Latin America: High Logistics Costs and Poor Infrastructure for Merchandise Transportation

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Introduction

Access to basic infrastructure services – roads, ports, electricity, water and sanitation – still remains a key challenge in the fight against poverty and the search for sustainable growth in the region. While some benefits of good infrastructure are self-evident, others are less obvious: for example, the poorest people in rural Latin America live almost twice as far from the nearest paved road as their more prosperous compatriots, and logistic costs are exceedingly high in Latin America, hampering export led growth strategies.

In this paper, we make a number of recommendations for improvements, all of which could be realistically implemented. Given the wide range of countries and average incomes in the region, the best ways to implement the solutions will vary between countries. Nevertheless, the proposals apply to most countries.

Background review

A number of empirical studies have shown that improving infrastructure has a positive impact on output, particularly for developing countries. As might be expected, the greatest returns are in the early stages of development, when the existing infrastructure is poor.

Recent literature, surveying panel data across a number of countries, has confirmed the positive impact of investment. It also takes account of reverse causation – improved infrastructure enhances economic growth, but this may itself create a demand for further infrastructure investments. Taking this into account ensures that the economic impact of infrastructure investment is not over-estimated.

Of course, it is not just a question of total spending, but the selection, quality or efficiency of the infrastructure which is built. For example, more than 40 percent of the difference in economic performance of low- and high-growth countries can be explained by differences in the stock and effective use of infrastructure. The availability and quality of infrastructure also has a great effect on logistics costs, both in terms of direct transport costs and the level of inventories which must be held.

Infrastructure problems ultimately have a major impact on competitiveness. In Latin America, more than half of firms surveyed consider infrastructure to be a major or severe obstacle to running and growing a business, a much higher level than in Europe or Asia.

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Logistic costs in Latin America range from 18 to 34 percent of product value, while the OECD benchmark is about 9 percent.

The challenge: reducing high logistics costs

The physical flow of goods is controlled by a complex logistics system. Several World Bank studies have shown that three components have to be dealt with to optimize the flow: transportation, business logistics and trade facilitation. Both public and private sectors contribute to the overall performance of logistic systems in an economy.

From a starting point in industrialized countries, businesses worldwide have been moving to fully integrated logistics operations, including everything from purchasing of raw materials to storage, inventory management and delivery of finished goods. With the gradual reduction of tariffs and the spread of free trade agreements, logistics now accounts for a larger proportion of the total cost of trade, representing a larger share of the costs than tariff barriers.

Since there is no single definition of logistics costs in use, quantitative international comparisons cannot be very precise. However, such surveys are useful in at least providing relative rankings. For the purposes of this paper, we include in total logistics costs, transport costs, transaction costs (processing of permits, customs, standards, losses, etc), financial costs (inventory, storage, security) and non-financial costs (insurance).

There are three World Bank studies which can be used to rank Latin American countries internationally. The Doing Business database analyses the impact of regulations on trade, showing Latin America to have an acceptable overall performance, but with much room for improvement compared to the OECD average. Some countries – Brazil and Peru for example – have a particularly urgent need to ease the burden of regulation.

The second study shows that, as a proportion of GDP, Latin American states face significantly higher logistics costs, 25 percent of product value, on average, than the USA or OECD countries, 9 percent on average. In a third study, shippers and logistics operators are being asked to respond to a questionnaire to assess their overall perception of the ease of trading. Of the 70 countries surveyed so far, Chile is the highest ranked country in the region, placed 29th, with Brazil at 51st and Peru at 55th.

Because of poor infrastructure, inventory levels are more than double the US figure of 15 percent of GDP, and the additional holding is estimated to cost Latin American economies more than 2 percent of GDP. Another perspective comes out of a survey of business productivity, where for six countries in the region a 20 percent improvement in losses due to transport problems, time to clear customs or duration of power outages could result in significant productivity increases; 10 percent or more in some countries.

Three areas make the largest impacts on logistics costs – infrastructure and transport services, company logistics organization and public sector trade facilitation – and we now look at these in more detail.

The impact of infrastructure on growth

A recent study by the World Bank has evaluated the impact of infrastructure using econometric analysis of available data from a large number of countries, covering the period from 1960 to 2000. This analysis is based on a set of standard growth determinants – human capital, financial depth, trade openness, government burden, governance, inflation and real exchange rate overvaluation and terms of trade shocks – plus indices of infrastructure quality.

