariff protection (IDB INTrade database).

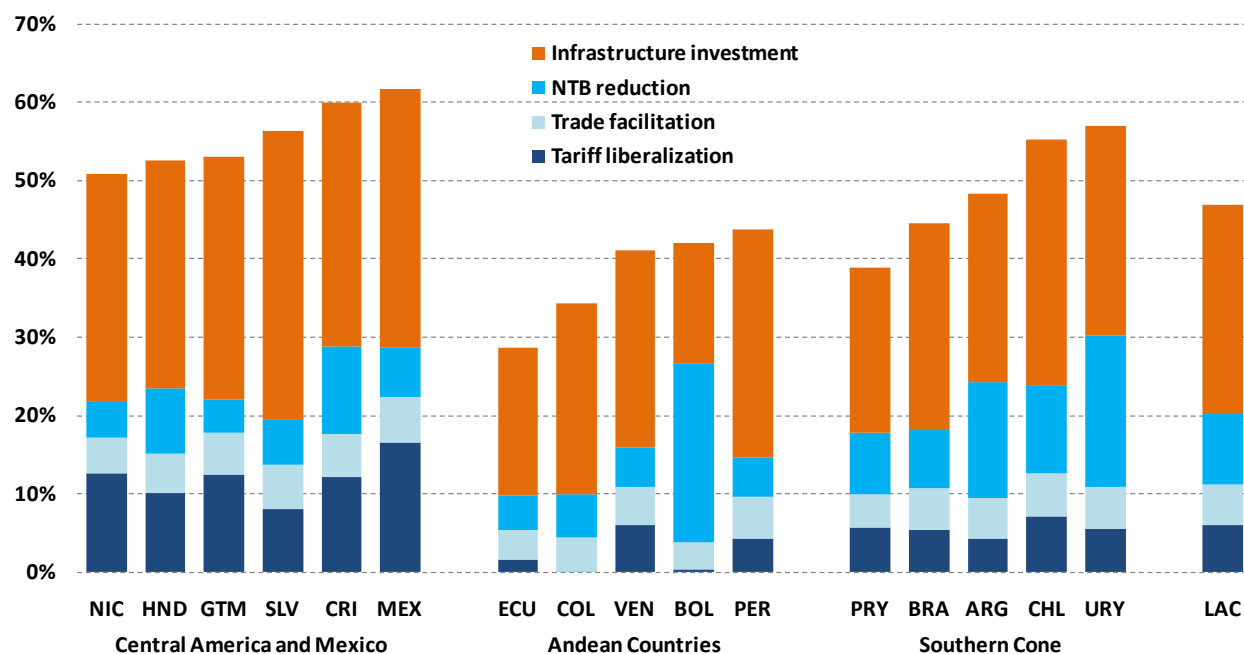
<sup>31</sup> Scenario based on the reduction of the ad valorem equivalent transport costs obtained from the Latin American Integration Association (ALADI) as reported by Moreira, Volpe, and Blyde (2008) and used in the simulations presented in IDB, World Bank and ECLAC (2010).

<sup>32</sup> Scenario based on disaggregated ad valorem equivalents of NTB restrictiveness adapted from Kee, Nicita, and Olarreaga (2009).

<sup>33</sup> Scenario based on country-specific investment needs in the transport sector (2005–2010) as provided by ECLAC (Perrotti and Sánchez, 2011), estimated using an econometric model that follows Fay and Yepes (2003).

The first conclusion to emerge from evaluation of the simulation results is that both the *software* and *hardware* segments of the integration agenda accrue substantial and roughly equal returns to the region as a whole, although there is considerable cross-country variation. At the regional level, the three *software* policy reform scenarios together generate an average increase in intraregional exports of 20 percent over the next decade, and investment in transport *hardware* can be expected to generate an additional 27 percent in exports (Figure 18).

**Figure 18. Export Effects of Integration *Software* Policy Reforms and *Hardware* Investment**  
(Intra-LAC export gains, as percentage of 2008 baseline)



Source: IDB-INT CGE model.

Note: Model predictions from *software* reforms and *hardware* investment over the next decade.

