

Inter-American Development Bank  
Vice-Presidency of Knowledge  
Integration and Trade Sector

# Unclogging The Arteries



A Report on the Impact of Transport Costs on Latin American Trade



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- ★ 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.**



- ★ For most sectors and markets, countries in the region face transport costs that are significantly higher than tariffs;
- ★ LAC transport costs tend to be higher than in the developed world, largely because of deficiencies in ports and airports and weak competition in shipping services;
- ★ Although ocean freight expenditures seems to be converging to developed world standards, the opposite seems to be taking place with airfreight and;
- ★ Reductions in freight costs can have a significant and larger impact than tariff liberalization on both volume and diversification of LAC's trade.

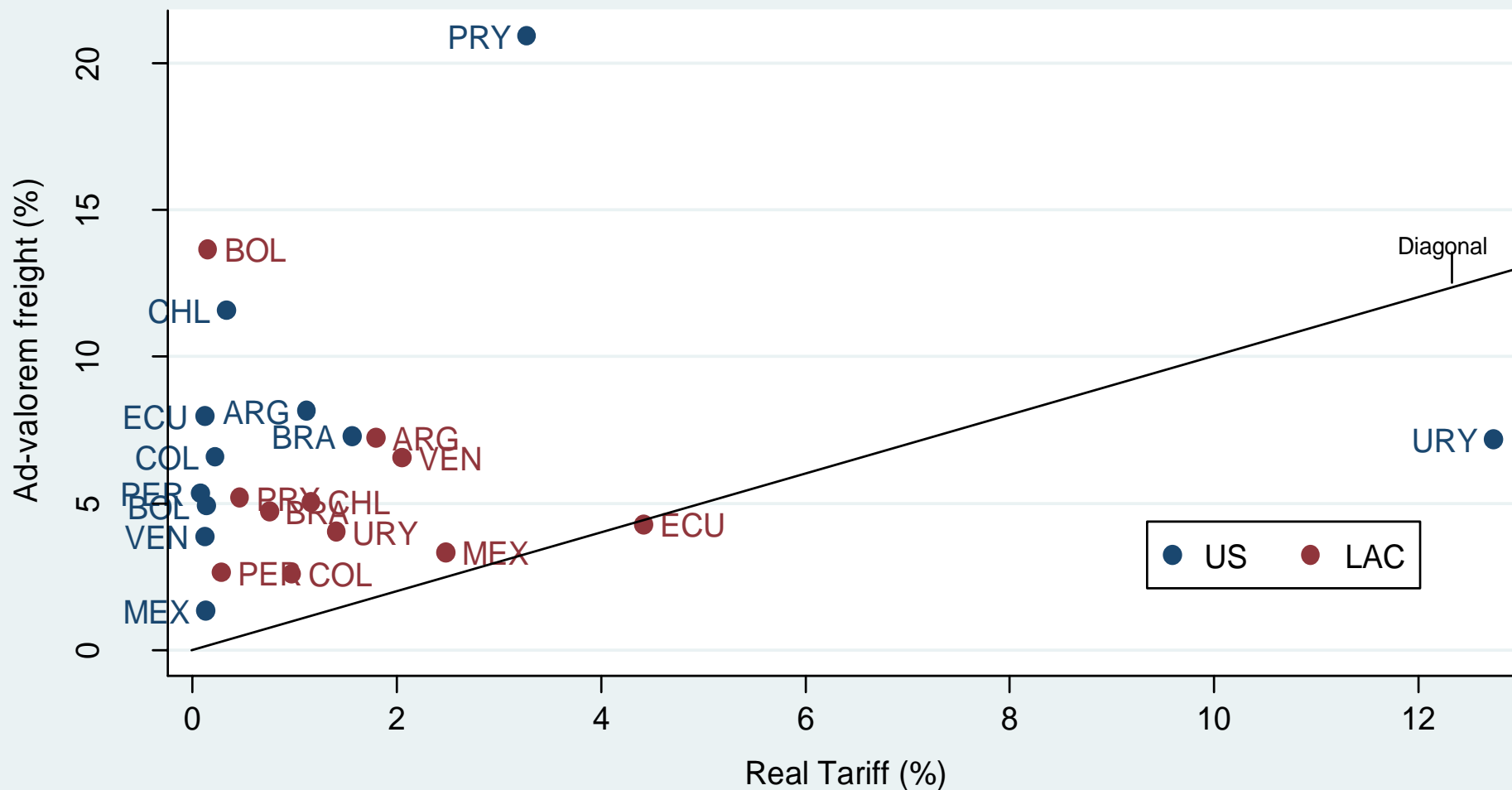


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*Transport Costs vs. Tariffs*

Figure 2 - Ad-Valorem Freight and Real Tariffs for Intraregional Exports and Exports to the U.S. Selected LAC Countries. 2005