That study confirms the significant positive impact of good infrastructure, stock and quality on growth. We can visualize the importance by looking at the effect of a one standard deviation increase in the infrastructure index. This takes us from the level shown by Ecuador and Colombia to that of South Korea and New Zealand over the same period. This increase would also increase the growth rate of the economy by 3 percent. In the Latin American context, raising the infrastructure development level of Peru (in the 25th percentile for the region) to that of Chile (75th percentile) would increase Peru's rate of growth by 1.7 percent. But such an improvement would require a very significant expansion of investment levels.

Not all types of infrastructure have the same influence on the economy. Investment in telecommunications – particularly as measured by the total number of lines per thousand workers – has a significant positive effect. Investment in power generation is beneficial, but less so, and expansion of the road and railway networks has a smaller but still quite significant effect.

A one standard deviation increase in the number of phone lines increases economic growth by 2.6-3.1 percent. But such an increase is very large, going from the level of Indonesia (51 main lines per 1,000 workers) to that of Japan (with very nearly one line per worker). A similar one standard deviation rise in power generation increases growth rates by 1.7 percent, while for roads and railways growth is enhanced by 1.4 percent. As for telecommunications, the necessary increases in capacity and investments are very large indeed.

Overall, if all Latin American countries were to catch up with the region's leader in terms of infrastructure quantity, there would be gains of between 1.1 and 4.8 percent in annual growth. Catching up with the median index for East Asia would imply increases of 3.2 to 6.3 percent, but in all cases very large investments would be needed. Finally, we should note that such increases in the rate of economic growth should help to raise the income of the poor by more than the current average, making infrastructure development a high priority for poverty reduction.

Logistics costs, inventories and their influence on competitiveness and growth.
Assessing the value of increased inventories-and of its adverse impact on competitiveness- made necessary by poor infrastructure gives us an indication of the benefits of increased growth and competitiveness if they can be reduced. At present, inventories in the region are about three times the OECD average.

We have already seen that the high levels of stockholding, at typical developing country private sector interest rates of 15-20 percent, represent a cost of about 2 percent of GDP to the economy as a whole. The implications of this are significant: for a poor country, whose infrastructure stock is valued in the range of 2 percent of GDP, eliminating the excess inventories would finance an increase of 50 to 100 percent of its infrastructure stock.

Individual firms would also benefit greatly. Halving inventories would reduce unit costs by over 20 percent, increasing competitiveness, demand and employment. Actual benefits may be even greater, as improved logistics may make some previously impossible transactions feasible, and additional costs incurred to offset infrastructure failings would no longer be necessary.

Potential benefits of trade facilitation and its impact on competitiveness and growth

Trade facilitation is largely determined by public sector policies and related services and infrastructure. Its relationship with trade flows is unambiguous and four principal indicators of its performance can be identified: port efficiency, customs environment, regulatory environment and service sector infrastructure. While there is no standard definition of the term, the concept of trade facilitation has in recent times been broadened from direct physical and customs formalities considerations to include the wider environment in which trade transactions take place.

Latin America is well below global best practice in these various areas, so considerable improvements are possible. By way of reference when looking at the effect of the various infrastructure factors, it is estimated that a 1 percent reduction in average tariffs would increase trade by 1.1 percent, while a 1 percent (80 km) reduction in distance to market would give a 1.3 percent increase in trade.

Improved port efficiency has a positive effect on trade, and more so for exports than imports. The customs environment has a positive effect on trade for importing countries, although the effect is smaller than that of tariffs. An improved regulatory environment is also beneficial, again more so for exports than imports. Better service sector infrastructure has a similar, though larger, effect: for exporters; this has the largest influence of any trade facilitation measure.

Although dramatic improvements in infrastructure can take place, they are expensive and take time. We have undertaken a global study which looked at bringing below-average countries half-way to the average of all countries. As we have seen, various infrastructure improvements will result in economic benefits, some more for exporters and some for importers. Each country's unilateral changes will have a direct impact, but there will also be an impact of reforms undertaken by other trading partners.

For the 75 below-average countries, the overall impacts of the various improvements are substantial: an increase in trade between the countries of about $377 billion, or 9.7 percent. $107bn is from port efficiency improvements and $33bn from a better customs environment. Improving the regulatory environment accounts for a further $83bn, but the largest gain ($154bn) comes from better service sector infrastructure.

These improvements do not accrue equally to all developing regions. South Asia gets the largest share – 40.3 percent – while Latin America is in fourth place with 20 percent. Nevertheless, these are still very substantial increases. Mexico's export gain would be $17.3bn, the largest in the region, and Paraguay would have a net gain of nearly 75 percent. But the impact everywhere is indeed dramatic.

Solutions/recommendations

We have three recommendations to achieve a significant reduction in logistic costs and consequently on the improvement of competitiveness.