The second finding from the simulations is that “one size does not fit all.” Although the expected aggregate increase in exports is generally substantial (at the lowest end, cumulative export gains are on the order of 30 percent), there are marked heterogeneities across countries. The optimal policy mix for a particular country or region, inferred according to the relative export potential of the *software* and *hardware* components of the agenda, depends on initial conditions: the general openness of its economy, its regional trade orientation, the existing level of restrictiveness of its partners’ regulations, and the stock and quality of its infrastructure.

For example, Mexico and Central America can expect relatively high export returns from tariff liberalization, given the prominence of the “missing links” in intraregional FTAs and the potential to

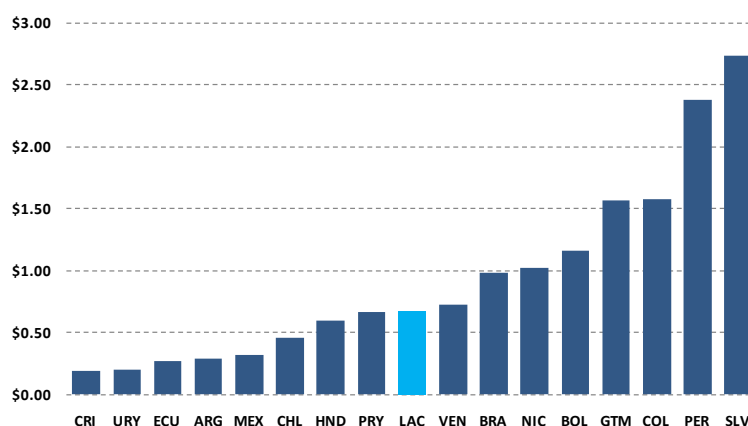
<sup>34</sup> The results should be interpreted with caution: rather than focusing on absolute numeric forecasts, interpretation should focus on the relative magnitude of the effects of alternative policy scenarios and on their cross-country variations.

benefit from market access in South America. The Southern Cone countries would likely benefit more than others from NTB reductions, given the prevalence of regulatory restrictions there. Infrastructure investment would benefit the Central American economies the most because of their relatively limited existing transport network.

The third observation based on the simulation results is that when policy interventions and investments are sustained over time, they generate cumulative dynamic gains. In other words, when policy reform keeps advancing steadily, each year's returns build on the previous year's gains, particularly in the case of infrastructure investment. Whereas *software* reforms operate only via one-off reductions in trade costs, *hardware* investments activate three different channels: they reduce transport costs, boost economic growth through consumption and employment, and promote higher productivity as the result of a more efficient allocation of factors of production. This in turn makes exports more competitive in regional and global markets alike.

**Figure 19. Returns on Investment in Transport Infrastructure *Hardware***

(GDP gains from each dollar invested in transport infrastructure, in dollars, through 2020)



Source: IDB-INT CGE model.

A high payoff from infrastructure investment in terms of GDP growth constitutes the fourth finding of the empirical exercise. On average, for every dollar invested, the region can expect to generate \$1.70 in increased economic activity (implying a return of \$0.70 for each dollar; Figure 19). Countries with high intraregional trade potential and large infrastructure gaps are estimated to accrue gains in excess of \$2.00 for every dollar invested in transport infrastructure over the next ten years.

Additional policy considerations, not explicitly derived from the model simulations, complement the interpretation of the simulation results.

First, it is important to consider the comparative fiscal costs of the various integration policy options. Although the returns on investment in infrastructure are indeed high in most countries, this option requires a substantial financial commitment—additional annual investment needs are on average equivalent to 1.1 percent of the regional GDP for the next decade (Perrotti and Sánchez, 2011). Meanwhile, soft policy interventions, though not without cost, do not have significant fiscal impact, but



rather require political commitment, an adequate regional institutional framework, and specialized technical capacity for negotiation and implementation.<sup>35</sup> All these costs are small when compared to those associated with investment in infrastructure, which makes *software* interventions very cost-effective.

