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CONTENTS

T RADE, TRANSPORT COSTS AND REGIONAL DISPARITIES: WHY DOES IT MATTER?	5
<i>Mauricio Mesquita Moreira and Juan Blyde</i>	

A RTICLES	9
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<i>Some Empirical Results from Economic Geography and their Regional Policy Implications: The European Experience</i>	11
<i>Pierre-Philippe Combes</i>	

<i>Trade, Proximity and Growth: The Impact of Economic Integration on Mexico's Regional Disparities</i>	19
<i>Javier Sánchez Reaza</i>	

<i>Internal Transport Infrastructure in Argentina and its Impacts on Provincial Exports</i>	33
<i>María F. Granato and Pedro E. Moncarz</i>	

<i>Freight Logistics in Latin America and The Caribbean: An Agenda to Improve Performance</i>	57
<i>José A. Barbero</i>	

S LECTION FROM THE CALL FOR PAPERS: "PHYSICAL INTEGRATION FOR THE INTERNATIONAL INSERTION AND REGIONAL CONNECTIVITY OF LATIN AMERICA AND THE CARIBBEAN"	65
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<i>"Hard" Infrastructure and Regional Connectivity in Latin America and the Caribbean: Developments in the Region's Land-Locked Economies</i>	67
<i>Andy Thorpe and Faye Sizeland</i>	

<i>Brazilian Regions' Trade in MERCOSUR: An Analysis of Comparative Advantages</i>	81
<i>Paulo R. Feistel and Álvaro Barrantes Hidalgo</i>	



I NTERVIEWS	91
<i>Panel Interviews about Regional Disparities, Infrastructure, and Export Competitiveness</i>	93
<i>Argentina: Oscar Guardianelli and Gerardo Juárez</i>	97
<i>Brazil: Edeon Vaz Ferreira</i>	103
<i>Colombia: Saúl Pineda Hoyos</i>	105
<i>Mexico: Luz María de la Mora</i>	111
S TATISTICS	123
B OOKS AND ESSAYS REVIEWS	133
<i>La vida y la época de Raúl Prebisch, 1901-1986</i>	135
<i>Daniel Sotelsek</i>	
<i>Una región en construcción. UNASUR y la integración en América del Sur</i>	139
<i>Francisco J. Verdes-Montenegro Escáñez</i>	
<i>La Unión Europea como modelo de integración: análisis comparativo del Sistema de la Integración Centroamericana</i>	141
<i>Carlos Jiménez Piernas</i>	

TRADE, TRANSPORT COSTS AND REGIONAL DISPARITIES: **Why does it matter?**

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In a seminal paper, published more than a decade ago, Krugman and Elizondo (1996) argued “When economists discuss such issues as trade policies in developing countries, they generally pay little attention to the effects of such policies on the internal economic geography of those countries.” That was certainly true for Latin America and the Caribbean (LAC) then and, unfortunately, that continues to be true for Latin America and the Caribbean today, with a few exceptions that confirm the rule.

Since the region opened up its economy in the late 80s and early 90s, plenty of ink has been spilt and a mass of numbers have been crunched to assess the impact of trade liberalization -be that unilateral, regional or multilateral- on issues such as mark-ups, productivity and income/wage inequalities. Yet, despite the countries’ poor record in ensuring that the benefits of growth are spread evenly across their regions, research devoted to understand how the new trade regime interacts with the prevailing regional disparities has clearly been scarce.

True, unlike the impact of trade on productivity or wage inequalities, the relationship between trade and regional disparities cannot count on a unified theory or a solid body of empirical evidence. Moreover, the challenge of doing research on this issue was made worse by another of the trade economists’ costly attention

gaps: transport costs. The profession has traditionally treated these costs as a nuisance; something that could be assumed away without consequence for the analysis of trade impacts and related policy recommendations. This could be considered a reasonable attitude in a world where tariffs and non-tariff barriers are high or even prohibitive. This is no longer the case. Not only tariffs came down in every corner of the globe, but the growing fragmentation of production, with the multiplication of the so-called global value chains, have raised the economic and strategic importance of logistical costs. These days, one can hardly understand and assess the impact of trade and investment flows around the world, without a good grasp of the nature and magnitude of these costs.

As we have argued elsewhere (Moreira, Volpe and Blyde, 2008), this radical shift in the relative importance of transport costs is particularly important for LAC for at least two reasons: LAC’s comparative advantage is heavily biased toward transport-intensive goods, be that because of its rich endowment of natural resources (i.e. export of “heavy” and perishable goods) or because of its proximity to the large US and EU markets (i.e. advantages in the export of heavy and time-sensitive goods). So the ability to measure, assess the impact and devise policies to minimize transport costs is crucial for policy makers to maximize the region’s presence in the world markets and its gains from trade.

But that is not all. This ability is also important to allow a better understanding of how trade impacts the internal economic geography of countries in the region. By definition, there are neither tariffs nor non-tariff barriers in a behind-border environment. Therefore, domestic transport costs are likely to be by far the major trade costs that stand between the producer of a good in a certain region of a country and the export routes and ports connecting to regional and world markets. Without having a good grasp of the impact of these costs and the policies to address them, it would be virtually impossible to say something meaningful about the trade and regional disparities nexus.

ADDRESSING THE CHALLENGE

Although considerable, the theoretical and empirical difficulties involved in addressing this research agenda are not insurmountable. The theoretical work that has been done in economic geography in the last decades has given economists a number of insights and useful analytical tools to address this issue. We cannot say *a priori* whether or not trade is a factor leading to the concentration of economic activity across regions -neither the models produce unambiguous results nor the evidence is conclusive (see e.g. Europe experience)- yet we have today a better understanding of the mechanisms through which trade may affect the distribution of economic activity across space disparities.

A key, unifying feature that comes out of virtually every model in this literature is the role played by trade costs in general, and transport costs in particular. For example, the typical model in this literature (see, e.g. Krugman and Elizondo, 1996) shows that due to transport costs, firms in relatively closed economies tend to choose production sites with good access to consumers and to other firms. Concentration of economic activity then arises as a self-reinforcing process of agglomeration: firms are willing to pay a wage premium in order to locate in a larger city precisely because so many other firms are concentrated there. At the same time, workers may face high land rents or congestion costs, but these costs are partly offset by better access to the goods and services produced in the city. In these models, when the economy opens to international trade the forces pulling factors to the large city lose steam. Firms start selling to the world market

and get some of their inputs from that market as well. Therefore, the wage premium they are willing to pay to be in the large city falls as the domestic market loses its importance. Likewise, workers are less willing to accept high land or congestion costs to be in the large city as some of the consumption they now get come from imported goods. All these led to a process of dispersion away from the large metropolis. Economies of scale are also a powerful element. Again, firms producing for world markets can still ripe this benefit with no need of being close to an already congested area. They may choose an appropriate location in the hinterland to the extent that they have access to adequate infrastructure and reduced transport costs.

While the theory is very stylized, it provides the main ingredients of the factors at work, namely the interplay between centripetal forces (forces that induce agglomeration) and centrifugal forces (forces that induce dispersion). Whether or not trade will increase or reduce regional disparities depends on how trade costs modify the tug of war between these forces. Of course, the reality on the ground can be more complex and the final outcome might depend on the relative strength of these forces which may vary from country to country. Nevertheless, some early empirical analyses seem to support the predictions of the theory. Hanson (1998), for example, show that trade opening in Mexico led to a break in the production belt around México City and to the formation of industrial developments in the north of the country.

The question, of course, is whether this result can be generalized. Can we say unequivocally that trade and integration in LAC is likely to promote regional convergence? Is it feasible to isolate and assess the impact of trade variables from other factors that are constantly shaping the location of economic activity in the territory? Can the theory provide more nuances regarding this relationship? What is the more recent empirical evidence for Mexico and for other countries in LAC?

The Inter-American Development Bank (IDB) has launched a research project to delve into this complex relationship between trade and regional convergence with a focus on the role of transport costs. Working at the country level, the project's intended contribution focus, *first*, on documenting and quantifying the impact of those costs on the ability of regions within countries to trade with the rest of the world. *Second*, on identifying

the determinants of those costs and, *finally*, on making concrete policy recommendation on how to minimize them. The report, to be published during the first semester of 2011, is part of the Bank's research agenda on trade and integration devoted to help countries identify and deal with trade obstacles that in many cases take the form of bottlenecks behind borders.

This issue of the *Integration and Trade Journal* is part of this effort to address this agenda and is devoted to examine the relationship between trade, regional disparities and transport costs through a series of contributions, in articles and interviews, from experts in the field.

GATHERING CONTRIBUTIONS

The first article, written by Pierre-Philippe Combes, presents a succinct but thorough revision of the empirical literature on economic geography. Combes puts in blunt language the state of the field when indicating that the "glass is still half-empty". For instance, robust empirical findings are scarce and a number of theoretical issues have not been corroborated by empirical analysis yet. In essence, this article calls for a cautious approach by policy makers regarding regional policies and for further advances in the empirical arena particularly in areas in which results are still not reliable. Yet, Combes unveils a series of facts in economic geography that are robust and discusses how some regional policy implications can be derived from them.

Focused on the Latin-American reality, the second article written by Javier Sánchez-Reaza addresses the impact of economic integration on regional disparities in Mexico. Sánchez-Reaza presents a detailed account of the various regional convergence and divergence trends in Mexico through different periods of time and their relationship with the structural transformation of the country from a relatively closed to an open economy. The author confirms earlier results that trade opening brought a significant change in the concentration of economic activity away from Mexico City in the center of the country to the northern states. Yet, he notes that this process also led to an increase in the regional disparities that already existed between the northern and the southern (and much poorer) states of the country. Sánchez-Reaza acknowledges that part

of the problem is the lack of access of the southern states to the relevant markets in the north (the U.S. and Canada); therefore, a better provision of transport infrastructure is important to reduce this deficiency. To be effective, however, the author calls for a broader regional policy that does not stop on infrastructure but also includes other factors that may help attract more human and physical capital and to promote innovation.