1 – Latin America needs to spend more and better on infrastructure

Countries in the region currently spend only 2 percent of GDP on infrastructure, but 3-6 percent is needed to keep pace with countries such as China or Korea. The costs of this have to be borne primarily by the users (with a safety net for some) and secondary by the taxpayer.

Not only must more money be spent, but it must be spent more wisely, avoiding costly prestige or "white elephant" projects. Investments should be focused on increasing productivity and competitiveness and there is no reason why this should conflict with social goals. Implementing social tariffs will take care of social issues. The most important concern when it comes to infrastructure investment in Latin America is project selection. Selecting projects with the largest impact is critical, thus it is crucial that countries set up institutions capable of doing adequate planning, cost-benefit analysis and ongoing monitoring and evaluation.

Two projects funded by the World Bank illustrate how proper evaluation should be done. The first relates to rehabilitation and maintenance of two sectors of road in Bolivia. For a total cost of $23.4 million, benefits of $45 million would accrue and the net present value is calculated as $21.7 million (at a 12 percent discount rate). The project would reduce transport costs in a number of ways: by reducing vehicle operation, accident and travel time costs, removing physical constraints to travel both within the country and to Argentina and Chile and allowing more reliable and safer transport services to be run. A sensitivity analysis showed the project was still perfectly viable if costs rose by 20 percent and benefits were 20 percent lower; it reached breakeven only for much more pessimistic assumptions.

The second project was for maintenance of Mexico's federal highways. This would reduce costs by lowering vehicle operating and travel time costs, and also keep the road network in good condition in an efficient and sustainable way. Benefits of $612 million were calculated for a total cost of $77 million. When an initial survey was done in 2001, 57 percent of roads were classified as being in good or fair condition; by 2004 successful implementation of the maintenance program had increased this to 75 percent. A sensitivity analysis showed the benefits to be very robust.

2 – Latin America needs to adopt policies aimed at improving the efficiency of service logistics providers

Not only are physical infrastructure improvements needed, but they must be accompanied by effective and appropriate regulation. The ultimate aim of better regulation is to foster private sector investment to provide a range of efficient infrastructure and logistics services. Although the monetary costs of regulatory changes are low, the political barriers can be quite high.

An estimate has been made of the effect of reducing logistics costs in Peru from 34 to 20 percent of product value. This would increase both demand and employment in a range of industries. For example, the agricultural industry was projected to see demand increase by 12 percent and employment by 6 percent. For the leather and shoe industry, the corresponding figures are 18 percent and 15 percent. If such reforms added 1 percent to the annual growth rate, this would generate an additional $800 million each year. However, large as the benefits are, the true costs are difficult to assess.

3 – Latin American countries need to adopt policies and services to facilitate trade
In particular, they need to (i) strengthen the institutions that promote trade facilitation; (ii) support the internationalization of national firms (helping them develop new markets and become globally competitive), (iii) implement effective multimodality laws, providing in particular insurance across modes and the use of a single bill of landing; (iv) improve access areas to ports and connections to the other transport modes ; and (v) facilitate the development and offer of associated service such as transport services, testing, cooling services, logistic terminals/dry ports.

Such reforms are of relatively low cost, as they relate to policy and regulatory issues. Benefits are therefore likely to outweigh costs.

There are a number of specific areas for improvement. Capacity building in trade facilitation includes the creation or strengthening of an export development corporation, the reduction of administrative costs and fostering the flow of information which will allow local firms to achieve success in foreign markets. Latin American companies also need support to modernize their processes to allow them to compete effectively in global markets.

Creation of National Logistics Councils to bring together public and private sectors would help communication and understanding between the various players. Focusing on modernizing and streamlining customs procedures would allow the development of a system which facilitates rather than obstructs trade. Further help would be provided by passing comprehensive multimodality laws which would permit the use of a single bill of lading and simplified insurance. On the physical infrastructure side, well integrated access to ports would also reduce unnecessary problems and delays. This approach should be extended to provision of a comprehensive and coherent supply of logistics services, including cold chain facilities, logistics depots etc. Finally, to improve border crossings and ease trade between neighboring countries, regional trade facilitation committees should be set up.

Quantifying benefit-cost ratios for these proposals is complex, but all three identified areas are quite promising and suggest high impact. In particular, those involving institutional reform have a very low monetary cost, but are often held back because of political difficulties. Indicative figures for internal rate of return, together with qualitative rankings are:

- More and better investment in infrastructure – 25-50 percent (medium/high)
- Policies to improve the efficiency of logistics service providers – more than 50 percent (high)
- Policies to improve trade facilitation – more than 50 percent (very high)