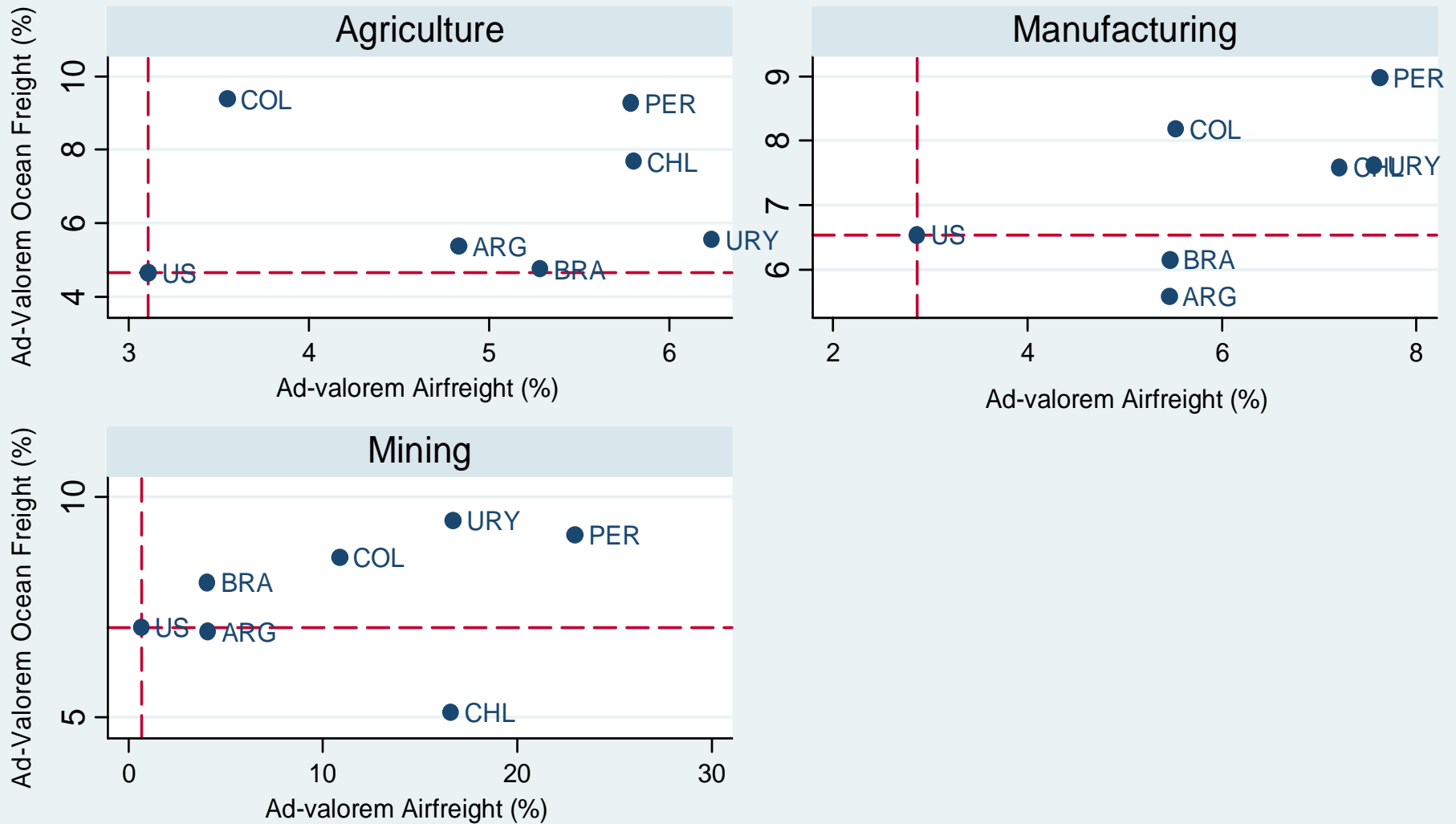


Note: Graph is based on import data from export markets. Freight is the ratio freight expenditures to imports. Real tariffs is the ratio of tariff revenue to imports. Intraregional exports includes Brazil, Argentina, Chile, Peru and Uruguay. See Table A.2 in the Appendix for the raw data.