The second policy consideration is that the simultaneous implementation of *soft* and *hard* reforms may generate high synergies. The *software* and *hardware* investments considered here generate together an estimated average 47 percent cumulative increase in intra-LAC exports. Although the evaluation technique used allows simulation of only one policy reform at a time, econometric evidence reported in Section I suggests that these trade gains are likely to be higher when *soft* and *hard* improvements are implemented as a package, as a result of the complementarities that exist among them. For example, trade facilitation and/or reducing NTBs may unlock unrealized potential gains of past tariff liberalization. Likewise, investment in transport combined with higher efficiency in customs may yield gains that surpass the sum of the two interventions implemented separately.

Finally, policymakers need to take into account the distributive effects of integration reforms. First, the direct effects should be considered: the reduction of transport costs brought about by investment in transport may generate major reductions in the price of food, which is determined in large part by transport and other trade transaction costs and disproportionately affects the poor. Investing in integration is thus tantamount to the elimination of a regressive tax on the poor. Further, the indirect effects should be considered: by increasing exports and promoting growth, integration interventions can be expected to generate welfare, employment, and additional fiscal revenue that may be used to finance additional development policies. Although it is certain that integration policy reforms and investment will require substantial structural adjustment in regional economies, their overall contribution to growth and development needs to be underscored.

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<sup>35</sup> NTB regulation reforms have little or no fiscal impact at all, as such barriers are not revenue-generating measures. The elimination of residual intraregional tariffs implies some loss of revenue, but these tariffs are low and there is potential to generate net fiscal income, through a higher level of economic activity and a broader tax base stimulated by trade and growth. Lastly, the same conclusion holds for trade facilitation measures, which involve regulatory reforms and only moderate public investment, mainly in information systems and capacity building.

## IV. Policy Implementation: Locking in Investment in Integration Projects

The previous section argued that in the medium to long term, the integration policy package outlined here is likely to generate exports and growth, and increase the region's level of integration in the global economy. However, from a policymaking perspective, these are long-term goals, whereas decision makers face pressing short-term issues that may divert resources from investment in integration. Moreover, from an operational perspective, the implementation of cross-border *software* and *hardware* integration projects faces three sets of issues related to the design of interventions, the regional prioritization process, and financing.

In practice, answering three fundamental questions may help Latin American and Caribbean governments to lock in investment in integration. How do other regions tackle the integration policy agenda, and what are the lessons learned? What are the key institutional issues that need to be addressed at the national and regional levels? How should the integration agenda be financed, and what is the role of international financial institutions?

### Strategic Design of Integration Corridors

Although the implementation of specific integration policies requires highly specialized technical skills found in line ministries (foreign affairs, trade, economy, transport, energy and telecommunications, and others) relevant to the integration agenda, a global integration strategy often requires a broader vision—even more so when, as demonstrated earlier in the case of LAC, the cost-effectiveness of policy interventions can be magnified by *software-hardware* complementarities. In this context, Ministries of Finance are therefore called to play a prominent role at the national level. Yet there is also a need for an overarching policy framework for implementation at the regional level. For much of the world, integration corridors provide such a framework.

Across LAC, there are currently three major initiatives for fostering coordination and collaboration among governments so as to benefit from development of integration corridors. The Initiative for the Integration of Regional Infrastructure in South America (IIRSA), which includes twelve countries,<sup>36</sup> was launched in 2000. The Mesoamerica Project, officially launched in 2008 and encompassing Central America, Mexico, Colombia, and the Dominican Republic, builds on the *Plan Puebla-Panamá* of 2001 (see Box 2 for an overview of both initiatives). In the Caribbean region, the regional policy framework for infrastructure planning has been provided by CARICOM and has resulted in a Community Transport Policy as well as the establishment of an Infrastructure Fund in 2009: the objective is to strengthen intraregional ties and contribute to both economic and trade integration in the Caribbean region.

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<sup>36</sup> Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Guyana, Paraguay, Peru, Suriname, Uruguay, and Venezuela.