A third article, written by María F. Granato and Pedro E. Moncarz, delves further into the relationship between regional exports and domestic transport infrastructure by examining the case of Argentina. The authors present a series of interesting facts about the correlation between domestic transport costs and regional disparities. For instance, they show how the origin of exports is strongly concentrated in the center-east of the country, not far from the main shipping locations, which also "happens" to exhibit the most dense transportation infrastructure, built around the main ports. The authors also carry out a series of simple but insightful exercises to illustrate how improvements in the transport infrastructure may favor relatively more the remote regions of the country located in the extremes north and south. This result shows once again that connectivity is fundamental particularly for lagged regions to take better advantage of the gains from international trade.

Once the importance of improving transportation and connectivity is established, particularly from a regional perspective, one should look at what are most significant transportation deficiencies in the region and how they can be reduced. This is exactly what José Barbero addresses in his article about freight logistics in Latin America and the Caribbean. The author presents a very illuminating summary of the main logistic problems facing the region including not only the physical infrastructure, such as roads, rail or ports, but also the performance of the industry. He then delineates an agenda to address the problems establishing clear priorities for action.

These findings are echoed in the articles selected from the *Integration & Trade Call for Papers* on "Physical Integration for the International Integration and Regional Connectivity of Latin America and the Caribbean". Andy Thorpe and Faye Sizeland's article examines LAC's infrastructure gap with a focus on land-locked countries. They argue that in cases such as Bolivia and Paraguay, the transport

infrastructure deficit is even more severe, especially in road and air infrastructure. The authors remind us that an efficient transport infrastructure requires not only new projects where they are needed, but also sufficient funds for maintenance.

While the transport infrastructure is the main channel connecting regional development and international trade in most of the articles presented, it is clear that the regions ability to benefit from trade also depend on other factors, not least of which their comparative advantages. With this perspective in mind, the article by Paulo Ricardo Feistel and Álvaro Barrantes Hidalgo examine the regional exports of Brazil to MERCOSUR in terms of factor intensity. Beyond specific findings suggesting the potential existence of trade diversion in MERCOSUR, the article touches tangentially on a point raised by Sánchez-Reaza that the issue of trade, infrastructure and regional development should be thought in conjunction with other factors determining regional comparative advantages.

The articles are complemented with *interviews to practitioners* in the field facing everyday challenges in terms of logistics, trade facilitation and transportation in the region. The interviews made to Oscar Guardianelli

and Gerardo Juárez in Argentina (ProCórdoba), Edeon Vaz Ferreira in Brazil (APROSOJA), Saúl Pineda in Colombia (Universidad del Rosario) and Luz María de la Mora in Mexico (LmmConsulting), provide some real life experiences and perspectives about the difficulties and opportunities in these areas and contribute to the identification of current problems and policy needs in different geographical areas within the region.

Within the regular *Statistics* section on integration and trade figures, some highlights and several graphs on transport costs are provided, to further reflect the dynamics in terms of productivity, and export competitiveness.

Lastly, this issue incorporates a new section on *Book and Essays Reviews* that compiles a selection resulting from the several works submitted since the posting of the Call, which addressed, on this occasion, the topic of regional integration and climate change.

In summary, the articles in the Journal, together with the insights from the interviews and statistics, aim to provide a useful material to help policymakers, practitioners and specialists alike to cut through the complex web of interactions between transport costs, regional disparities and international trade. ♦

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Articles

SOME EMPIRICAL RESULTS FROM ECONOMIC GEOGRAPHY AND THEIR REGIONAL POLICY IMPLICATIONS: THE EUROPEAN EXPERIENCE

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Some empirical results considered to be the most robust by economic geographers are presented here: economic density increases regional productivity; people in dense regions are more skilled; high market potential also improves regional productivity. After commenting on the correct interpretation of these findings, we show how certain regional policy implications can be derived from this. Typically, productivity could be increased by making cities larger. However little is known on how to change workers and firms incentives to locate there. Furthermore, this could be at the expense of productivity in other places, and the optimal number of large cities in an economy has not been assessed empirically yet. Similar conclusions are reached for market potential. An important difference is that the positive effect of higher market potential on productivity can also be achieved through a reduction in trade costs. Finally, it is difficult to derive policy implications from the over representation of skilled people in cities as long as it is not empirically shown whether cities make ex-ante identical people more skilled, which would also advocate in favour of larger cities, or if ex-ante more skilled people are simply more attracted by cities. The paper concludes by stressing the need for further empirical research oriented towards regional policy objectives.

INTRODUCTION

At least two reasons make 2008 an important year for economic geography. The Nobel Prize attributed to Paul Krugman validated the homogenous and consistent theoretical body of literature he initiated, the so-called “new economic geography”, which deals with the agglomeration and dispersion forces that drive economic activities to distribute unevenly over space. The empirical counterpart to this literature remains tiny. But the 2009 World Bank development report (World Bank, 2009) stresses the empirical relevance of the questions that economic geography tackles. And

significant progress on the empirical side has been made over recent years thanks to both a much improved access to individual (firms and workers) geolocalised data sets and a stronger will to improve the link between empirical strategies and theory. Some empirical results, considered as the most robust by economic geographers, are presented and commented: economic density increases regional productivity; people in dense regions are more skilled; high market potential, and therefore lower trade costs, improve regional productivity. We discuss the extent to which policy implications can be derived from such conclusions.

THE GAINS FROM SPATIAL CONCENTRATION

The gains from spatial concentration have been discussed at least since Marshall (1890). He lists the improved local circulation of knowledge and innovations, the possibility of building a thick local labour market where both firms and employees gain from more efficient matches, and the sharing of specialised intermediate inputs, to which could be added the proximity to final goods market in the presence of increasing returns to scale and trade costs. Researchers have long tried to quantify the productivity gains associated with these three families of effects. The issue is trickier than might first appear because of two important issues specific to the empirics of economic geography. Fundamentally, problems arise because location choices are endogenous, which creates reverse causality and selection issues. *Firstly*, this means that a larger region might increase productivity, which is what we want to measure, but also that higher productivity might attract more firms and workers, thus making the region larger and so reversing the causality. *Secondly*, the spatial mobility of agents depends on some of their characteristics that are correlated with their productivity. Typically, in modern economies, skilled people are more mobile than unskilled ones. If workers are attracted by more productive regions, these regions will appear even more productive, possibly not because they generate agglomeration economies but because they select people who are more productive.

Fortunately, the use of individual panel data and instrumental econometric techniques allows the researchers to circumvent, at least partially, these two sources of bias. The accepted result for Western countries is that doubling the density of economic activities increases productivity by around 2%. This figure is lower than estimates that do not control for the reverse causality and selection biases, but it remains significantly positive. Typically, density gaps between regions can easily be of a factor of more than 3 for population, and closer to 10 for employment. For instance, the population density ratio between the third and the first quartiles is 5.9 for US counties, 3.0 for French employment areas, 4.0 for Chinese cities and, although not directly comparable because computed at larger geographical scales, 5.7 for Argentine jurisdictions and 19.3 for Brazilian States. With an estimated density impact of a 2% rise in productivity for a doubling in density, this means that a worker moving from a location in the first quartile of density to a location in the third quartile would experience

a productivity gain, due solely to the presence of agglomeration economies, of 5.5%, 3.3%, 4.3%, 5.3%, and 9.3% in the US, France, China, Argentina and Brazil, respectively. For China, since the estimated density impact is actually around 7%, a much higher level than the 2% obtained for Western countries, the figure is really closer to 16%. It would be all the most interesting to estimate the density impact in Latin America countries to obtain the real productivity gains associated with agglomeration there.

The direct policy implication of the presence of agglomeration economies is that increasing regional economic density increases the productivity of firms and workers. The big question is how policy-makers can give workers more incentives to agglomerate in already large and dense areas. Workers compare their real wages and not their nominal wages between locations. Even when the latter are high due to higher productivity, the former could be lower due to higher housing costs or perceived negative externalities such as pollution, criminality, and so on. However, estimations show that workers are indeed attracted by dense areas, increasing the density impact on productivity through the reverse causality effect, by roughly 0.5 percentage point. Nevertheless, increasing density even more would produce further productivity gains. If displacing workers and firms is not considered as an implementable solution, one should appeal to endogenous market incentives to move economic activities to dense regions. However, although we are able to control for reverse causality in the estimations, the relationship between workers' and firms' location choices and the characteristics of the region has not been estimated yet. This means that the tools that could allow policy-makers to attract more activities to larger regions are not yet characterised in a framework consistent with the estimation of agglomeration economies. One can reasonably imagine that economic agents are sensitive to housing and land prices, which would mean that changing the land use legislation would be a useful tool to influence regional density. From the academic point of view this remains a hypothesis and very little has been seriously quantified.

The estimation of agglomeration economies also implicitly assumes that the degree of congestion of local infrastructure remains unchanged when density increases. This means that infrastructure development has to take place simultaneously with the increase in regional density. Typically, local transport infrastructure, schools, health services, etc. have to be built. While such costs could obviously be covered by

taxes on productivity gains (and are netted out of the above estimates of the density impact), the current empirical economic geography literature has little to say about how this can be implemented concretely and the effort it represents. In other words, 2% is only a net gain, corresponding to a $x+2\%$ gross gain and a $x\%$ loss due to increased congestion. Whether x is large or small, which is not assessed by the literature yet, makes a difference to the magnitude of the tax policy to be implemented simultaneously with the local density increase. Another important question for policy-makers relates to which industry, or which category of workers, most benefit from density economies. This would allow policy-makers to explore questions about possible redistributive effects of further concentrating the economy. Surprisingly enough, the literature rarely estimates the density impact for each industry or worker type separately, although the technique used could easily achieve this.

OPTIMAL REGIONAL SIZE

The estimation of agglomeration economies assumes a single log-linear effect of density on productivity. When estimated positive at 2%, this implies that having a single region where all economic activities locate would maximize productivity. It is not very realistic and has to be qualified from both the theoretical and empirical perspectives. The theoretical literature on systems of cities shows that there is an optimal size for any city, and then an optimal number of cities in the economy, generally different from one. This is because city size increases productivity at a decreasing marginal rate, due to increasing congestion effects. A maximal productivity level is reached and then productivity declines with city size. Au and Henderson (2006), who study Chinese cities, is one of the unfortunately rare contributions to examine these questions and attempt to estimate what the optimal city size is in real economies. These authors find that the impact of city size on productivity is indeed bell-shaped, which implies the existence of an optimal size for any city. Surprisingly for the common sense, these authors conclude that Chinese cities are in general too small to maximise productivity. Between 50 and 60% of the cities have a size significantly below the productivity peak, while only few cities are significantly above. Among the cities that are too small, the median productivity loss is modest, around 17%. However, it reaches 28% at the first quartile and at least 69% for

10% of the cities. Clearly, the migration restrictions that have been present over long periods in this country are one possible explanation for such a result. Given the higher productivity in cities, wages should be higher there, which should not be fully offset by higher goods and land prices. Chinese policy-makers therefore possess a relatively natural policy tool that simply consists in letting workers migrate more. However, even if such migrations go in the right direction, we should not forget that the market outcome rarely corresponds to the social optimum. The question of how to reach this optimum, i.e. induce a higher level of migration than that obtained through market forces, remains.