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



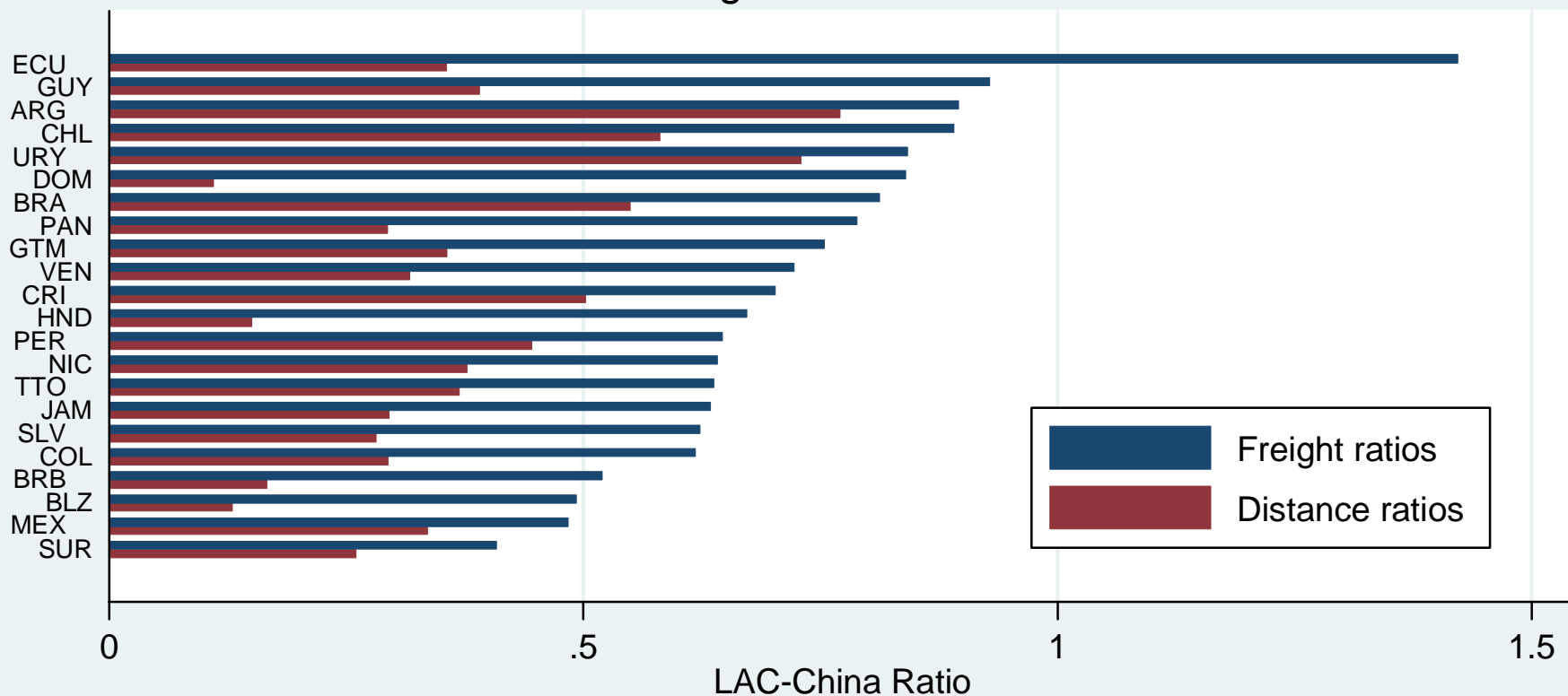
Figure 4 - Total Air and Ocean Freight Expenditure as a Share of Imports  
 U.S. versus Selected LAC Countries by Mode and Category of Goods. 2005



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

Figure 6c- Ratios Between LAC and China's Export Freight and Distance to the U.S.  
Manufacturing Goods. All Modes. 2006



Note: Freight ratios are based on simple average ad valorem freight rates of similar products (10 digit HS). Distance ratios are based on the average distance between the U.S. and the countries' main ports. Manufacturing defined as in the WTO- SITC classification.