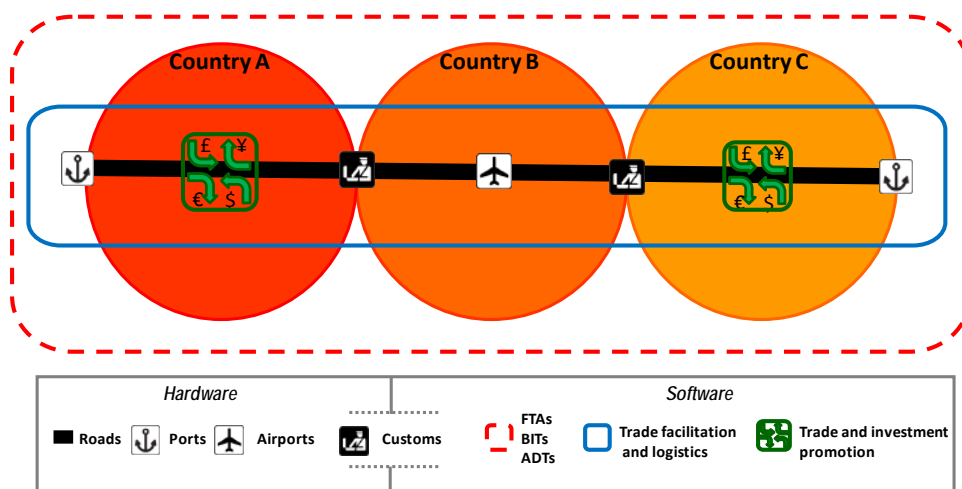
## Box 2. Latin American Regional Infrastructure Initiatives

**The Initiative for the Integration of Regional Infrastructure in South America (IIRSA)** seeks to develop and integrate regional infrastructure and to facilitate physical integration and equitable and sustainable territorial development. Since its 2000 inception, it has built consensus on 524 potential projects representing an estimated investment pipeline of US\$96 billion, of which 40 percent either have been concluded or are in the construction phase. Flagship operations include sectors such as energy and transport. As the initiative transitions into a new institutional setting under the guidance of the Council of Ministers of Infrastructure and Planning (COSIPLAN) of the Union of South American Nations (UNASUR), it has been given a new strategic objective, “to promote the connectivity of the region starting from the construction of physical integration networks,” and a new impetus for implementing regional integration projects. In particular, building on the Consensus Implementation Agenda (CIA) 2005–2010, member countries have agreed to define a new CIA based on the definition of two basic operational concepts: Territorial Integration Spaces and Structuring Integration Projects. This new operational agenda departs from the old one in that it emphasizes the sustainability and territorial dimension of infrastructure projects and a shift in focus from projects of “common interest” to “projects that promote integration between regions or territories.” Selected projects are subject to cross-country monitoring throughout the entire project cycle.

**The Mesoamerica Project** is a high-level mechanism for dialogue and coordination, cooperation, and integration among nine countries in the region that seeks to widen and strengthen their capacity to effectively implement projects to deliver results in the social, infrastructure, and connectivity areas. The first generation of projects (under the *Plan Puebla-Panamá*) focused on flagship operations in energy (System of Electrical Interconnection of Central America—SIEPAC), transport (The Central American Roads Network—RICAM), communication (Mesoamerican Information Highway—AMI), and trade facilitation (International Transit of Merchandise—TIM). The scope of the second generation of projects is wider, as it incorporates high-social-impact projects in areas such as health, environment, natural disasters, and housing, allowing cooperating countries to contribute with technical capacity and resources to consolidate regional priorities.

Although the planning of regional corridors already has a long history in LAC, there is a need to turn classic “transportation” corridors into effective, sustainable “trade and investment” corridors, whereby *software* interventions are combined with *hardware* projects in a systematic fashion. Figure 20 presents a hypothetical example of complementary national interventions in three countries, under a *software-hardware* integration perspective.

**Figure 20. Hardware and Software Complementarities in Sustainable Integration Corridors**



Source: IDB (2011).

