A general view of trade barriers derived from infrastructure deficiencies in South America

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Unclogging the Arteries

The Impact of Transport Costs on Latin American and Caribbean Trade

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Motivation

★ Trade policy in the region has been all too focused on removing tariffs. "Trade facilitation" was squeezed out of the trade agenda, particularly transportation.

★ If this neglect was not too costly in the 1980s, because the sheer magnitude of the policy barriers, it has rapidly become so in the last two decades.

★ Transportation costs has acquired an unprecedented strategic importance to the region:

– the very success of the trade reforms;

– the growing fragmentation of production and time-sensitiveness of trade;

– the emergence of vastly labor intensive and resource scarce economies;

– Oil shock .

Objective

★ To contribute to a better understanding of the importance of transport costs (TCs) for LAC trade. More specifically:

a) How do TCs compare to tariffs?

b) How do LAC TCs compare to those elsewhere in the world?

c) How "transport-intensive" are LAC exports?

d) What are the main determinants of LAC TCs?

e) What is the TC impact of on LAC trade?

Data

* **ALADI's** (Latin American Association of Foreign Trade) : **value and quantity of imports, tariff revenue and transport costs** (freight and insurance), **5000 products**, **mode and port of entry** (**Argentina, Bolivia, Brazil, Colombia, Chile, Ecuador, Mexico, Paraguay, Peru, Uruguay and Venezuela**) for 1990 and 1995 and from 2000 to 2005.

* The **U.S. Census: 17,000 "products"** (10 digit level, HS system), on **imports (value and weight), tariff revenue, transport costs (freight plus insurance), by mode and district of entry (air and ocean) for all exporters to the U.S.**

* **The U.S. Waterborne databanks: port of origin and port of entry.**

* Compairdata, ICAO, Airportcitycode.com, Portualia.com. and Shipanalysis.

Main Findings

* For most sectors and markets, countries in the region face transport costs that are significantly higher than tariffs: e.g. the regional average freight rate of exports to the US is **7.8%** whereas the average tariff is **2.7%**. Intraregional exports: freight **4.3%** , tariffs **1.9%**.

* LAC transport costs tend to be higher than in the developed world, largely because of heavier goods and deficiencies in ports and airports and weak competition in shipping services: e.g. the average ocean export freight rate from LAC to the U.S. is **75% higher than Netherlands**.

* Although ocean freight expenditures seems to be converging to developed world standards, the opposite seems to be taking place with **airfreight**;

* Reductions in freight costs can have a significant and larger impact than tariff liberalization on both volume and diversification of LAC's trade. For instance, in the of country such as Peru the positive impact of a 10% reduction in freight rates is likely **to 20 times as high as a similar reduction in tariffs (5 times for intraregional exports.)**