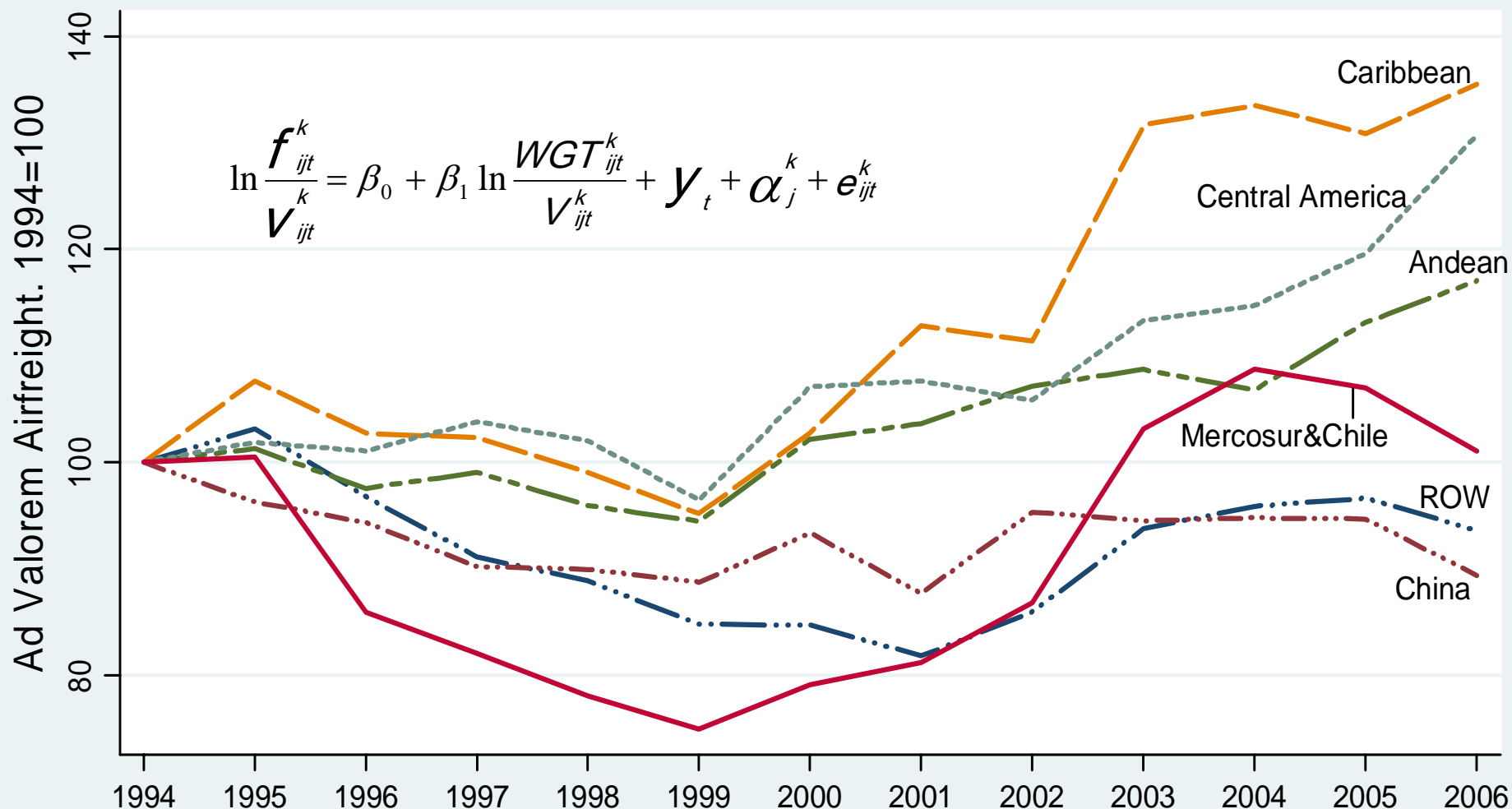
Source: U.S. Census Bureau



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*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

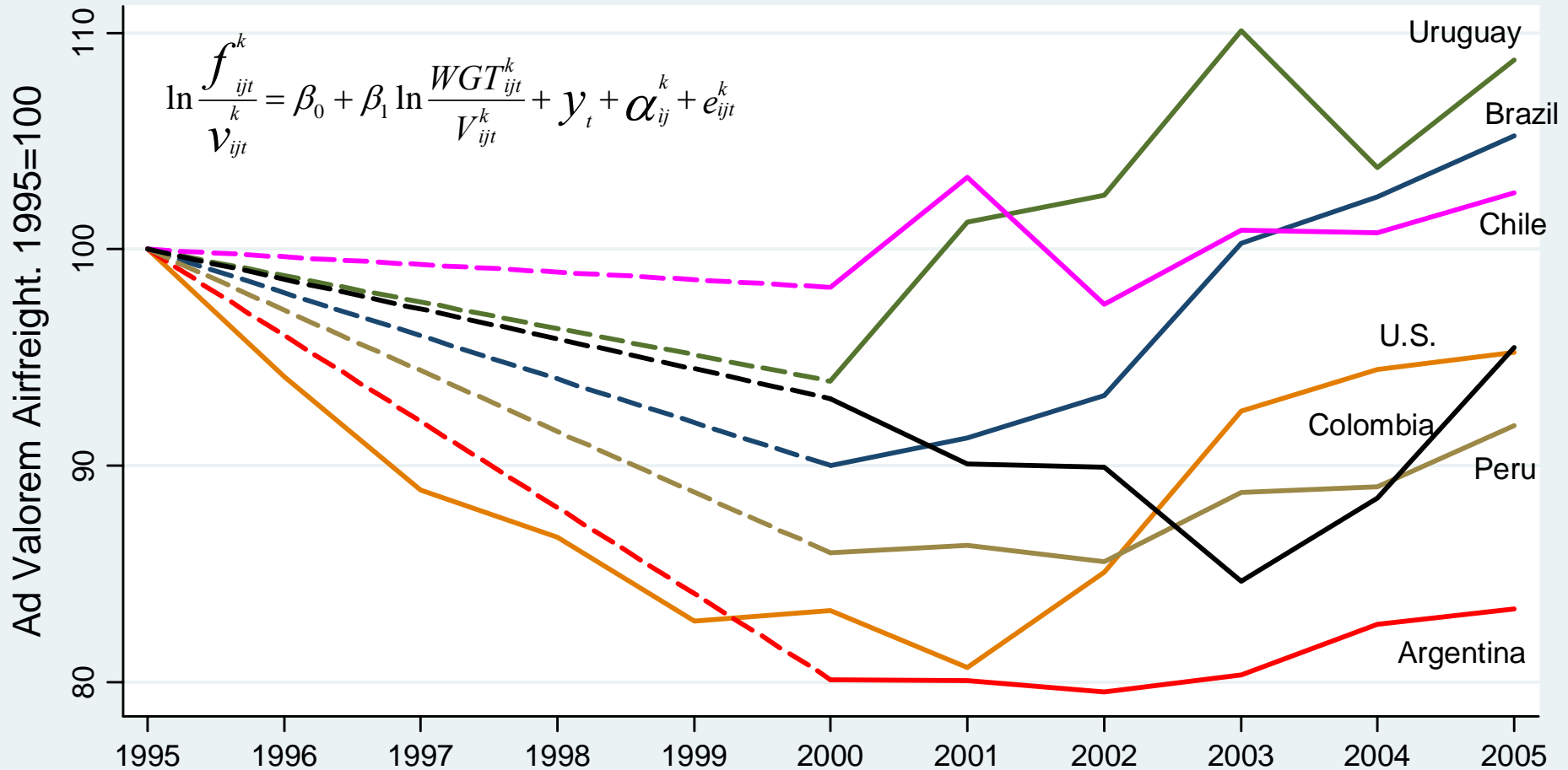


Note: Airfreight is freight plus insurance as a share of imports. It was estimated by regressing ad-valorem freight on the weigh-to-value ratio of the goods imported and on year and partner-good fixed effects. See text for details.

Data source: U.S. Census Bureau

Figure 7-Trend in Import Airfreight after Controlling for Changes in Trade Composition.