Other regions have already begun to implement such an operational approach with different modalities. The Trans-European Networks (TEN) of the European Union promote the interoperability and interconnection of transport networks in EU countries, with massive subsidies (up to 15 percent of project cost) administered at the regional level, and with dedicated instruments of the European Commission and the European Investment Bank (Schlirf, 2010). In Asia, similar efforts in the Greater Mekong Subregion and in the context of the Central Asia Regional Economic Cooperation (CAREC) Program rely on national financing and support from the Asian Development Bank. In the former, regional cooperation has delivered impressive results in a short period of time (Box 3).

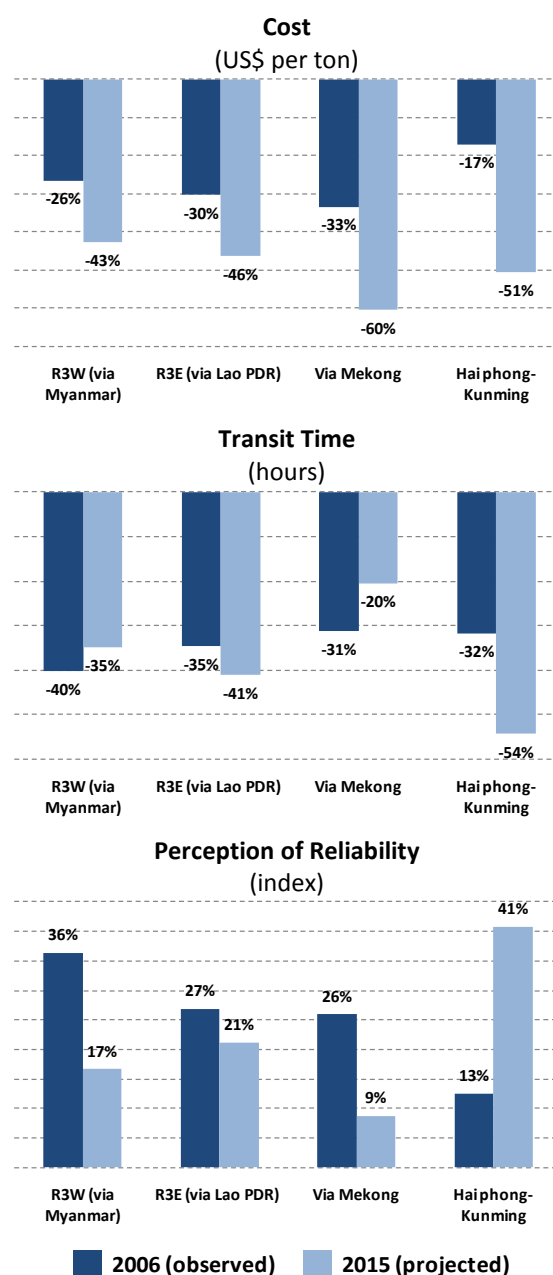
### Box 3. Good Practice: Effective Reduction of Logistics Costs in the Mekong North-South Corridor

The goal of the flagship North-South Economic Corridor of the Greater Mekong Subregion in Southeast Asia is to develop a highly efficient transport system in the framework of a *sustainable integration corridor*. Investments in infrastructure (transport, energy, telecommunications, and tourism) are coupled with planning and management of policy and regulatory reforms in support of selected businesses in order to maximize development impact. The reduction of logistics costs achieved as of 2006 (compared to the 2000 baseline) in various segments of the corridor is impressive for its magnitude and steady progress towards the medium-term goals set for 2015.



Source: Asian Development Bank (2007).

Note: R3W = Route no.3 West; R3E = Route no.3 East.



## Prioritizing National and Regional Integration Investments

Once integration corridors are identified and designed, the most daunting challenge is to prioritize national and regional projects that function as anchors for the program as a whole. Investment priorities should be based on criteria of **regional economic efficiency**, as opposed to a purely national economic or political perspective. A realistic approach needs to consider that even though regional efficiency should be the determining criterion for prioritizing investment projects, in practice, other considerations such as national sovereignty or political convenience could weaken or erode the regional efficiency criteria. Acknowledging this possibility has four main implications.