Transport Costs vs. Tariffs

Figure 2 - Ad-Valorem Freight and Real Tariffs for Intraregional Exports and Exports to the U.S. Selected LAC Countries. 2005
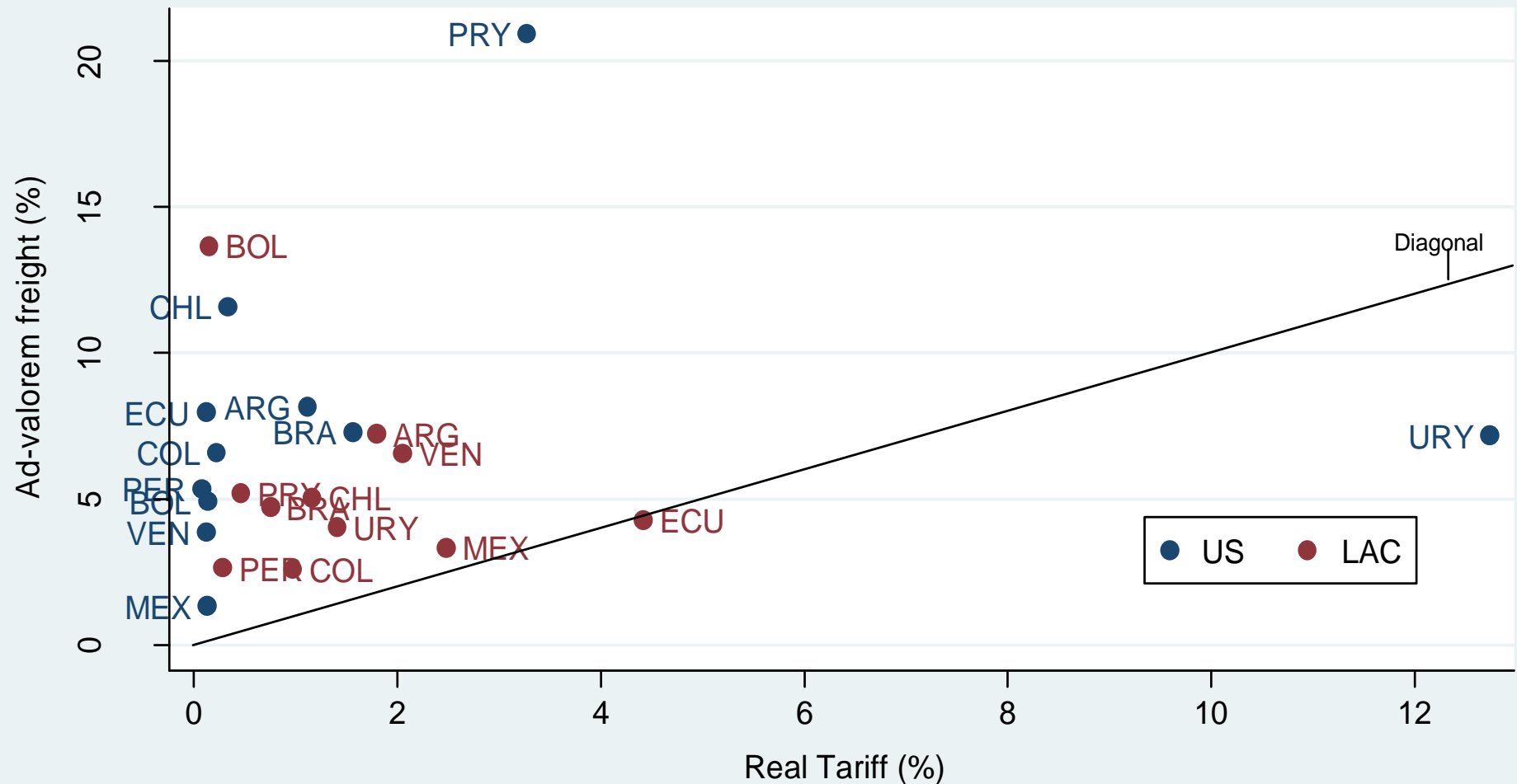
Note: Graph is based on import data from export markets. Freight is the ratio freight expenditures to imports. Real tariffs is the ratio of tariff revenue to imports. Intraregional exports includes Brazil, Argentina, Chile, Peru and Uruguay. See Table A.2 in the Appendix for the raw data.