U.S. and Selected LAC countries. 1995-2005. 1995=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. Data for LAC countries is only available for 1995 and 2000-2005. See text for details.

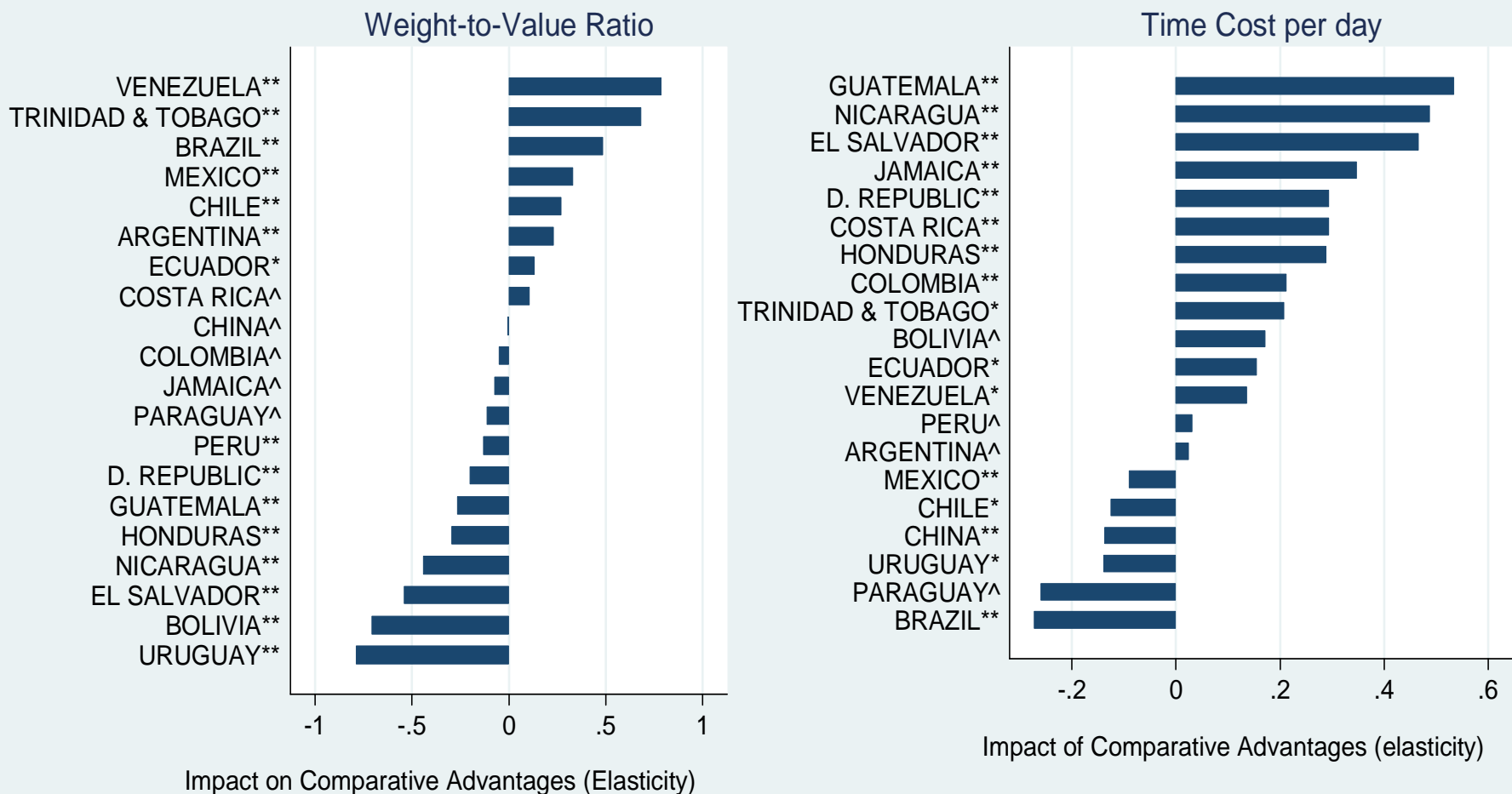
Data source: ALADI and U.S. Census Bureau