First, it would be appropriate to provide **financial incentives** for the implementation of investment projects in which regional economic efficiency criteria predominate. Regional integration initiatives should include only those projects in which these criteria prevail, allowing these projects to benefit from such regional incentives or lending and guarantees offered at more favorable conditions by sources of international finance. It may thus be useful to develop, among other things, regional financial instruments featuring concessional lending, rapid approval and disbursement procedures, and technical assistance, so as to compensate for the higher transaction costs associated with multicountry projects.

Second, although each country should be free to pursue the implementation of projects prioritized according to internal criteria, governments could consider **holding back national projects** that hamper the implementation of more efficient regional programs. For example, the construction of a power plant that produces energy at a high economic and/or environmental cost at the national level could be an obstacle to developing a larger and/or cleaner project that requires a regional scale to operate efficiently.

Third, sustaining a process leading to deep regional **interdependence** may facilitate the collective prioritization of investment projects. Creating a web of interconnected economic interests would raise the cost of adopting national decisions opposed to the regional interest and of restricting access to regional facilities located in one country, through fear of retaliation. More specifically, a balanced portfolio of regional projects that benefit all countries in the region equitably may help to dilute discords that result from potential conflicts between regional efficiency criteria and national political interests.

Fourth, and finally, a framework of deep interdependence also hinges crucially on the existence of **institutional platforms** that bring together authorities responsible for public investments in *hardware* (finance, transport, energy, etc.) with those in charge of setting *software* regulations, in order to ensure a clear and shared definition of priorities. Moreover, as investment is added to the traditional integration negotiation agenda, placing integration investment initiatives under the oversight of Finance Ministers in each country may help to advance projects to the execution phase, as evidenced by the experience of Central America (Box 4).

#### **Box 4. PIFCARD: The Regional Investment and Finance Program of Central America, Panama and the Dominican Republic**

In June 2010, Central American Presidents instructed the Council of Ministers of Finance of Central America and the Dominican Republic (COSEFIN) to formulate and implement a regional investment and finance program (Plan de Inversiones y Financiamiento para Centroamérica, Panamá y República Dominicana, or PIFCARD), including a medium-term regional *investment strategy* in energy, transport, and telecom (*hardware*), as well as in the convergence of regulatory frameworks (*software*), so as to facilitate investment and promote regional efficiency; a *financing strategy* based on the mobilization of tax revenues, foreign aid, and private funds (including public-private partnerships and the development of a regional capital market); and an *economic integration strategy* that provides a coherent framework for prioritizing investments and a common business platform for productivity and internationalization. As such, PIFCARD emerges as an initiative well poised to take advantage of integration *software-hardware* complementarities.

**Institutional setting.** PIFCARD provides an effective institutional platform for delivering investment in integration that mobilizes strong national counterparts as a complement to regional technical bodies. The leadership of the Ministers of Finance allows the most solid national expertise to be leveraged and provides a comprehensive rather than a sectoral approach to integration and a focus on investment in infrastructure, within a framework of fiscal sustainability. A support group of regional and multilateral development and financial institutions (IMF, CAMEI, IDB, ECLAC, and the World Bank) guarantees adequate technical assistance to the process.

**Focus.** PIFCARD seeks to prioritize investment projects that harness economies of scale and generate strong regional economic interdependence, such as energy generation projects oriented at supplying a secure regional market of interconnected national power grids with adequate compatible regulation, a regional transport corridor, trade facilitation measures focused on customs interoperability, and a regional information technology backbone, together constituting an example of a sustainable economic integration corridor.

**Prospects.** The close functional interaction of COSEFIN and the relevant regional technical bodies in areas such as economy, trade, energy, transport, and telecommunications will ensure adequate convergence of the regulatory *software* upon implementation of investment projects. However, weak competition, fragile national or regional regulatory agencies, and the prevalence of firms with dominant positions in small domestic markets suggest that regional modernization of the regulatory frameworks may prove an even greater challenge than financing regional investments. The leadership of COSEFIN is therefore a promising development.

However, although Ministries of Finance in the region are typically endowed with world-class technical capacity, they often lack units equipped to address all the multifaceted dimensions of modern integration investments. Complementing the current regional institutional architecture with strong national subsidiary units tasked with oversight of integration investment strategies thus emerges as a priority. The institutional setting should be tailored according to the specific situation of each country, such as an interministerial committee directly under the authority of the President or a dedicated unit placed under the oversight of the Ministry of Finance or of Planning.