A last issue regards the impact on other regions of increasing the size of a given region. In the absence of immigration from outside the country or an increase in fertility rates, growth in one region's population can only arise at the expense of other regions. If density and therefore productivity increase in one region, they must both decrease elsewhere. This means that the optimal policy for one region may be different to the optimal policy at the national level, a standard policy issue when studying regional policies. Therefore, over and above the optimal size of each region, policy-makers face the question of the optimal total number of large regions in a country. Although this has been largely studied from the theoretical point of view, there is, to the best of our knowledge, no empirical assessment of this issue. The difficulty lies in the fact that current empirical strategies consider each region as a separate object of investigation and do not take into account much of the rest of the economy. The productivity of a region depends solely on the characteristics of that same region and not on those of other regions (apart from the market potential variable, which is further discussed below). In the absence of a general equilibrium model of inter-regional trade whereby all regions would be interdependent, increasing the density in one region does not result in any effect in other regions, which is clearly an important assumption for the study of regional policies.

The impact of density/overall size of regions on productivity is both the most studied question in empirical economic geography and also the most robust to variants in the data set used and the empirical strategy chosen. Another fairly systematic result regards the positive effect of local specialisation (the share of a given industry in the local economy) on productivity. Typically, increasing the share of an industry in a region by 10% increases productivity by

0.2%. In France, this can reach 0.4% in sectors such as high-tech or business services. The direct policy implication is therefore the same as before, but now at the industry level. Increasing the local share of a given industry would increase the productivity of its firms and workers. The same problems arise, however. The question of how to increase specialisation is not addressed. Neither is the question of the optimal number of regions where this industry should be largely present. However, unlike overall density, specialisation can be increased in one region without necessarily detracting from another. Indeed, each region can be specialised in a different industry. Conversely, another issue, negative this time, is specific to specialisation: the possible hysteresis effect. Some researchers hypothesise that specialisation could have a positive impact on productivity during periods of national expansion of the industry, but a negative impact when the industry contracts. In this case, the optimal policy would depend on the period when it is applied, which can create time inconsistency: increasing specialisation would be efficient in the short-run but induce losses due to higher costs of reconverting the local economy over the long term, for example.

CITIES AND SKILLS

Up until recently, researchers were estimating productivity gains from density almost twice as large as the 2% mentioned above. The reason is that they were using data aggregated by spatial units. This makes it difficult to properly control for the characteristics of the local labour force. Combes, Duranton and Gobillon (2008) show that people are more skilled and able in dense regions. When this is not controlled for, the impact of density captures not only the effect of agglomeration economies, but also the fact that people's abilities are higher in denser areas. In other words, instead of comparing the productivity of two identical persons in two different locations, one denser than the other, these previous estimations compared the productivity in two different locations of two different persons, one more skilled than the other. The correct reading of the impact of density on productivity is the following. Doubling employment density increases the productivity of any worker by 2%, independently of the local composition of the regional labour force and for given characteristics of this worker. Now, on aggregate grounds, when one doubles the density in

a region, one can simultaneously match the current regional skills composition, and the gain is 2% for all workers in the region. But one can also match the skills composition of the regions that are twice as large, biased towards higher skills. In this case, the total effect of density has to be used, that is to say not only the 2% corresponding to the direct effect, but also the extra aggregate productivity increase due to the presence of more skilled workers in the denser regions. Studies show that the resulting total increase of the regional average productivity is around 4%.

Another important issue does not have any empirical answer yet. Why are people in dense areas more skilled? Are they initially and intrinsically more skilled and then they move at some point in their life to dense areas? This could occur for instance because this type of worker is more attracted by the goods available there, typically cultural and leisure amenities, or because they attended the best universities, which are also located there. Or do dense areas themselves make workers become more skilled and able, through stronger learning effects taking place there, as modelled by Glaeser (1999), for instance? Answering these questions would be useful to policy-makers. Typically, in the first case, the real gains from density correspond to the 2% mentioned above, since the further productivity advantage due to the fact that people are more skilled would exist in any location. In the second case, there is a 2% direct effect of density on productivity and an indirect effect of similar magnitude due to faster learning in dense areas, the overall effect of a doubling in density really being a 4% increase in productivity.

Two further comments are worth mentioning. *First*, it is also generally shown that skilled people exert a positive externality on other workers, for instance because they are also more capable of capturing and transmitting knowledge externalities. Therefore, even in the case where higher skills in dense regions do not result from density but only from the fact that skilled people are attracted by certain amenities that are over-represented in these regions, there is a further positive effect of density. *Second*, it follows from both this last effect and the possible stronger learning in denser regions that policy-makers would like to increase not only density but also the share of skilled people in dense areas. Unfortunately, as said above, the determinants of workers' location choices have not been characterized in a setting consistent with the one in which agglomeration economies are estimated. This is even less true for the particular category of the most skilled workers. So the

literature does not quantify the tools that policy-makers could use to attract more workers, and specifically more skilled workers, to dense regions.

MARKET POTENTIAL AND THE ROLE OF TRADE INTEGRATION

The empirical literature on the determinants of regional productivity has long ignored the role of the location of the region within the larger economic system, the country or the continent. One of the contributions of new economic geography is to stress the fact that trading possibilities make economic outcome in all regions inter-related. Casual observation shows that dense regions are often surrounded by other dense regions. If a region benefits from its own density, it is also reasonable to imagine, given the ease of economic interactions between neighbouring regions, that the density of one region could have a positive impact on its neighbour's productivity. Conversely, non-dense regions benefit neither from their own density nor from spillovers from their neighbouring regions, which have a higher probability of being not dense. Ignoring such a spatial autocorrelation of density, and assuming regional productivity to be a function solely of its own characteristics and not those of its neighbours was a strong assumption that has been relaxed recently by considering market potential variables in econometric specifications.

Market potential is a notion that dates back to Harris (1954). The intuition is straightforward. Market potential is the sum of the size of the regions other than the one considered, discounted by the distance between the region of interest and the others. It tells whether a region is close or faraway to other large regions (or dense ones, if density is the property of interest). One expects such a market potential variable to have a positive impact on productivity for exactly the same reasons as own regional density. Economic characteristics present in neighbouring regions might have the same effect as own regional characteristics that generate agglomeration economies. This would operate through trade and communication interactions between regions, even if the intensity of the effect should clearly decrease with distance, due to the presence of trade and communication costs. This is what market potential captures. A positive effect of market potential on regional productivity is systematically estimated. As for density, however,

such a conclusion raises many methodological issues related to the reverse causality and spatial selection we discussed above. They are solved using the same econometric tools. Once these biases are controlled for, the typical elasticity of productivity with respect to market potential is found to be of similar magnitude, though slightly larger, as the one for density, typically 3% for a doubling of market potential.

The question then arises for policy-makers of how to increase market potential in a region. There are only two possibilities. *The first is* to increase the size/density of nearby regions. Given that market potential and density impacts are similar, the regional productivity increase is similar when density in the own region increases or when it increases in all other regions by the same amount. Apart from the fact that the former strategy seems to be easier to implement, increasing market potential by changing regional densities is plagued by the same problems as own region density. As long as the determinants of households' and firms' location choices are not characterised simultaneously with the estimate of agglomeration economies, it is difficult to assess which tools policy-makers can use to change the density of neighbouring areas. Moreover, beyond productivity gains in a given region, policy-makers would have to assess the overall effect of their strategy, i.e. its impact on other regions. Typically, increasing market potential in one region may mean decreasing it in others, those nearby regions from where the population comes. However, if one could succeed in increasing density in all regions simultaneously, typically by attracting population from outside the economy, then all regions would benefit from both the own density and the market potential effects.

There is a second way to increase market potential. A direct implication of the positive effect of market potential is that better trade integration increases productivity. Reducing trade costs is equivalent to reducing distance between regions, and therefore increasing market potential. Many components enter trade costs, typically transport costs, information costs and trade policies. We can imagine policy-makers having the means to affect transport costs, typically by building transport infrastructure. *First*, the cost of building this infrastructure is again not captured in the estimated effect of market potential, and should be subtracted from productivity gains, like any cost of reducing other components of trade costs. *Second*, some elements of transport costs, such as the cost of energy, are only partly under the control of policy-makers, through the

corresponding taxes, but not the raw energy price. An increase in transport costs in the future might be envisaged if the cost of energy increases a lot, which would decrease market potential and therefore reduce productivity. Policy-makers can also play on information costs, but there are very few estimates of the share these costs represent in total trade costs. If the few estimates of the impact of migrants on trade flows are to be believed, this could be quite large, but it remains to be confirmed. Last, policy-makers can use standard trade policy tools, but they are clearly constrained by the political economy of such changes, both domestically and internationally. In any case, it would affect only the part of market potential that is external to the country but not the domestic market potential that can be crucial for large countries such as China, but also Mexico, Brazil, or Argentina in Latin America. Note also that although distance is the variable that most often enters the computation of market potential, the relationship between distance and the three determinants of trade costs we have just mentioned is not known precisely, and this would be a necessary first step in the evaluation of these types of policies. One important further issue when playing on trade costs is that this affects the location incentives of all agents, by changing the extent of competition, the prices of goods and the returns to factors. This is again one of the crucial conclusions of new economic geography models. However, the impact of market potential is usually estimated “all other things being equal”, which is rarely the case in the real world. Typically, both the own and the other regions’ densities change concurrently with the decline in trade costs. Unfortunately, the magnitude of such indirect effects is not known, since, once again, the determinants of how people and firms choose their location are not evaluated simultaneously with the density economies.