*Are LAC exports transport intensive?*



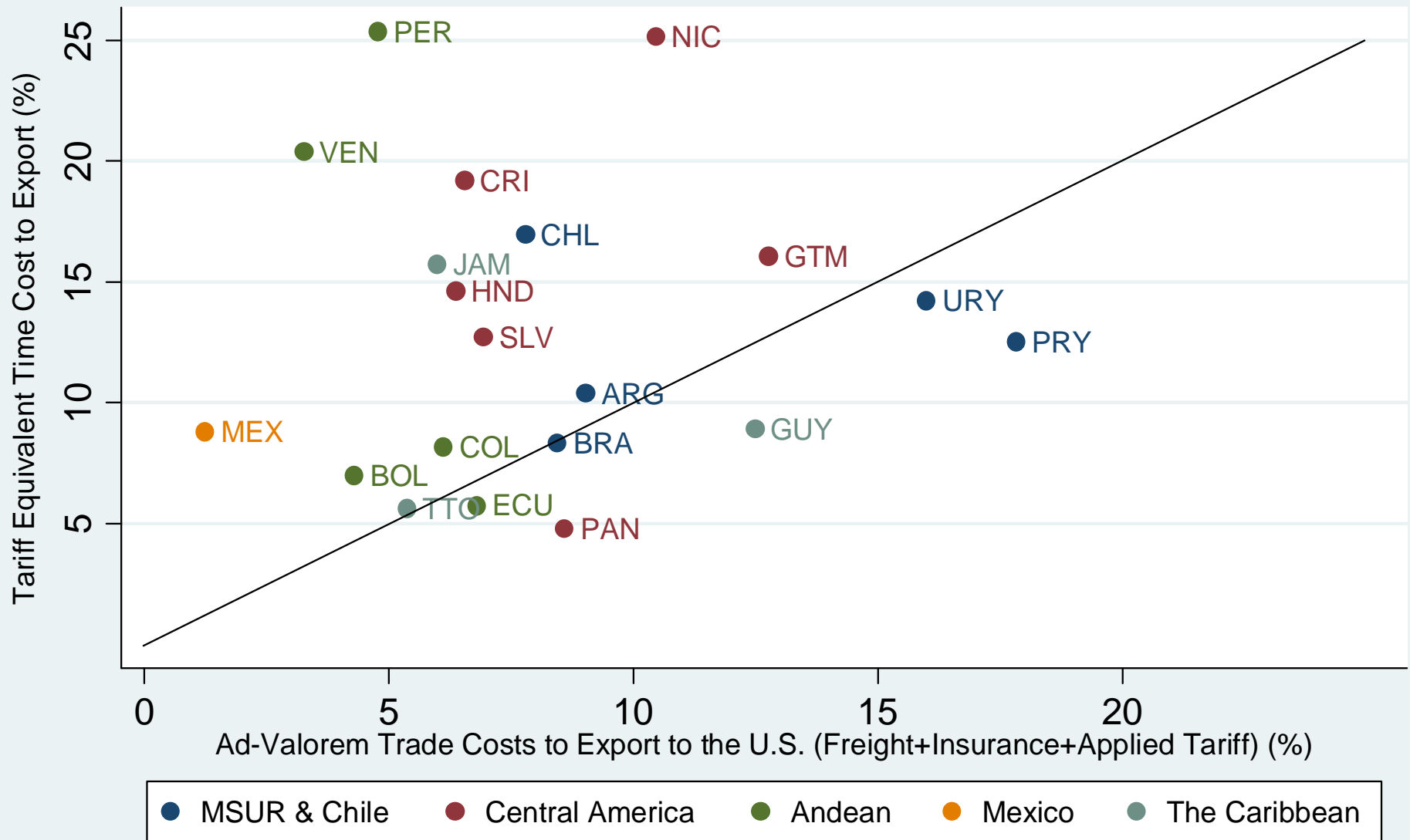
Figure 13 - The Impact of Time Costs and Weight on LAC's Revealed Comparative Advantages. U.S. Market. 1994-2006



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

$$\frac{X_{US\_jt}^k}{X_{US\_wt}^k} = \beta_0 + \beta_1 \ln \tau^k + \beta_2 \ln \frac{W_{US\_j}^k}{V_{US\_j}^k} + a_t + a_k + e_{ijt}^k$$

Figure 14 - Time Costs to Export and Trade Costs to Export to the U.S.  
Selected LAC and East Asian Countries. 2006



Data Source: Hummels and Schaur 2007 and Doing Business 2007



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*What are the determinants of  
LAC TCs?*