#### **Financing Investment in Integration**

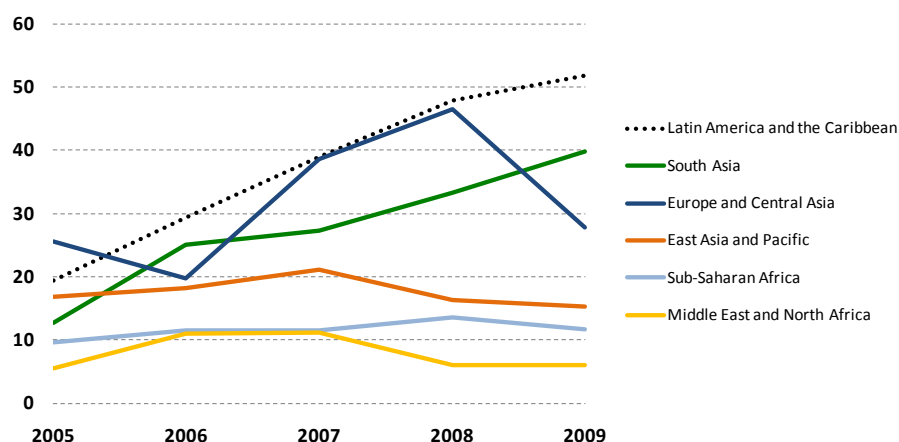
Investment in integration *software* and *hardware* requires budgetary commitment on the part of governments and an ability to attract complementary resources and skills from the public and private sectors. Although there has been significant progress in several countries in recent years—most notably Brazil, Chile, and Peru—as a region, LAC continues to underinvest in infrastructure, particularly as it relates to trade and transport. Public expenditure for all infrastructure sectors in LAC stands between 2 and 3 percent of GDP, compared to 6 to 10 percent for East Asian countries (Fay and Morrison, 2007).

In the 1990s, when public capital expenditure in LAC dropped precipitously, the expectation arose that private investment would fill a large part of the gap. After a short-lived spike due to the large privatizations of the mid-1990s, projects involving private participation in infrastructure (PPI) in the region declined steadily from 1997 to 2005 (World Bank, 2010c). Has this trend begun to reverse? Although total levels remain modest, private investment in infrastructure has risen through the financial

crisis years. Figure 21 shows the increase in investment in recent years. In nominal terms, PPI in LAC has almost returned to its peak level of 1997.

**Figure 21. Trends in Investment in Private Infrastructure Projects**

(By region, 2005–2009, in US\$ billions)

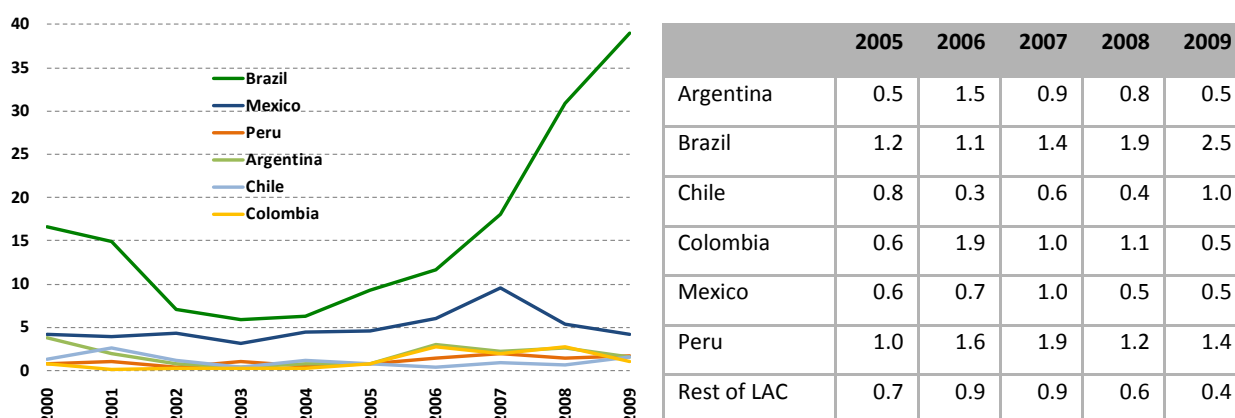


Source: World Bank (2010c).