Older strategies for assessing the impact of transport infrastructure considered it as an input of the regional production function. This approach rapidly reached a dead-end, however. The most important limit is again due to the fact that it implicitly considers that agents are immobile and do not update their location choices when infrastructure changes. Since transport infrastructure clearly affects the region’s trading opportunities, it changes its specialisation pattern and the profitability of firms. Moreover, since government spending in a region changes the costs of trade with all other regions, it also affects productivity in these other regions, which is not taken into account, as the region’s productivity is considered to depend only on its own infrastructure. In this respect, considering the role of infrastructure

through its impact on a market potential variable is more consistent. Last, infrastructure investments in the real world are most often made either in expanding regions (to keep the congestion of the local transport network low), or, on the contrary, in depressed regions (to help them catch up). In either case, this creates reverse causality issues, since regional productivity is now a determinant of government spending. This reverse causality is rarely addressed.

Beyond the role of local government spending, there are, in many European countries, specific regional policies. Typically, subsidies are provided to firms that choose to locate in regions targeted by policy makers, for instance to cover part of their settlement costs. They can also benefit from tax exemption. Again, assessing the impact of such local policies is difficult, because they are often targeted at the regions or firms with the lowest productivity. This is really close to the famous example of the positive correlation found between the local number of police officers and the local level of crime, due to the fact that more police are employed in areas of higher crime. Not controlling for such a reverse causality could very well lead to the erroneous conclusion that subsidies have a negative effect on productivity. Still, even when this is properly assessed, Martin, Mayer and Mayn  ris (2008) show for instance that regional policy in France has little if any impact on local employment and productivity. For the UK, Criscuolo, Martin, Overman, and Van Reenen (2007) conclude that subsidies have a positive impact on employment and investment, but that productivity is not affected, as in France. Regional subsidies might even delay the reallocation of factors towards more efficient firms. These are pretty pessimistic conclusions regarding the possible influence of policy-makers on local development.

WHERE WE STAND

Economic geographers are conscious that the glass is still half-empty. Robust empirical conclusions remain scarce and a number of theoretical issues still have any empirical counterpart. In addition to the methodological and interpretational limits we have underlined to the estimation of the impact of density or market potential, a number of crucial concerns have not benefited from sufficient attention yet. For instance, while more and more is known about the gains from spatial concentration, very little is known

about its costs. If the ultimate objective is to evaluate the net overall benefits from agglomeration, part of the equation is still missing. In the same vein, while the empirical effect of density on efficiency benefits from much interest, equity questions raised by the spatial concentration of economic activities do not, even if theory shows that trade integration, when leading to more spatial concentration, can result in a trade-off between the two. Under-employment is largely neglected in theoretical new economic geography, and even more so on the empirical side. And yet, which country can claim not to face unemployment problems and, more importantly for us, large regional variations in unemployment rates? Finally, economists are starting to take an interest in global warming. It is surprising that economic geography has not considered it at all yet. Firms' and workers' location choices directly condition the volume of trade flows and of daily commuting, and therefore of CO₂ emissions, for instance.

On the other hand, we must bear in mind that empirical economic geography, and particularly the empirical assessment of regional policies, is a difficult

exercise, given the endogenous response of firms and workers to these policies through location choices, which in turn directly affect policy-makers' objectives and their determinants. There are few empirical results considered as robust by the profession, but sometimes "few robust" is better than "many unreliable". Thanks to the progress made in empirical economic geography strategies over recent years, it is now rarely disputed, for instance, that density and market potential increase productivity, that workers are more skilled in cities and even that regional subsidies have little impact on productivity and growth. These are already a number of facts that could raise the interest of policy-makers and perhaps change their way of thinking about regional issues. What also remains true is that the areas studied by empirical economic geography remain mainly concentrated in Europe and North America. Latin America certainly deserves more attention from empirical economic geographers, if access to data allows them to reproduce the most recent approaches. This would certainly provide many interesting insights for regional policy in this part of the world. ♦

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TRADE, PROXIMITY AND GROWTH: THE IMPACT OF ECONOMIC INTEGRATION ON MEXICO'S REGIONAL DISPARITIES

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The New Economic Geography (NEG) and its recent breakthroughs in the literature of economics have made for a better understanding of the connections between geographical space and trade. The current debate endeavors to advance our understanding of the relationship between these and growth by attempting to connect economic agglomerations to higher economic performance. This paper seeks to explore the theoretical and empirical connections between trade and agglomeration, as well as the consequences for growth and territorial inequality. The case of Mexico is used, since it has had three models of economic development and has moved from being a closed to an open economy. Trade seems to be linked to an increase in regional disparities in Mexico after the reorientation of its most relevant market toward its northern neighbor. The paper suggests there are grounds for approaching regional policy as a vehicle to integrate sectoral policies that could lead to unforeseen consequences. It also suggests that, while the limits on regional policy are to be found in the importance of autonomous regional institutions regions in the institutional fabric of governance, such policy is nevertheless desirable for reasons of equality and efficiency.

INTRODUCTION

One of the most important, but also one of longest-standing arguments in economics is the influence of trade on economic growth. The latest literature suggests that the connection

between the two lies in geographical aspects such as market proximity. When a country switches from autarky to free trade and joins the larger world market, the territorial effects are profound. The case of Mexico is unique in this regard. After setting out the theoretical and historical aspects of the Mexican

* The opinions expressed herein are those of the author and do not necessarily reflect the official position of the OECD or its member countries.

case, this paper seeks to present the various different trends in regional convergence and divergence in the country at different periods. It also sets out the structural changes in the determining factors of economic growth, which have been influenced by changing development models. Last, it discusses the logic and scope of a regional policy.

TRADE, LOCATION, AND GROWTH: THE EVOLUTION OF THE LITERATURE

TRADITIONAL THEORIES OF INTERNATIONAL TRADE

Traditional theories emphasize the importance of trade in creating benefits for nations. Neo-classical models do not, however, deal with the possible spatial implications of free trade. More recently, the New Economic Geography (NEG) has argued that the benefits of trade may be concentrated in a few places or dispersed to different regions or countries, depending on levels of transportation costs, and the forces of agglomeration and dispersion of the economic activity. This paper looks at the case of Mexico to explore these theoretical ideas.

While free trade brings undeniable benefits, its relationship with stronger growth is not so clearly established. According to traditional trade theory, the benefits of trade can be divided into two (Markusen *et al.* 1995). *On the one hand*, the benefits of exchange which involve a greater supply of goods and better-priced services; *on the other*, the benefits of specialization, meaning that certain countries engage in the production of certain goods according to the abundance of their factor endowment, while others engage in other activities. In other words, trade flows between countries are determined by individual countries' factor endowments and their subsequent specialization. Thus, countries where the labor factor is more abundant than the capital factor will be characterized by lower wages than those whose endowment is the other way around. However, these assumptions based on the four fundamental theorems of the Heckscher-Ohlin model establish no connection with higher economic growth (Heckscher, 1919; Ohlin,

1933).¹ In fact, Rodríguez & Rodrik (2000) show that, by controlling various growth factors, openness to trade does not seem to be the cause of growth in a broad sample of countries. The literature has not managed to clearly establish a mechanism through which an increase in exports leads to GDP growth (Edwards, 1993) and offers scant guidance with regard to the links between trade and growth (Krueger, 1990).

THE LINKS BETWEEN TRADE, GROWTH AND SPACE

The lack of links between trade and growth is due to a lack of spatial focus (Frankel & Romer, 1999). Research like Gallup, Sachs & Mellinger's (1998) argues that geography emerges as the element linking trade and growth. Irwin & Treviö (2002) show that the geographical features of one country determined its patterns of trade throughout the twentieth century and help to more clearly define the positive relationship between trade and growth. Just like the existence of a border, the fact that a country has no access to the sea or its distance from the market can be a determining factor in trade between countries. Given that the richest countries tend to trade more, the relationship between trade and growth is endogenous and can only be clarified by controlling the geographical factors.

This literature does not, however, clarify the mechanisms through which geography affects trade and growth. NEG therefore tries to establish mechanisms between geography and trade. This new literature, which explains the factors leading to the agglomeration of economic activity, appeared in the early 1990s, mainly in the research of Paul Krugman, who received the Nobel Prize for Economics in 2008 precisely for developing the theory. The theoretical basis of the center-periphery model in NEG relies on

¹ By traditional theories of international trade, I mean all the models and theorems derived from the idea that the pattern of trade and its consequences depend primarily on the levels of abundance and mobility of the factors of production. This literature starts with Ricardo (1817), and then Heckscher (1919) and Ohlin (1933). The most widespread models include the "Exchange Model", the "Ricardian Model", the "Heckscher-Ohlin Model" and the "Specific Factor Model". The four theorems of the Heckscher-Ohlin Model are the Stolper-Samuelson, the Rybczynski, the Heckscher-Ohlin, and Factor-Price equalization theorems.

the Dixit-Stiglitz Model of Monopolistic Competition (Dixit & Stiglitz, 1977). Unlike models of foreign trade, this model enables at least one of the sectors to show increasing returns to scale and therefore imperfect competition. The model developed in Krugman (1991 & 1992), Krugman & Venables (1995), Fujita, Krugman & Venables (1999), and elsewhere, explains the concentration and dispersion of economic activity with two sets of opposing forces: centripetal and centrifugal. Among centripetal forces, the literature identifies the labor market, backward and forward production chains, and knowledge spillovers; among centrifugal forces are congestion costs, land prices, and diseconomies of scale.

THE MAIN FEATURES OF THE NEG

Concentration or dispersion will accordingly depend on transportation costs and, more generally, the cost of trade. The level of transportation costs partly determines -along with the goods' elasticity of substitution, mobility of factors, and centripetal and centrifugal forces- whether production is concentrated in one or more places, from where it is distributed to other regions or countries, or whether production is dispersed to a wider range of centers serving local or regional markets. If transportation costs are high, for example, companies can more easily afford to establish regional production and distribution centers in order to avoid such costs. If, on the other hand, costs are extremely low, companies find it easier to concentrate and distribute to national and international markets from one or more centers. Of course, the ease with which a good can be substituted locally, the mobility or immobility of the workforce, backward and forward linkages between companies, knowledge spillovers in certain places, real estate or land prices, congestion costs, and other factors also play a part in the outcome.