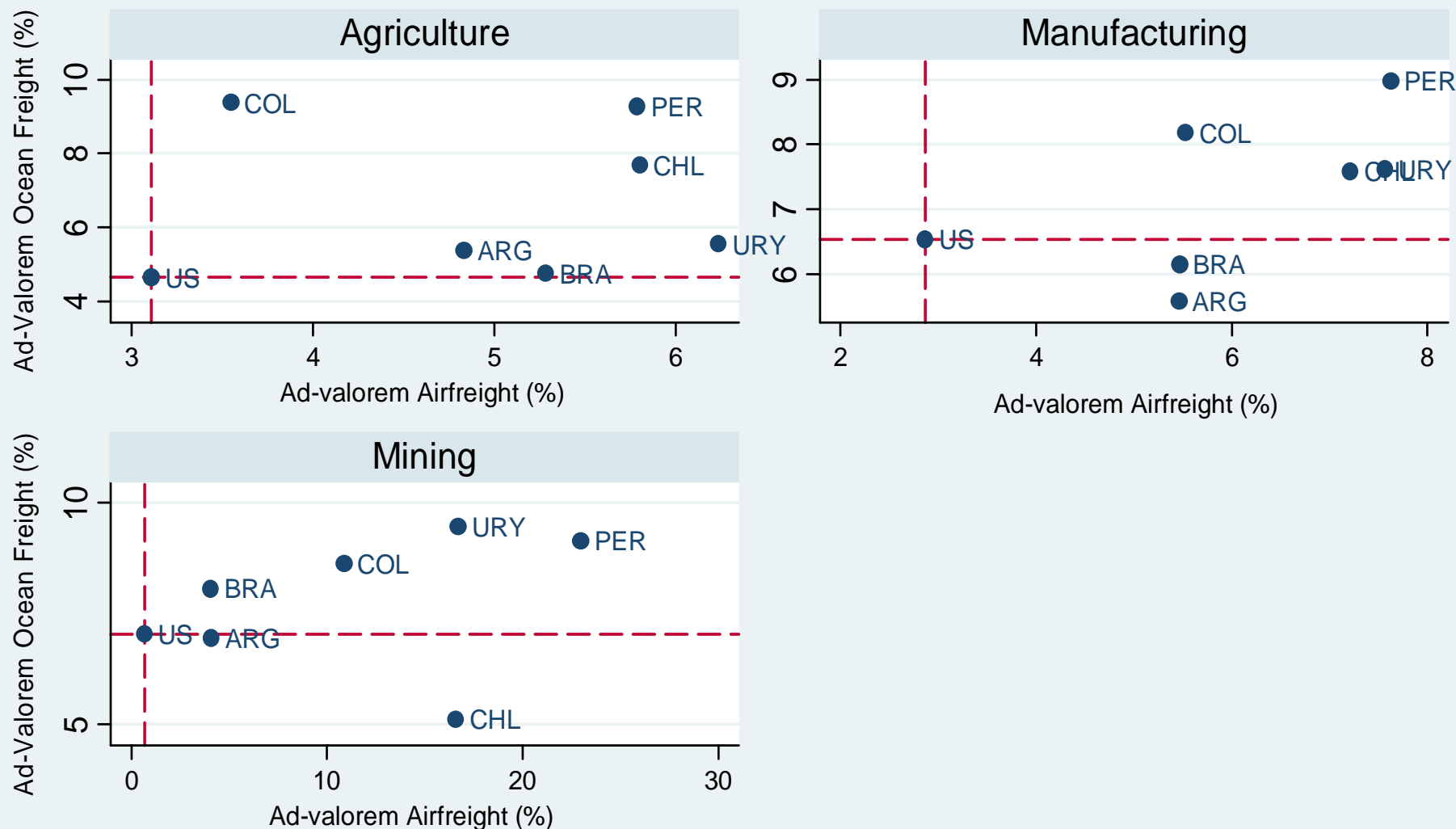Source: Own calculation based on US Census Bureau and Aladi Data.

Are LAC TCs too high?

Figure 4 - Total Air and Ocean Freight Expenditure as a Share of Imports
U.S. versus Selected LAC Countries by Mode and Category of Goods. 2005