# The Determinants

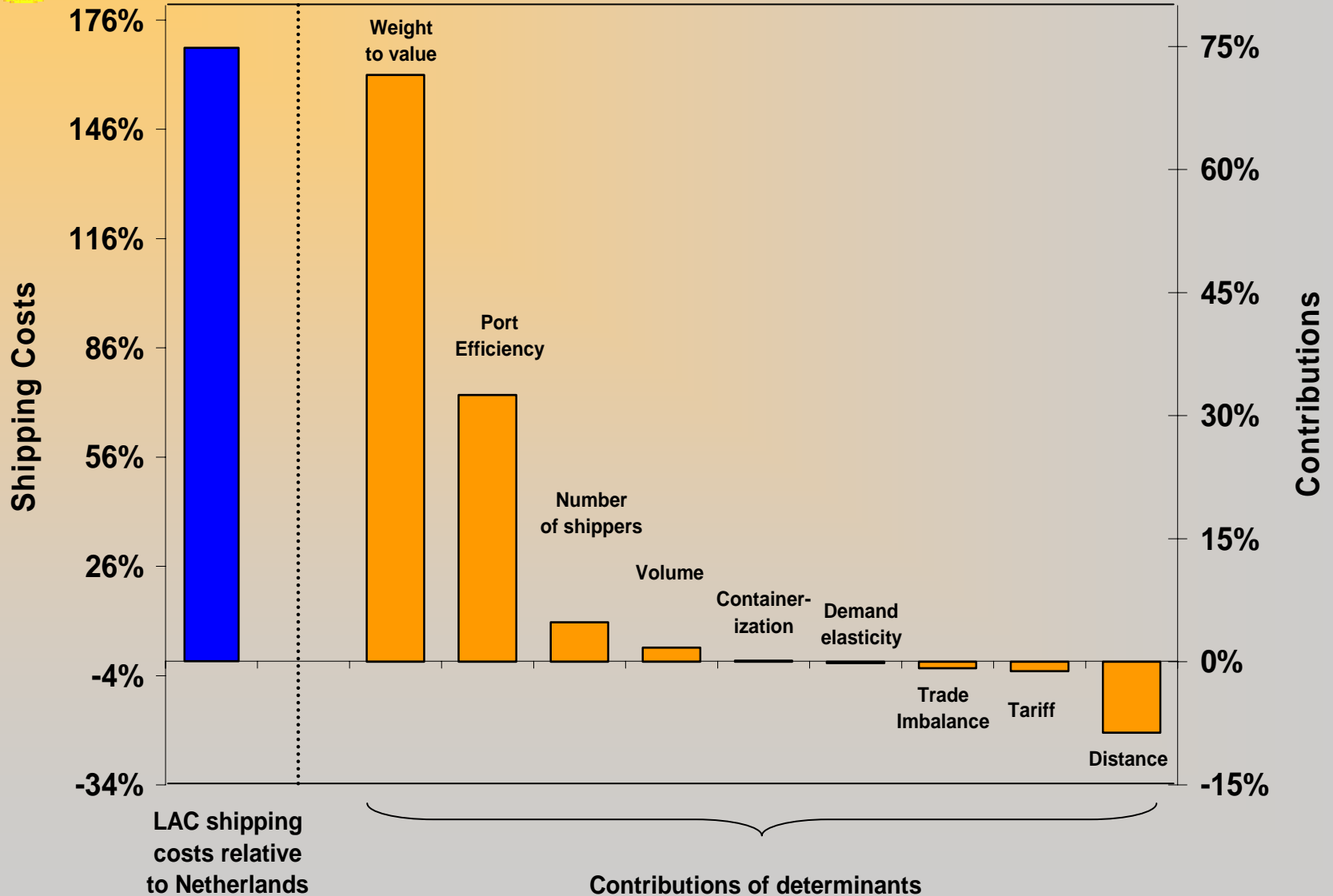
Using very detailed data on ocean and airfreight rates paid by U.S. and LAC imports coming from countries around the world as well as data from several other sources for 2000-2005.

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	(-)

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

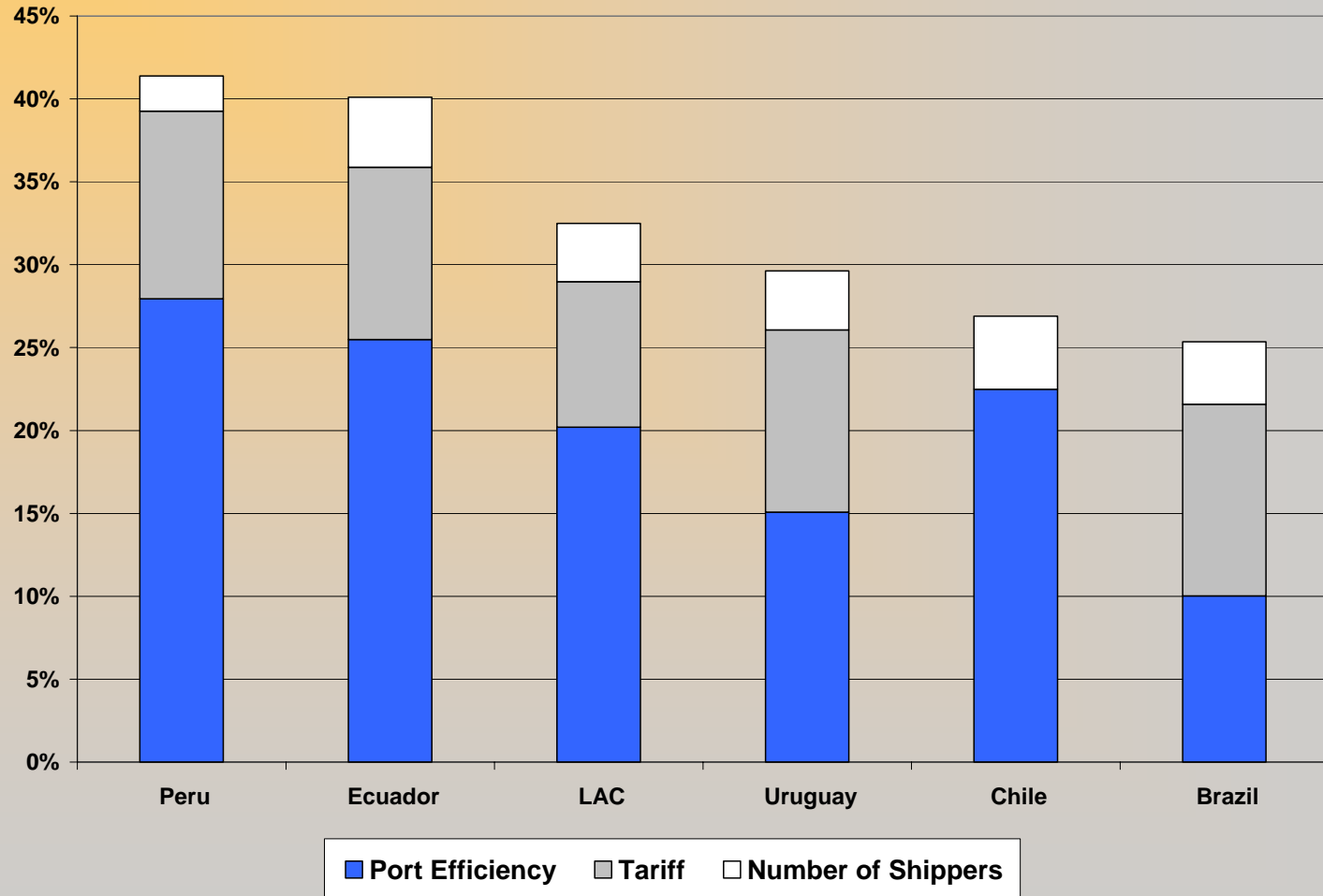


**Figure 2.4: Decomposing Differences in Ocean Freight Rates Between LAC and the Netherlands Exports to the U.S. (2000-2005)**