One extremely important concentration mechanism is economies of agglomeration. These are external to the firm but raise companies' productivity through lower input costs, a larger labor market, and knowledge spillovers, another condition for these models being the mobility of factors, the workers, and whether companies decide to concentrate or disperse. The mechanisms of these economies of agglomeration are based on "matching" in the labor market, which brings

down the cost of unemployment for workers and the cost of recruitment for companies, "sharing" any public goods and infrastructure needed for the company's operations among other things such as the shared risk due to failure to meet contracts, and "learning", which takes place organizationally via contact between the companies' various different actors (Duranton & Puga, 2004). The prime example of such concentration and mechanisms is to be found in cities. One can, of course, imagine a process of agglomeration in which centripetal forces dominate and become stronger with free trade and the reduction of transportation costs, but weaker as the concentration becomes one where centrifugal forces begin to dominate.

In concentrating, workers and companies form the basis for differential economic growth between a country's regions. Since, according to endogenous growth theories, physical capital, human capital, and innovation are the most important determining factors in growth (Aghion & Howitt, 1998), cities are often where not just factors but growth is concentrated. However, growth is often steadier in more backward regions where the concentration is not stronger mainly due to congestion costs or diseconomies of scale, which offset some of the benefits of concentration (OECD, 2009a). Consequently, there have been cases and/or periods where income convergence has been detected between a country's regions or even between countries, and cases where a divergence or widening of the income gap between regions can be detected. The result in terms of growth depends on the concentrations and the particular stage of the concentration process at which the cities find themselves. The OECD (2009a) shows how, despite agglomerating production, Mexico City in the case of Mexico, Madrid in Spain, Berlin in Germany, Seoul in South Korea, etc. do not necessarily achieve the highest rates of growth in their respective countries. Readers may notice that, while growth rates are a good indicator, the size of the economy may make it achieving a higher rate easier, i.e. smaller economies with a slight rise in production can end up with a higher rate of growth than a larger economy with higher rises in production in absolute terms. However, the OECD (2009b) also shows how, for a significant number of its member countries, the contribution to national GDP of the more backward regions -many with low concentrations- is even higher than that of large

concentrations in absolute terms. A regional policy cannot therefore be based simply on promoting big cities, since every region can play a role.

THE EVOLUTION OF REGIONAL DISPARITIES IN MEXICO

DEVELOPMENT MODELS IN MEXICAN HISTORY

Mexico is ideal for exploring the impact of economic openness on a country's regional disparities. After following an Import Substitution Industrialization (ISI) model until the mid-1980s, Mexico implemented an export promotion strategy, initially based on trade deregulation with its entry to the General Agreement on Tariffs and Trade (GATT) and later its integration with the United States and Canada under the North America Free Trade Agreement (NAFTA). As a result, concentrations were affected by freer trade and lower trade-related costs, thus promoting agglomeration in the north of the country. This could have led to a strengthening of North-South disparities and a shift in Mexico City's concentration to the north of the country.

Mexico has followed three major models of economic development during its history as an independent country. From Independence up to the Great Depression, it followed an Enclave Economy Model (MEE), where the bulk of investment came from abroad, production was almost entirely exported, and there were few links with the local economy. Foreign investment was, in fact, closely bound up with the external market through investment and demand, and was only connected to the local economy through taxation (Cardoso & Faletto, 1979; Roxborough, 1979). The Great Depression in the United States led to Mexico (and other countries) closing its borders and adopting an ISI model through which it sought to boost its emerging domestic industry. The vehicle chosen to achieve this was tariff and non-tariff protection. But these protectionist measures led to serious inefficiencies and bottlenecks in production, making the model less effective by the late 1960s. The discovery of huge oilfields in the south led Mexico to postpone liberalization. The third export promotion-based model emerged when it joined GATT in the 1980s and NAFTA in the 1990s.

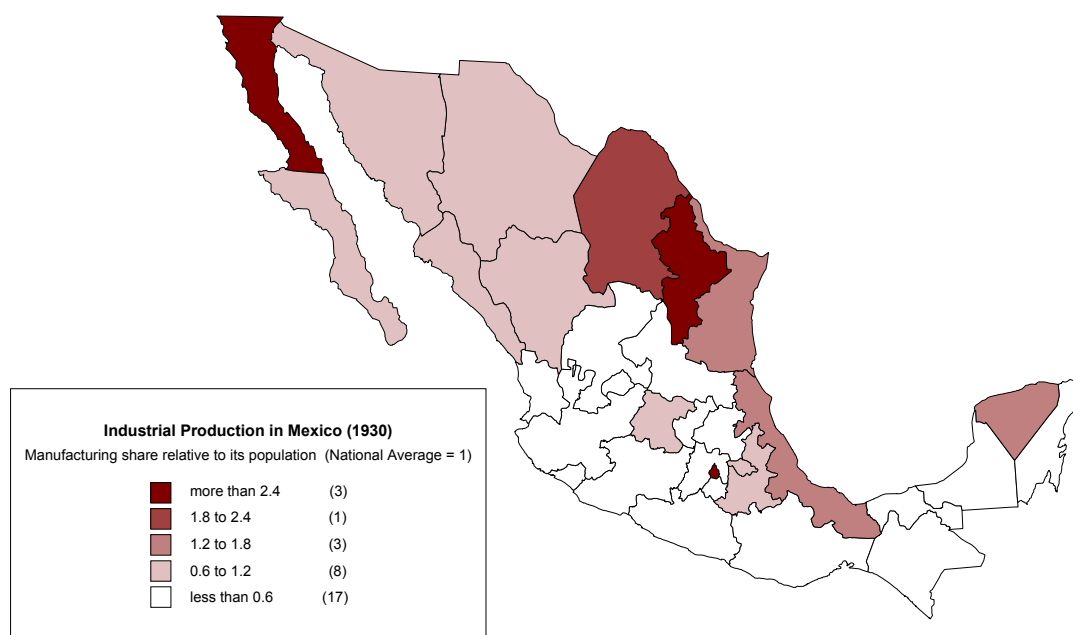
REGIONAL DISPARITIES AFTER THE MEE

Regional disparities in Mexico emerged the moment decisions began to be taken about the colonization of each region and how this was carried out. Similarly, colonial rule and even independence led to the formation of regional monopolies, to inefficiency in production -regional specialization and interregional trade being prevented- and to the fragmentation of the territory and regional markets. Despite Mexican industrialization being based on foreign direct investment (FDI) and having great export potential, it was tied to an enclave economy with few links with the region's economies. This economy also allowed industrialization in the largest population centers and in places linked to the extraction of primary inputs. Communication infrastructure deepened this trend by promoting ties between the center and profitable regions (Sánchez-Reaza, 2006).

The MEE in Mexico was geared to mining and the exploitation of natural resources. By 1930, however, the MEE was clearing the way for industrialization, with manufacturing now accounting for 16% of GDP and mining, less than 10%. The boost to manufacturing was based on openness to foreign investment and the development of the rail infrastructure. Manufacturing grew almost 8% p.a. as a result, while the economy as a whole grew just 1% (Solís, 1990). This industrialization was unevenly distributed across Mexican territory, however. As seen in [Figure 1](#), at the start of ISI, the most industrialized states -along with DF- were the border states of Nuevo León and Baja California. The second most industrialized group consisted of Tamaulipas, Veracruz, and Yucatán, and the third, with average levels of industrialization, consisted of the northern states of Sonora, Chihuahua, Baja California Sur, Sinaloa, and Durango, and the central states of Guanajuato, Puebla, and Tlaxcala. In other words, industrialization occurred mainly on the border and in a few non-border northern states, as well as in some central states and Yucatán.

IMPORT SUBSTITUTION INDUSTRIALIZATION (ISI)

During the Great Depression, Mexico reacted with a development strategy based on ISI. Although this had some degree of success, the model and its industrialization were based on (i) expanding the State's role in economic

Figure 1**INDUSTRIAL PRODUCTION IN MEXICO DURING THE EARLY STAGE OF ISI**

Source: Author's calculations based on López Malo (1960) and INEGI (1990).

activity, (ii) protectionism over the intermediate and capital goods needed for the actual substitution process, (iii) a growing external structural imbalance, (iv) the growth of the agricultural sector, and (v) Mexican companies' inefficiency and lack of competitiveness.

ISI-based protectionism not only favored public companies, but bred inefficiency. In fact, Fernández Pérez (1994) claims that protectionism was not associated with productivity and, in a similar vein, Fischer, Germen & Hiemenz (1982) argue that the chemical industry was one of the most inefficient and most heavily protected at the time. According to the efficiency index drawn up by Hernández Laos (1985), national private industry was so inefficient that it was overtaken by public-sector industry. In other words, ISI allowed industrial development in Mexico with high levels of inefficiency, leaving industry in fairly poor competitive shape when it came to opening up the markets.

INDUSTRIAL LOCATION, DISPARITIES AND REGIONAL POLICIES DURING THE CLOSED ECONOMY

During this long period, industrialization helped to maintain the pattern of development around Mexico City and to extend the development of Mexico's border states. Likewise, public investment and the State's entrepreneurial role drove growth in the Yucatán Peninsula. Certain regional policies and programs designed from the center appeared, but with limited results. Yet these policies and State investment seem to have supported the process of regional convergence seen toward the end of the period (Sánchez-Reaza, 2006).