Note: Freight includes insurance. Goods Categories follow WTO-SITC Classification
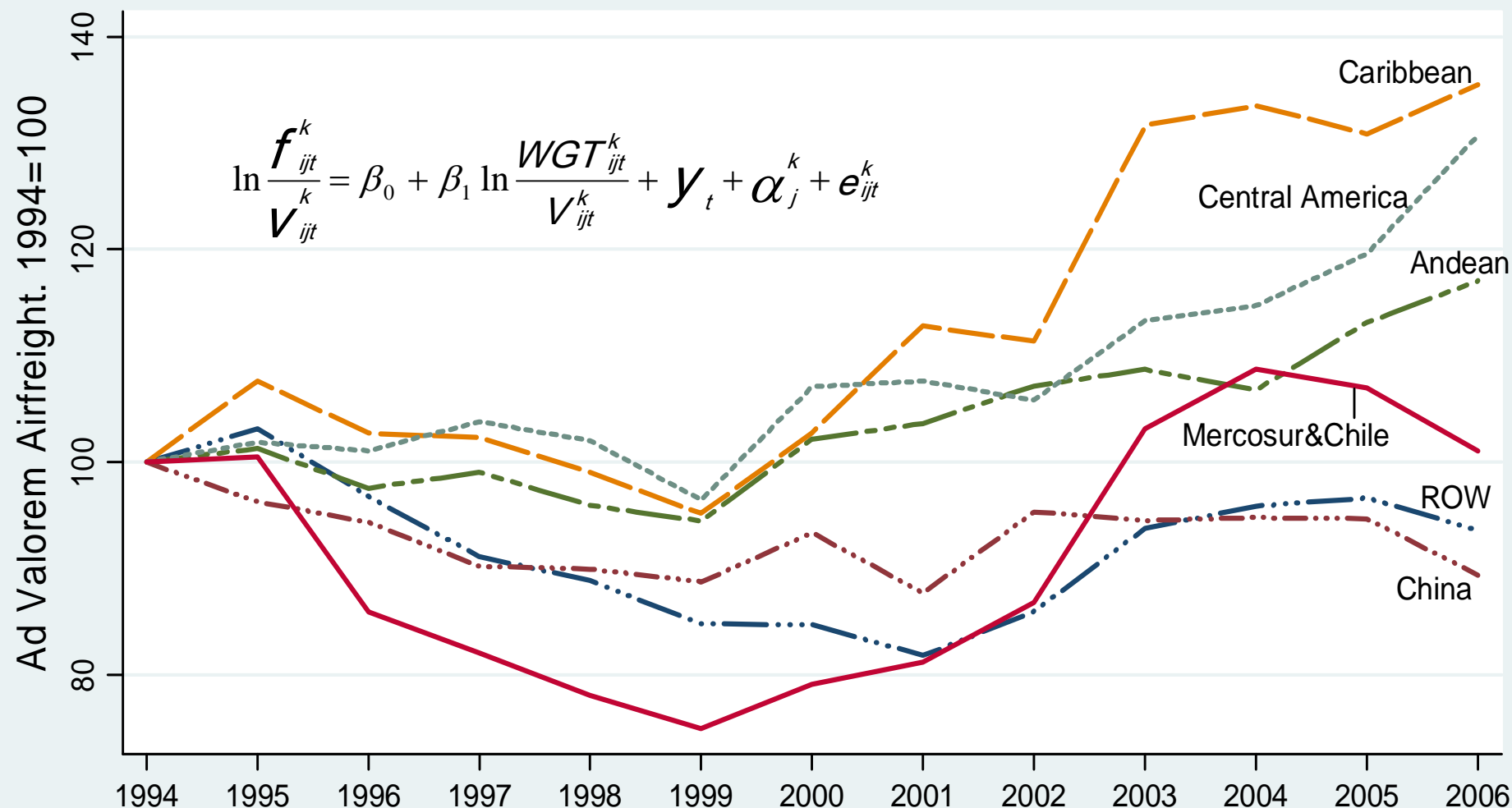 Countries: Peru (PER) , Argentina (ARG), Brazil (BRA), Uruguay (URY), Colombia (COL) and Chile (CHL)

 Data source: U.S. Census Bureau and ALADI

Are LAC TCs converging?

Figure 9-Trend in Export Airfreight to the U.S. after Controlling for Trade Composition. Selected LAC Sub-Regions, China and Rest of the World (ROW). 1994-2006. 1994=100

$$\ln \frac{f_{ijt}^k}{v_{ijt}^k} = \beta_0 + \beta_1 \ln \frac{WGT_{ijt}^k}{V_{ijt}^k} + y_t + \alpha_j^k + e_{ijt}^k$$