**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.**





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*What is the TC impact of on  
LAC trade?*



**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*

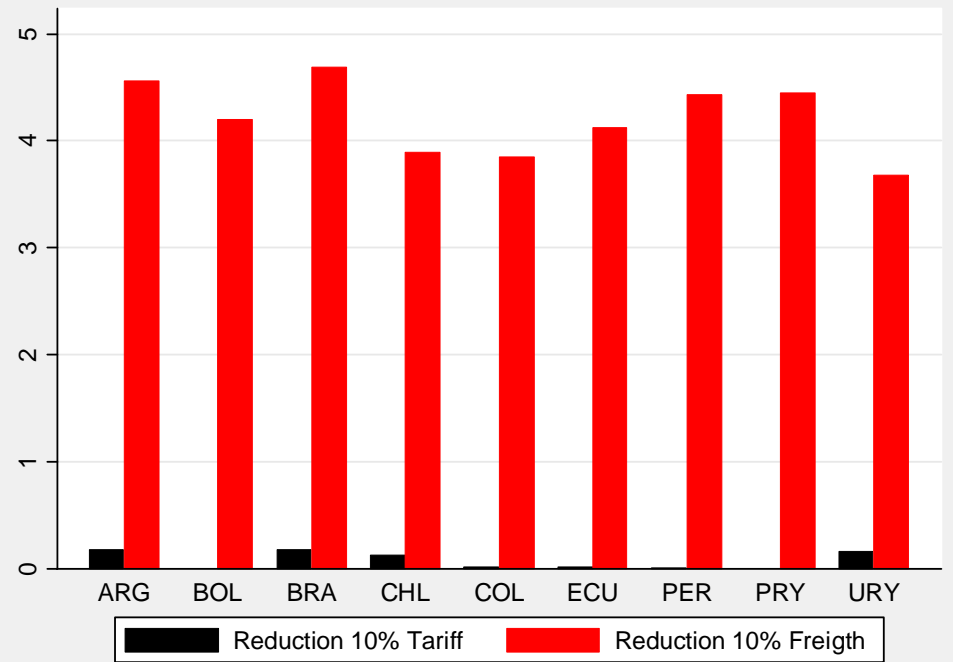
*Permanent Exporter Specific Characteristics*

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

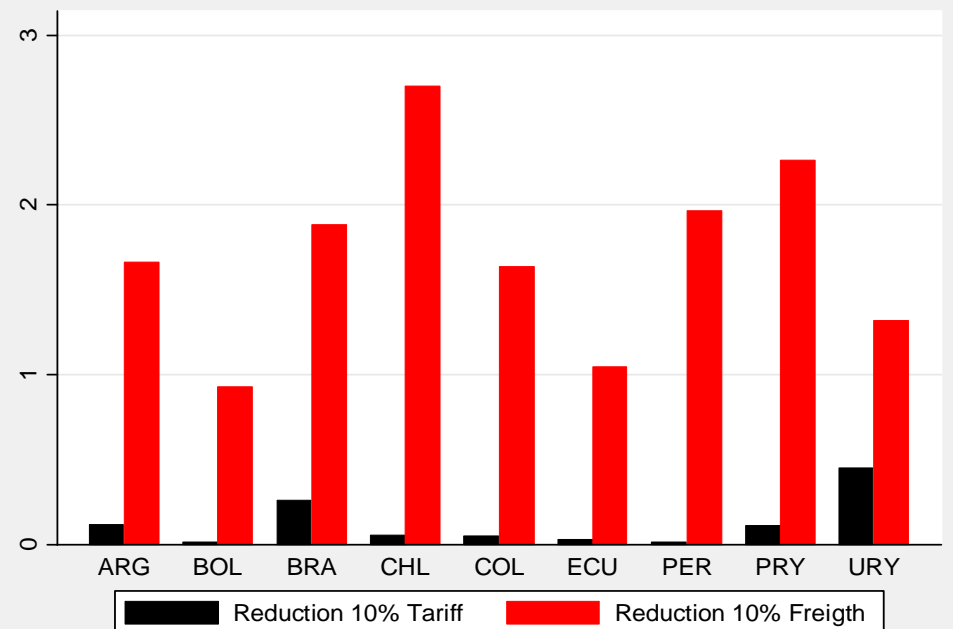
- ✓ A 10 per cent reduction in trade costs would lead approximately to a 50 per cent expansion of bilateral imports.
- ✓ A 10 per cent decline in average transport costs would be associated with a 9 per cent increase of the number of products imported and with an expansion of more than 10 per cent in the number of products exported to the region.



## 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.