In addition, the highest value added manufacturing tended to be close to the centers of consumption, especially Mexico City (Hernández Laos, 1985). The highest levels of industrial concentration were

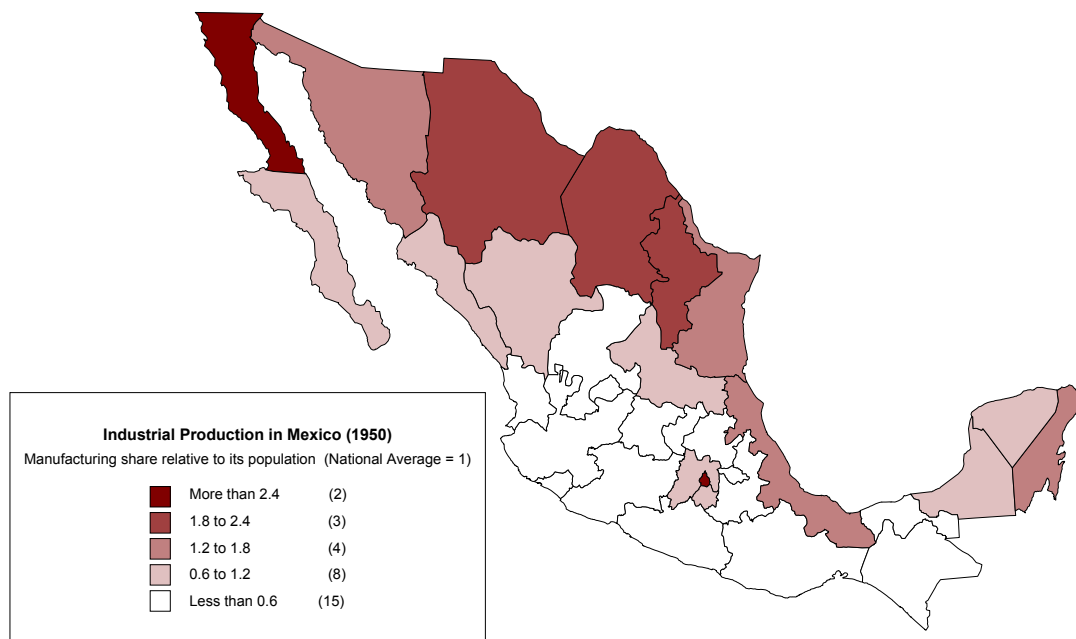
thus seen in such areas as pharmaceuticals, printing, textiles, and tobacco. Similarly, engineering output, brewing, glass, tobacco, and steel was established in Nuevo León, while cotton ginning, fish processing, and wheat milling was concentrated in Baja California, as were industrial oils and brewing.

Proximity to inputs was also important in certain industries given the high transportation costs of raw materials. States like Coahuila and Baja California on the US border accounted for 85% of wheat output (Hughlett, 1946). Likewise, Tamaulipas was geared to the processing of cotton, sugar, and vegetable oils, while Veracruz processed oil, coffee, and sugar, and Yucatán, henequen. All these industries were based on proximity to inputs. López Malo (1960), however, argued that transportation costs, the efficiency of public services, the existence of other companies, climate, labor supply, and wages were also among the reasons for industrial location.

Industrialization was dominated by Mexico City and, to a lesser extent, Nuevo León. Mexico's largest market not only agglomerated industrial production, but also public resources and population. Mexican urbanization meant that DF and neighboring states took in almost a third of the country's total population in 1930 (Alba, 1982). The expansion of public investment and services needed for industrialization benefited Mexico City and its area of influence (Hernández Laos, 1985). 99% of the pharmaceutical industry was located in DF, which distributed to the rest of the Republic (López Malo, 1960). DF not only represented the largest consumer market and a plentiful labor market, but the proximity of other companies was another incentive to companies thinking of setting up in business. DF was responsible for 28% of manufacturing output (over 40% if neighboring states were included). Likewise, Veracruz and Nuevo León accounted for nearly a fifth of Mexico's manufacturing output, while the border states -including Nuevo León- represented 22% (Figure 2).

Figure 2

INDUSTRIAL PRODUCTION IN MEXICO DURING THE ADVANCED STAGE OF ISI



Source: Author's calculations based on López Malo (1960) and INEGI (1990).

Despite southern Mexico's backwardness in industrialization and despite regional public policies being designed from the center, the poorest states in Mexico grew more rapidly during the latter stages of implementation of the ISI model. As shown in Juan-Ramón & Rivera-Batiz (1996) and in Sánchez-Reaza & Rodríguez-Pose (2002), Mexico underwent a process of regional convergence between 1970 and 1985, apparent in the closing of the gap (σ -convergence) and the speed at which the poorest regional economies grew (β -convergence).² Several reasons can be put forward for the swifter growth of the poorest states. First, Juan-Ramón & Rivera-Batiz (1996) and Sánchez-Reaza & Rodríguez-Pose (2002) make apparent the slant displayed by the oil industry for growth in states like Campeche and Tabasco and, to a lesser extent, Veracruz and San Luis Potosí, where some oil activity was seen. Likewise, the tourism industry largely accounts for growth in Quintana Roo and Guerrero. Regional policies based mainly on water basins may also have had some impact on growth in other states such as Oaxaca and Michoacán. Last, the efforts of directing industrialization away from Mexico City, as in the case of Ciudad Saghún in Hidalgo, may also have had an effect on the trend toward convergence.

The explanations provided in Sánchez-Reaza (2009) and Rodríguez-Pose & Sánchez-Reaza (2005) to understand the widening of the territorial inequality gap are rooted in changes in the relative importance of the factors associated with regional growth. During the final stage of the closed economy (ISI) period, the Mexican regions' growth was due mainly to oil, natural resources, and agriculture. Migration and

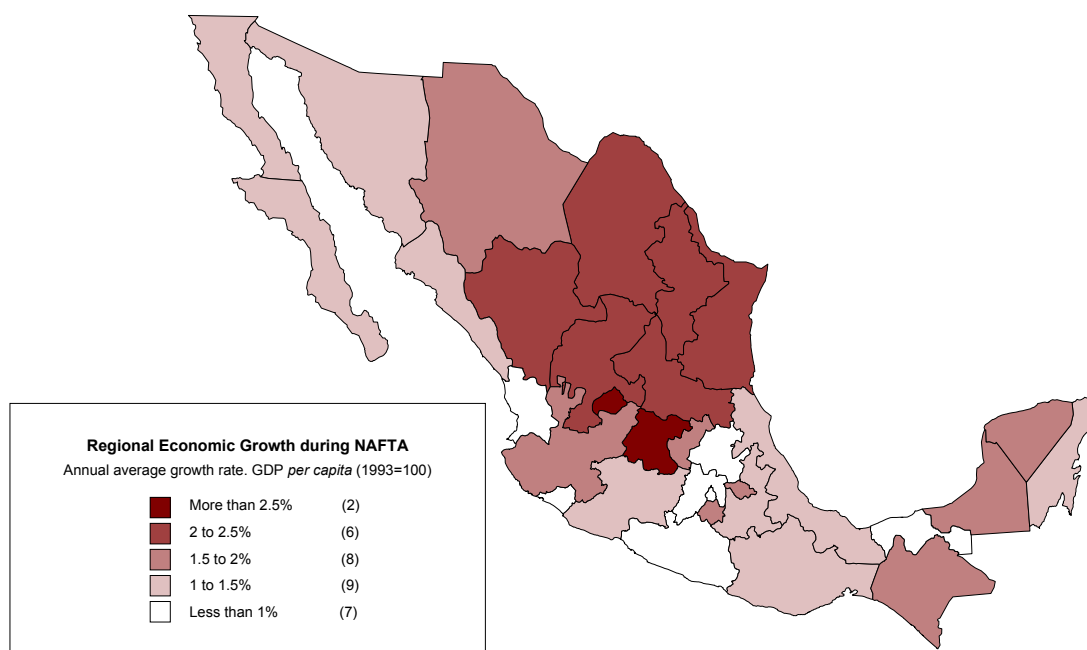
remittances from migrants were key factors behind regional convergence in Mexico. The poorest states, in the Mexican south, provided the bulk of exports and migrants over these years. Against this background, investing in improving the skills of the labor force or trying to create opportunities for endogenous growth in relatively poor states made little sense as a regional development strategy. The mobility of factors (in this case labor) and exports of natural resources were enough to reduce inequalities between states. However, this situation implied serious risks, which became more apparent once the ISI system collapsed. Mexico had become too dependent on oil and the exploitation of natural resources, and falling prices contributed to the breakup of the ISI model.

THE IMPACT OF OPENNESS AND NAFTA ON MEXICO'S REGIONAL DISPARITIES

In a context of economic crisis stemming from a long period of external structural imbalances, inadequate financial management of debt, the disproportionate role of the State and oil in the economy, a depressed agricultural sector promoting migration from the countryside to the city, and centralized regional policies, Mexico finally decided to open to foreign trade. In contrast to import substitution, what was being sought with this model was for development to be based on commercial success, supported in turn by the competitiveness of Mexican companies.

The period of trade openness entailed a structural reform based, on the one hand, on the reduction of State economic intervention through privatization and, on the other, on trade openness with access to GATT, which involved eliminating licensing and promoting exports (White, 1989; Smith, 1990). This enabled more use to be made of the *Maquiladora* Program, boosted Foreign Direct Investment (FDI), and developed trade in intermediate goods with the United States (Weintraub, 1988). In the first year after the signing of GATT, *maquiladora* employment rose almost 18% and, by the signing of NAFTA, the number of companies had tripled (INEGI, 1998). Nonetheless, FDI fell between 1987 and 1989 as a result of the "Black Monday" stock market crash on Wall Street in October 1987.

² For the purposes of this article, two notions of convergence must be distinguished. *On the one hand*, convergence can mean that a country's poorest regional economies grow more rapidly than its richest, so that they seem to "catch up" in terms of *per capita* income (Barro, 1991; Barro & Sala-i-Martin, 1999). This focus has been called β -convergence or statistical regression toward the mean, since the estimated coefficient of regression is usually labeled with a β . *On the other hand*, σ -convergence represents a reduction in the dispersion of the values of a group of countries' *per capita* income, just as the standard deviation labeled with an σ shows the gap between a group's individuals. Convergence of the first type tends to produce convergence of the second type: i.e. if the more backward regions in a country begin to grow faster than the more advanced, the income gap between rich and poor regions tends to close. Yet this is not necessarily always the case, since σ -convergence will depend on the size of the income gap at the start of the period (σ_0^2) in relation to the steady state (Barro & Sala-i-Martin, 1999, p. 385).

Figure 3**ECONOMIC GROWTH DURING NAFTA (1993-2002)**

Source: Author's calculations based on INEGI (2005).