Caribbean

Central America

Andean

Mercosur&Chile

ROW

China

Ad Valorem Airfreight. 1994=100

Note: Airfreight is freight plus insurance as a share of imports. It was estimated by regressing ad-valorem freight on the weigh-to-value ratio of the goods imported and on year and partner-good fixed effects. See text for details.
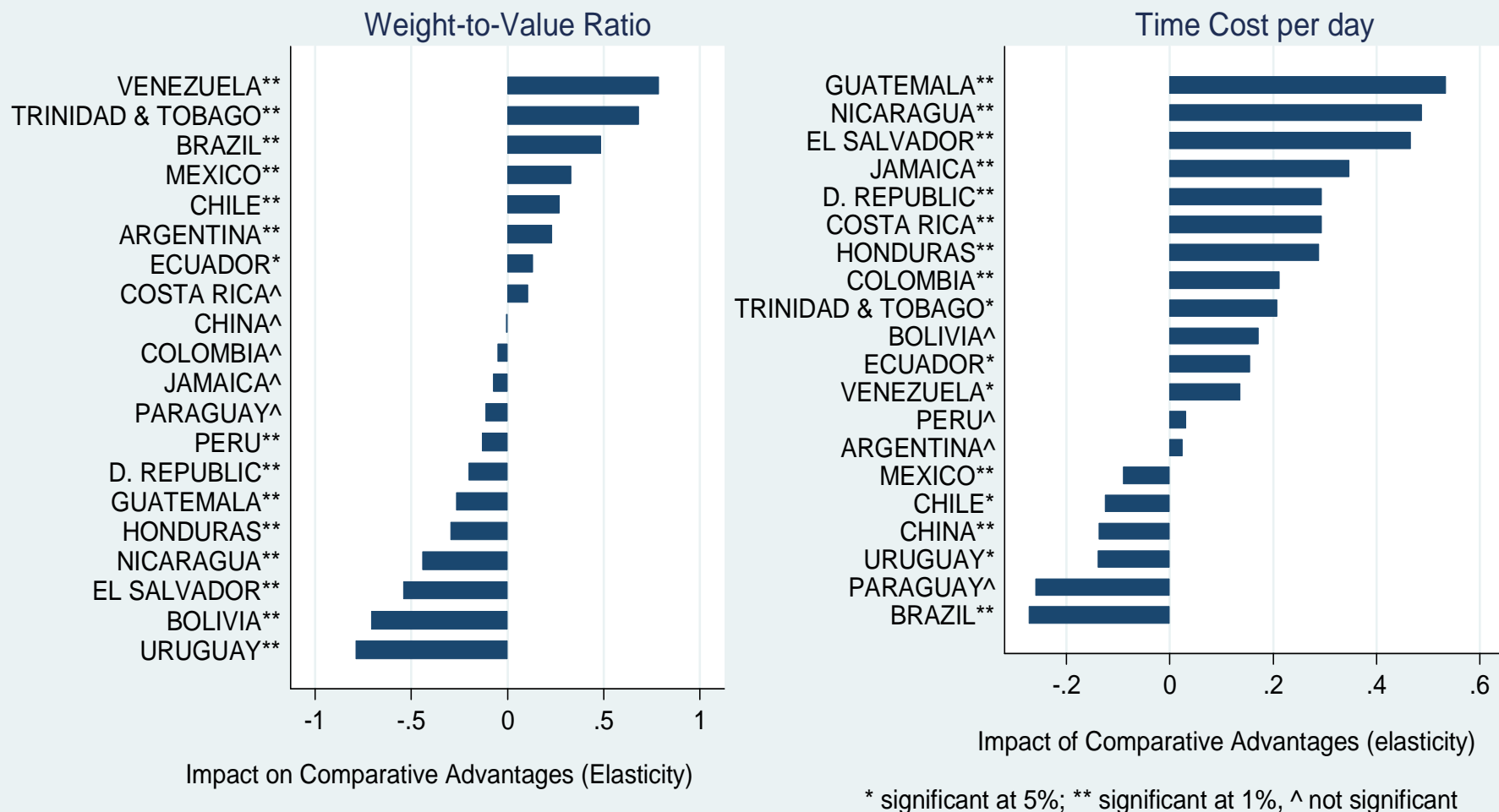
Data source: U.S. Census Bureau

Are LAC exports transport intensive?