However, this investment is increasingly concentrated geographically. Brazil is now the region's only country attracting significant shares of PPI, both in terms of absolute value (about 80 percent of total PPI in LAC) and as a percentage of GDP (2.5 percent). In Peru and Chile, PPI is around 1 percent of GDP; in other countries in LAC, it stands at or below 0.5 percent (Figure 22).

**Figure 22. Private Participation in Infrastructure Projects**

(By country, 2000–2009, in US\$ billions [left panel] and as percentage of GDP, 2005–2009 [right panel])



Source: World Bank (2010c).

The trend is also toward high sectoral concentration, as the energy sector has begun to dominate the portfolio. With increasing support in the provision of concessionary financing from state-owned banks and feed-in tariffs that reduce risk for investors, build-operate-and-transfer (BOT) generation plants have become relatively attractive for large-scale investment. Transport sector investments, by contrast,

now account for less than 25 percent of all infrastructure investments in the region, dominated by a few large BOT highway investments in Brazil, Colombia, and Mexico.

What do these trends suggest for investment in integration projects? First, the general scarcity of public resources available for investment in *hardware* infrastructure, compounded with the institutional challenges related to the prioritization of regional projects, makes investment in cost-effective integration *software* policy reform a valuable proposition in itself.

Second, given the need to attract private investment to ease budgetary constraints, governments have the option of reforming the *software* in order to attract investment in the *hardware* in the energy sector, and even more so in the transport sector, currently not prioritized by private investors. The private sector's interest and commitment in some Latin American and Caribbean countries, such as in Brazil, as a result of the leveraging of private sector investments with public ones, and in Mexico, through public-private partnerships, is a testament to the positive influence complementary policies can have on infrastructure investment. However, the rest of the region needs to follow suit.

All the evidence points to the same conclusion: in order to harvest the significant potential gains that a new generation of integration policy reforms and investment may deliver to countries in the region, governments are well advised to lock in an investment strategy that tackles both the *software* and the *hardware* components within an integrated regional strategic plan.

### **Potential Support Role of International Financial Institutions**

By means of an enhanced compact of integration instruments, international financial institutions may help countries overcome coordination failures, lock in investments in integration, and capitalize on integration's long-term development potential.

Acting as honest brokers, dispensing technical integration expertise, and providing financial support while operating with long-term objectives, multilateral development institutions can support Latin American and Caribbean integration initiatives with actions in the following financial and nonfinancial areas:

- **Financing integration operations.** Work with member countries in coordinating sovereign-guaranteed national operations with cross-border integration programs and provide nonsovereign loans and guarantees to private sector projects that have regional scale and integration objectives.
- **Incentives for the development of integration programs.** Strengthen member countries' capacity to design and implement a new generation of integration programs, by providing adequate incentives and mobilizing a smart mix of nonfinancial products, regional grants, and regional and national policy-based and investment lending needed to build integration corridors.
- **Support to strategic initiatives.** Contribute to the region's long-term integration vision by providing support to emerging integration initiatives undertaken by member countries.
- **Policy dialogue.** Engage policymakers at the sectoral and executive-financial level and facilitate high-level multisector regional policy dialogues on existing or emerging regional integration initiatives to ensure coherence, sustainability, and development impact.



- **Policy research.** Provide regional policymakers with cutting-edge applied research that contributes to a long-term vision, enhances the quality of policy dialogue, and supports an innovative operational program.
- **Capacity building.** Facilitate the development of integration capacity-building initiatives and support high-profile institutional strategic alliances that have a long-term impact on a critical mass of integration constituencies throughout the region, including high-level executive training, short-term policy advisory services, and support for project identification, design, monitoring, and evaluation.

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