The period continued with the signing of several trade agreements, including NAFTA.³

THE TERRITORIAL IMPACT OF OPENNESS

The demise of the ISI model led to economic liberalization and greater trade openness, and the signing of GATT was a decisive step in this strategy. In terms of regional growth, however, and the evolution of regional disparities, the GATT years were still dominated by the effects of the break-up of the previous system. Migration became the main factor behind regional development and the effect of opening borders to trade

can only be seen in the shift from Mexico City to the United States as the most relevant market. Production thus tended to be closer to the most relevant market, i.e. the United States. Although the relative supremacy of the border states is clearly apparent, the effects on Mexico City are not entirely clear. Whereas the trend in the capital could be explained by a shift in its focus, manufacturing activity would seem to have taken two -not mutually exclusive- paths: (i) some companies benefited from broader or regional, rather than local, economies of agglomeration (*neighborhood effects*); (ii) the old manufacturing belt moving north to take advantage of the proximity to the relevant new market.

Trade openness has enabled access to a market much larger than Mexico City and legislative reforms opened the door to higher levels of foreign private capital, with economic integration through NAFTA further reinforcing this trend. The conditions were even riper, then, for fostering the growth of the northern states, especially the border states, which not only had

³ Although it would appear that GATT and NAFTA -and all the other trade agreements- propose the same roadmap to development, based on promoting exports, the two schemes are substantially different. In brief, GATT, being multilateral, allows the highest possible level of trade for Mexico, while preferential trade agreements like NAFTA offer specific advantages and opportunities for member countries under special conditions (Bhagwati, 1991).

easier access to the United States and made possible the integration of cross-border production chains, but also enjoyed the kind of accumulation of experience and skills to be expected from a global manufacturing sector that had been in the region for 40 years. The main regional impact of free trade policies implemented in Mexico since the mid-1980s has been the deepening of existing regional disparities. As [Figure 3](#) shows, the growth of the now more developed northern economies has allowed a pattern of regional divergence -in both the widening of the gap and the speed with which the richest economies are leaving the more backward ones behind- as shown in Sánchez-Reaza & Rodríguez-Pose (2002) up to 1998.

Trade openness has brought with it clear benefits in terms of specialization, trade, and, to a lesser extent, growth (Sánchez-Reaza, 2009). Paradoxically, these benefits do not seem to have benefited the poorest states, as shown by the process of divergence seen especially since the signing of NAFTA. Nevertheless, it would seem that some more backward states may more recently have begun to feel the benefits of economic integration. A process of industrial relocation may enable these states to develop, but there is also the possibility that the skills of the workforce and the type of activities being accommodated may, in the future, create greater disparities. Institutional factors may also begin to play an increasingly important role, enabling or inhibiting the development of some more backward regions.

This growth has, however, also begun to be seen more recently in non-border northern states like Durango, Zacatecas, and San Luis Potosí. On one hand, this can be explained by the lower demand faced by Mexican products against the background of the US recession between 2001 and 2003, which saw a fall in employment and maquiladora activity in border states, particularly Baja California and Chihuahua. It is important to highlight the sound performance of the economies of Aguascalientes and Guanajuato, which may be demonstrating that institutional factors like industrial promotion could be playing an increasingly important role. On the other hand, a process of "waves of industrialization", such as that described in Puga & Venables (1996), may be taking place in Mexico. Although such industrial spillovers are desirable in the interests of other less advantaged states' development, the type of activities being accommodated the northern border states are of higher value added and require higher levels of skills and technology, while other more

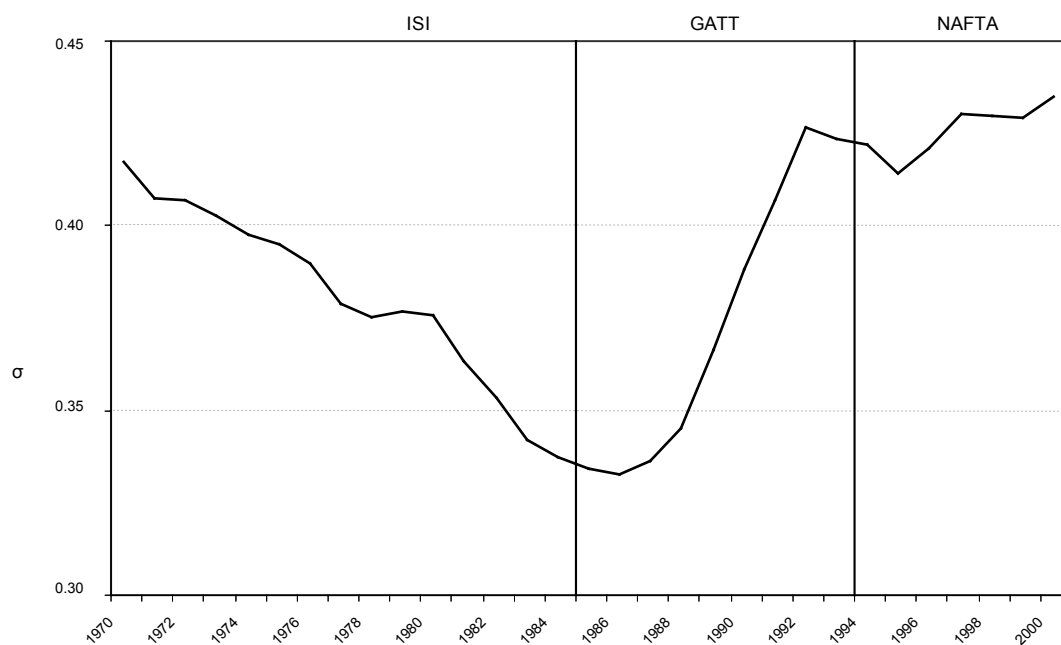
labor-intensive activities may be relocated not just outside Mexico City, but in other states with lower labor costs (Rodríguez-Pose & Sánchez-Reaza, 2005).

According to the econometric analysis in Sánchez-Reaza (2009), trade liberalization and economic integration have brought with them a change in the pattern of regional inequality. Despite the existence of regional disparities and a North-South divide in Mexico since the early days of industrialization in the 1930s, the recent shifts in economic regimes can be linked to changes in regional trends. Whereas the last days of the ISI period were characterized by regional convergence, economic liberalization and integration have been associated with greater regional divergence and widening inequality ([Figure 4](#)).

Integration has also hastened a higher concentration of economic activity in Mexico's main economic hubs. The states that border on the United States have been the main beneficiaries of this process, but it has also proved positive for Mexico City. Despite the reduction in the number of manufacturing jobs (Hanson, 1998), the capital continues to attract high value added services and is on its way to becoming a financial center. On the contrary, the southern Mexican states, which are most dependent on farming activities or the exploitation of natural resources, have suffered severe declines. This is particularly true of the oil-producing states, Campeche and Tabasco, where *per capita* GDP has been seriously eroded by falling oil prices in the period analyzed (although this trend may recently have been reversed) and the Mexican economy's reduced dependence on oil. The rural, agricultural states of Chiapas, Oaxaca, Guerrero, or Tlaxcala have also performed poorly in terms of economic growth.

THE DETERMINING FACTORS OF REGIONAL ECONOMIC GROWTH IN OPENNESS AND PUBLIC POLICY

The effects of trade liberalization and economic integration began to be more apparent during the NAFTA period. As predicted by NEG, trade and economic integration have triggered a process of higher economic concentration, mainly benefiting the more advanced northern regions. Given the significant differences in transportation costs between the Mexican north and south, companies, as mentioned in the second section of this paper, have more incentives to locate in both the north and south of the country and supply the regional markets. Although this may be happening in terms of the distribution of final consumer goods, the pattern of

Figure 4**CHANGES IN THE CONVERGENCE PATTERN**

Source: Rodríguez-Pose & Sánchez-Reaza (2005).

industrial location in Mexico has been characterized by foreign investment in the north, seeking to run parts of a manufacturing process and then export intermediate or final goods to their final destination, i.e. the US market. Proximity to its northern neighbor and exports of manufacturing products have accordingly become the most important factors in determining regional economic growth, with regional disparities widening as a result. Although migration and natural resources have lost their status as the key determining factors of growth, endogenous growth factors like human capital or innovation have not filled the gap, in line with the OECD's results (2007) for Mexican regional growth. However, regional growth seems to be guided by FDI, manufacturing exports, and proximity to the United States, a combination that works entirely in the favor of Mexico's border states.

The implications of these results could not be more significant. This is *first* and foremost because the

typically poorest southern regions have a structural problem accessing the relevant markets of the NAFTA bloc, limiting performance and growth. Access to this market is not achieved, however, by the sole provision of infrastructure (OECD, 2009a), but with favorable business environments that either attract new companies or link local companies in with global production chains. *Second*, it is because regions that have been unsuccessful in attracting FDI will tend to lag behind, in fact an expression of how far the regions are from the markets. Local firms' low levels of productivity and quality, or simply disconnection from global value chains, may make it difficult to attract FDI. Low levels of human capital, and high transportation and operating costs in southern Mexico may also inhibit the influx of FDI. One possible strategy for many of these regions could therefore be not just the provision of production infrastructure, but also other factors in the business environment, such as the local labor market, information and communication technology

(ICT) networks to improve regional connectivity within the state, promoting cooperation between businesses to enable them to innovate or even absorb technology, or boosting their human capital and gearing it to more specialized activities in the state. However, a doubt remains over whether some of Mexico's regions are in fact on the threshold of becoming knowledge-based economies or whether the lack of statistically significant results in Sánchez-Reaza (2009) is due to a lack of reliability in the data.

EFFICIENCY OR EQUALITY? PUBLIC POLICY OPTIONS FOR MEXICO

Economic liberalization and economic integration have not lessened disparities, but have been accompanied by greater economic polarization (Dussel Peters, 1997). As predicted by some Heckscher-Ohlin-von Thünen models (Venables & Limão, 1999), Mexican states close to the US market have benefited from integration, and have increased production and income. On the other hand, states further away from the United States have seen their income fall in relative terms and have grown even farther apart from the Mexican economy's recent insertion in international markets. Although certain centrifugal forces may take on a more important role in the future more intervention may be needed to control congestion costs and environmental degradation which begin to affect the efficiency of the main economic hubs.