Figure 13 - The Impact of Time Costs and Weight on LAC's Revealed Comparative Advantages. U.S. Market. 1994-2006

Weight-to-Value Ratio

VENEZUELA**
TRINIDAD & TOBAGO**
BRAZIL**
MEXICO**
CHILE**
ARGENTINA**
ECUADOR*
COSTA RICA^
CHINA^
COLOMBIA^
JAMAICA^
PARAGUAY^
PERU**
D. REPUBLIC**
GUATEMALA**
HONDURAS**
NICARAGUA**
EL SALVADOR**
BOLIVIA**
URUGUAY**

-1   -.5   0   .5   1

Impact on Comparative Advantages (Elasticity)

Time Cost per day

GUATEMALA**
NICARAGUA**
EL SALVADOR**
JAMAICA**
D. REPUBLIC**
COSTA RICA**
HONDURAS**
COLOMBIA**
TRINIDAD & TOBAGO*
BOLIVIA^
ECUADOR*
VENEZUELA*
PERU^
ARGENTINA^
MEXICO**
CHILE*
CHINA**
URUGUAY*
PARAGUAY^
BRAZIL**

-.2   0   .2   .4   .6

Impact of Comparative Advantages (elasticity)

* significant at 5%; ** significant at 1%, ^ not significant

Note: The Impact figures are coeficients of a regression of revealed comparative advantages on time costs and weight-to-ratio with controls. See text for details.

$$\frac{X^k_{US\_jt} / X_{US\_jt}}{X^k_{US\_Wt} / X_{US\_wt}} = \beta_0 + \beta_1 \ln \tau^k + \beta_2 \ln \frac{W^k_{us\_j}}{v^k_{us\_j}} + a_t + a_k + e^k_{ijt}$$

What are the determinants of LAC TCs?

Using very detailed data on ocean and airfreight rates paid by U.S. and LAC imports coming from countries around the world as well as data from several other sources for 2000-2005.

Determinants of Ocean Freight Rates	Expected Sign
Weight-value	(+)
Distance	(+)
Volume of Imports	(-)
Trade Imbalance	(-)
Containerization	(-)
Number of Shippers	(-)
Elasticity of Import Demand	(-)
Tariff Rate	(+)
Exporter Port Efficiency	(-)
Importer Port Efficiency	(-)

$$\ln\frac{F_{ijkt}}{V_{ijkt}}=\beta_0+\beta_1\ln\frac{WGT_{ijkt}}{V_{ijkt}}+\beta_2\ln DIST_{ij}+\beta_3\ln q_{ijt}+\beta_4 Time_{it}+\beta_5 T_{ijkt}+\beta_6\ln n_{ij}+\beta_7\ln\lambda_{Ikt}+\beta_8\ln\sigma_k+\phi_i+\theta_j+\gamma_k+\tau_t+e_{ijkt}$$

Figure 2.5: Percentage Reductions in Ocean freight import rates from a Change in Port Efficiency, Tariff Rates and Number of Shippers to U.S. Levels. Base year 2005.
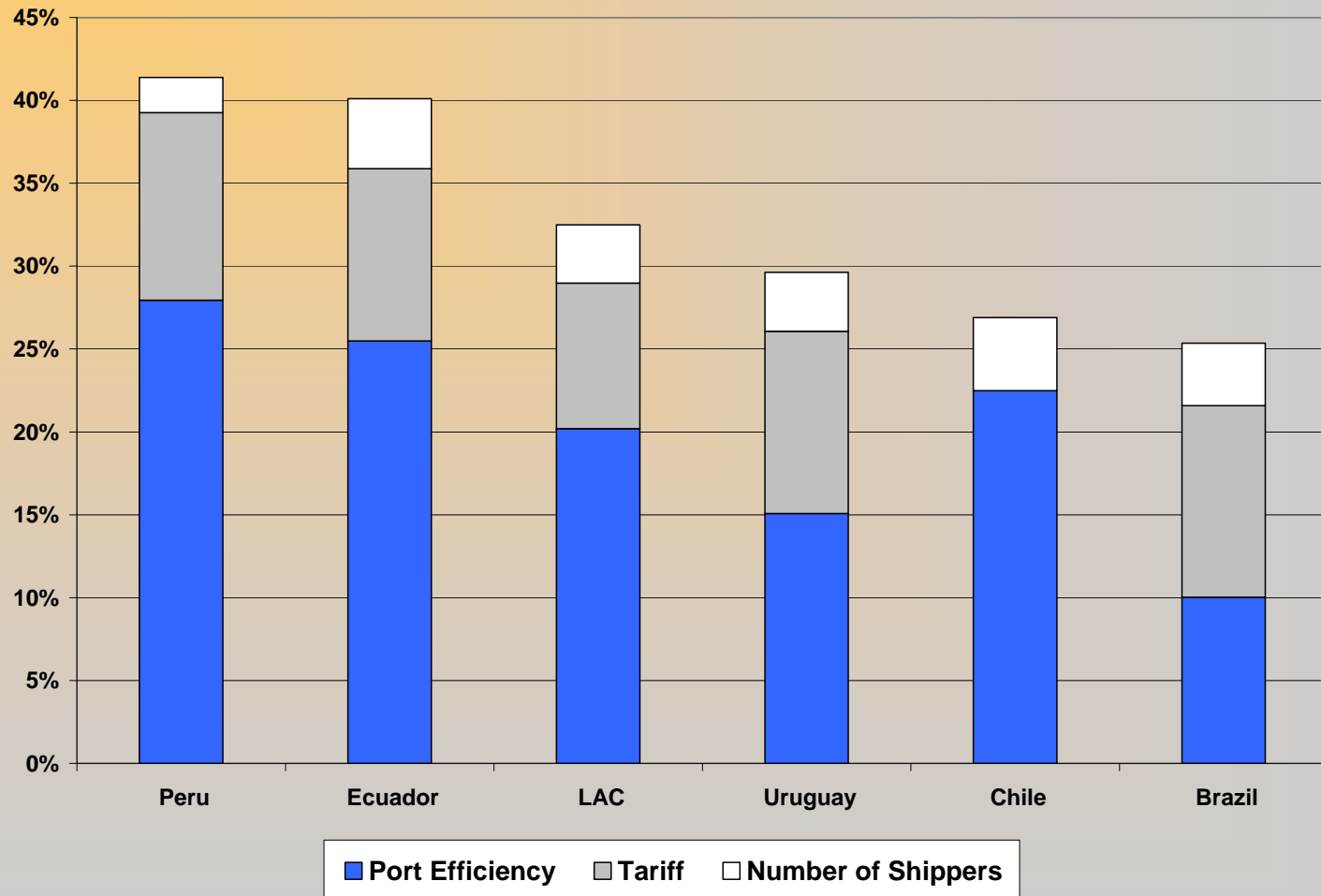
What is the TC impact of on LAC trade?

The Impact

| For Each Sector: Determinants of Bilateral Imports/Exports at the Product Level |
|:---:|
| *Bilateral Trade Costs at the Product Level (-)* |
| *Bilateral Distance (-)* |
| *Permanent Importer Specific Characteristics* |
| *Permanent Exporter Specific Characteristics* |

$$lnM_{cdz} = \lambda_c + \lambda_d + \beta ln\left(\tau_{cdz} + f_{cdz}\right) + \delta \ln D_{cd} + \varepsilon_{cdk}$$

Reductions in Transport Costs and Tariffs and Median Response of Sectoral Exports to US
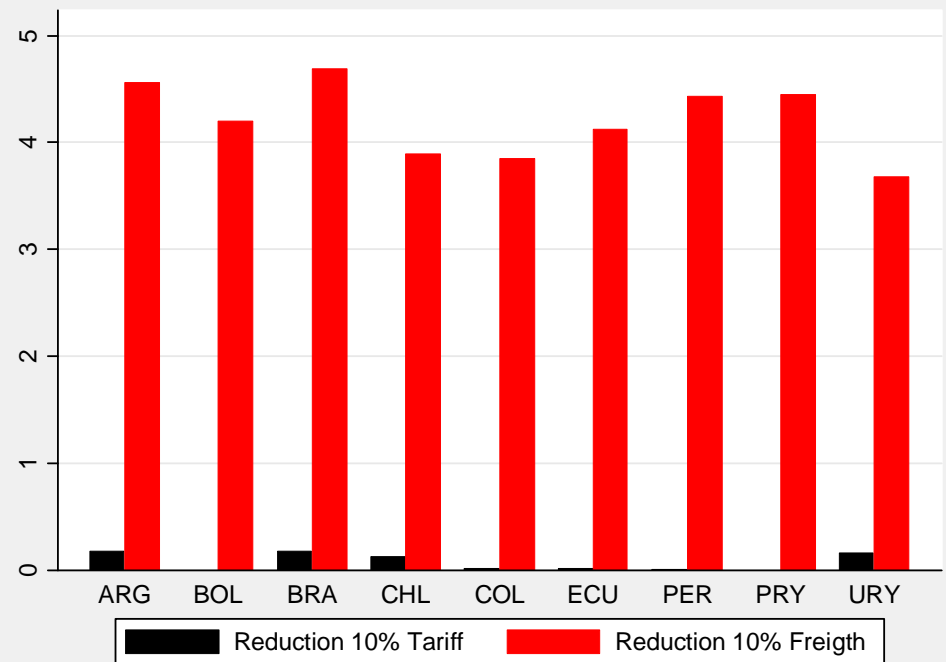
Reductions in Transport Costs and Tariffs and Response of Export Diversification in US
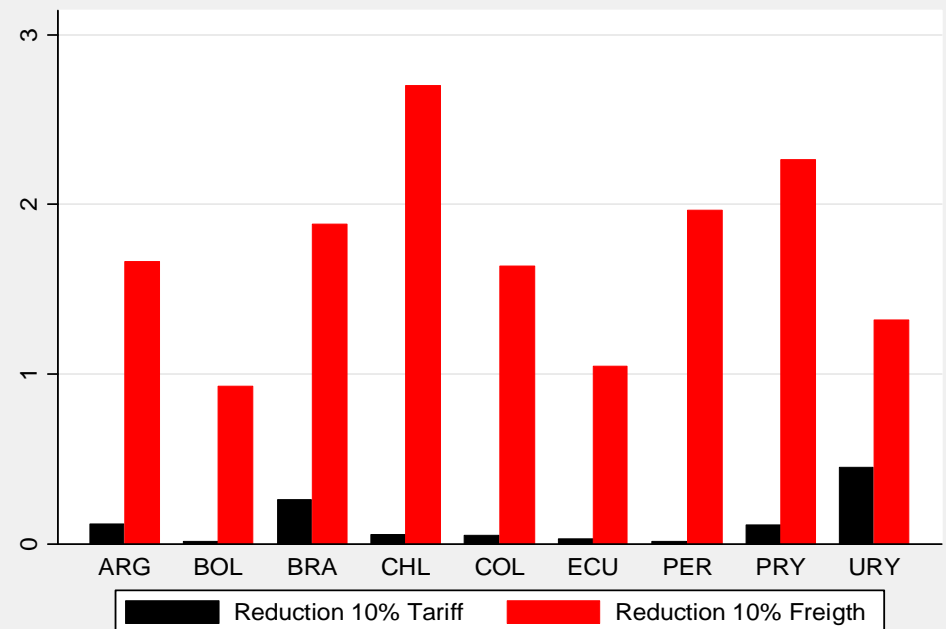
Conclusions

- ✓ The case for **expanding the scope of the region's trade agenda**, with transport costs at its very center, seems very clear.
- ✓ The areas the focus are the quality of the **infrastructure** and **competition** in transport services (regulatory framework).
- ✓ We see, though, some important **political and technical challenges**.
- ✓ On the political side, lies on turning the often mundane and invisible details of the transport network into something that can be perceived by politicians as generating **political benefits**.
- ✓ On the technical side, there are:
  a) the well-know risks of a "**big push**" towards transport infrastructure being interpreted as license to pursue any project;
  b) The **stringent fiscal and financial** constraints that beset most governments in the region;
  c) The implementation of **regional transport projects** that involve two or more countries, which are plagued with externalities and coordination failures.