Despite this scenario, factors of economic growth in the regions are endogenous (OECD, 2009a) and therefore each region can have an influence over its own buoyancy. Similarly, there are a growing number of states that are showing signs of independence in development strategy-making and some of the benefits of trade may also be captured by the more backward regions. Regional policies do, however, need to be comprehensive in outlook, since policies with very narrow goals can have the opposite effect. The provision of infrastructure without other factors of development may accordingly lead to leaking by linking, with capital increasingly accumulating in the centers. Transport infrastructure reduces costs and therefore increases benefits of companies concentrating, exploiting economies of agglomeration, and supplying other regions from big cities. Similarly, a policy based solely on human capital may lead to a brain drain, since the returns on investment in human

capital will be higher in the major centers, which offer not just better wages, but consumption externalities (e.g., museums, theaters, restaurants, etc.). Only when both are accompanied by elements that improve the business environment, such as innovation, will regional policy become more effective (OECD, 2009b).

Although clearly, from a regional standpoint, a development policy for individual regions does make sense, this is not so obvious from the point of view of individual countries. Some of the arguments put forward against a regional policy are set out in the European Union report which calls for structural funds for countries and not for regions (Sapir, *et al.* 2003). Similarly, the recent World Bank World Development Report, argues in favor of spatially blind policies focusing on the individual (World Bank, 2009). The two reports do, however, present highly convincing arguments against regional policy. There are three reasons why regional policy can be a strategy for development: *first*, for reasons of equality, regional policy is a necessity that seeks not to compensate, but to kindle endogenous factors in individual regions to achieve a Pareto optimum; *second*, for reasons of efficiency, if we take into account the fact that the performance of many OECD member countries depends on the more backward regions, i.e. over half the economic growth of many OECD countries occurs in more the backward regions that part of a regional policy is geared to (OECD, 2009b); and *third*, for institutional reasons, a regional policy that seeks horizontal coordination of sectoral efforts at the central level not only promotes efficient policies, but effectiveness, since isolated educational or infrastructure policies do not promote long-term economic growth (OECD, 2009a). Likewise, vertical coordination between different orders of government in many countries is not only desirable but unavoidable. It is hard to imagine the efforts toward individual regions' development being dropped by the regions themselves for the sake of national efficiency.

CONCLUSIONS

R egional disparities in Mexico are neither a new phenomenon, nor an exclusively equality-based concern. The pattern of regional inequality seen today harks back to the colonial enclave economy model, but has been reinforced by trade openness. The mechanism that leads to inequality also leads to concentration in certain development hubs. However,

the shift in Mexico's trade policy brought about a shift in the most relevant market from Mexico City to the United States, with the states nearest the northern border enjoying the most benefits as a result. This process has also been driven by the more pronounced influence of foreign direct investment (FDI) and manufacturing exports on economic growth. Greater regional divergence has, however, not been accompanied by an increase in the importance of certain endogenous growth factors like human capital or innovation. However, a regional policy is necessary for the sake of equality in order to provide greater opportunities for different regions, but also for the sake of efficiency, since even the more backward regions contribute to national economic growth, and for institutional reasons, Mexican states being autonomous

and unlikely to pass over opportunities to develop their regions in the interests of national efficiency. It is particularly important to highlight the coordinating nature of a regional policy that maximizes the impact of sectoral policies in terms of economic growth and the contribution of the more backward regions to national economic performance. So, an infrastructure policy to, among other things, reduce transportation costs in the Mexican south, albeit desirable and necessary, can only be effective if regional policy coordinates additional efforts to supply the region with human capital and improve the local business environment. This would also promote the agglomeration of capital, skills, and employment in the south without adversely affecting what is happening in the north and center. ♦

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INTERNAL TRANSPORT INFRASTRUCTURE IN ARGENTINA AND ITS IMPACT ON PROVINCIAL EXPORTS

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The design of Argentina's transport infrastructure puts the regions farthest from the Rosario/Buenos Aires port cluster at a disadvantage. Most of the country's physical investments and services are concentrated in the center-east of its territory, with branches extending toward the Litoral, the west, and, to a lesser degree, the Argentine Northwest. Similarly, foreign sales are heavily concentrated in the center-east, where the main customs posts are located. This takes on more relevance in the case of exports of Primary Commodities and Manufactures of Agricultural Origin (MOA), items that account for a great deal of most territories' foreign sales. This work seeks, via a simulation exercise, to approximate the effects of improved transport technology on total transportation costs and, hence, on the international competitiveness of the Argentine provinces. We have found that, if the cost of a 1,500km benchmark journey were to be reduced by 10%, the territories farthest away from the customs posts would benefit most, with reductions in total transportation costs of between 13% and 14%.

INTRODUCTION

Argentina is a country with a large geographic area and a low but highly concentrated population density. Its highly heterogeneous economic landscape is also characterized by a high concentration in the center-east of the country, in stark contrast with the relative emptiness of the rest of its territory. This spatial arrangement of today's Argentina had its origins in the late nineteenth century.

In those days, the area known as the Humid Pampa (Buenos Aires, Buenos Aires Province, and Córdoba and Santa Fe Provinces) began to develop its potential for the production of livestock and agricultural products in response to demand for these goods from the world

economy. The region's development was helped, particularly during the two World Wars and over the next quarter century, by public policies known as "Import Substitution Industrialization" (ISI), designed to strengthen the relevance of the domestic market over and above the international market.

These circumstances encouraged agglomeration processes that, in time, fed back into themselves via migrations from the more remote regions to the center-east of the country. Simultaneously, internal transport infrastructure -first rail, then road- was developed according to a plan that converged on the country's main port (Buenos Aires) and its area of influence. This often had an adverse effect on the peripheral regions and reinforced the spatial pattern.

By the 1990s, with the creation of MERCOSUR and Argentina's trade opening, the growth of the country's trade with neighboring countries -especially Brazil and, more recently, Chile- helped to ease somewhat any preexisting export (and production) disparities.

In this scenario, an improvement in transport technology -call it transport infrastructure, vehicular technology, or the joint operation of the two (system)- could favor the remotest provinces, particularly those located in the far north and south of the country. This paper sets out precisely to provide evidence in support of this hypothesis and, to that effect, we have conducted a simulation exercise in the Section *INTERNAL MOTOR TRANSPORTATION COSTS*. This seeks to approximate a measure of the effects that improving this technology by reducing the road freight rate would have on total transportation costs and, hence, on the various different Argentine provinces' international competitiveness.

The following Sections present the benchmarks needed to carry out the exercise successfully. *INTERNAL TRANSPORTATION COSTS* Section sets out the conceptual framework of our analysis, which is based on the contributions of the New Economic Geography (NEG) regarding the potential effects of greater internal integration (lower transportation costs) on the domestic regions' export performance. Next there follows a description of internal transport infrastructure in Argentina which distinguishes between different means of transport. This justifies why we do not later focus on motor transport. *THE RECENT EVOLUTION AND STRUCTURE* Section briefly discusses the structure of foreign trade in subnational territories and, in greater detail, the individual territories' accessibility to the main exit points for the country's exports (customs posts). This provides us with the data needed for the exercise: the exports' destination and distances between production sites and foreign exit points. Lastly, the findings are summarized and some conclusions are drawn.

INTERNAL TRANSPORTATION COSTS AND EXPORT PERFORMANCE: A BRIEF REVIEW OF THE LITERATURE

There was a significant reduction over the last century in the cost of trade at almost all spatial levels, driven by technological advances in transport and communication systems, and by the spread of preferential trade agreements. The spatial

dimension has thereby received special attention in the literature of economics, which has stressed the role of market accessibility in determining the geographic distribution of economic activities.

NEG sets out a particular conceptual framework that allows us to analyze the role played by the cost of trade in general and transportation costs in particular in export performance. This area of economics explains where the location of the economic activity is and why. Specifically, it is a general equilibrium approach in which market-mediated mechanisms give rise to forces of agglomeration and dispersion, and alter an economic landscape that would otherwise be more homogeneous.¹

Within this analytical-conceptual framework, there are several theoretical and empirical contributions that focus on the effects of changes in transportation costs in countries' interiors.² These are models that distinguish between national and subnational territories by differences in the cost of trade, or the mobility of production factors, or both.

The first "regional" NEG model is Krugman's (1996).³ It stresses the interrelationship between the level of transportation costs, and tariff and non-tariff barriers, on the one hand, and regional disparities, on the other. Krugman found that the higher the national transportation cost, the greater the advantages of locating production in close to already existing metropolitan areas when trade liberalization takes place among countries.

Subsequent models have introduced into the analysis a wealth of regions, accessibility asymmetries among them, and feedback mechanisms, both at domestic and international level, providing richer results in terms of spatial effects accordingly. These more recent models, while not allowing us to make precise general predictions about how changes in the parameters

¹ Updated theoretical revisions of the NEG can be found in Behrens & Robert-Nicoud (2009), Fujita & Thisse (2009), and Redding (2009).

² A comprehensive review of this literature can be found in Sforzato (2010).

³ The most direct precedent for these NEG models is the work by Martin & Rogers (1995), which concludes that lower domestic transportation costs -or better domestic infrastructure- promote the concentration of economic activity, while greater international integration magnifies this effect.

affect the economic landscape, do nevertheless yield interesting results for specific cases, appealing to numerical simulations or estimates. Several articles have tried to explain subnational regions' export performance along these lines.

Some contributions have suggested estimating increased gravitational equations⁴ to assess the explanatory power of those models in terms of regional trade flows: regional integration agreements have generally been found to facilitate such flows.⁵ Some more recent contributions have analyzed the spatial effects of intra- and international transportation costs more closely, finding that a reduction in the former costs may have positive effects on regions' export flows, in particular border regions or those with accessibility to large markets.⁶

In Argentina's case, two recent contributions have studied the link between transportation costs and regional infrastructure, on the one hand, and export performance, on the other (Granato, 2008 and Castro & Saslavsky, 2009). Both studies find that internal transportation costs, as approximated by distance measures, may adversely affect performance.

Last, other related contributions make progress on methodological questions. In particular, Combes & Lafourcade (2005) suggest that an estimate of the function of transportation costs ought to take four criteria into account:

- C1) The itinerary chosen from between origin and destination, as reflected in three variables: distance, time, and direction of journey.
- C2) The means of transport: road, rail, air, or river, which affects costs through energy/fuel, other related costs, taxes on the different means of transport, and market structure.
- C3) The goods transported: primary commodities, manufactured goods, durables or non-durables, etc.
- C4) The impact of each cost component must be identifiable.

Trying to respect all four criteria, which are in some cases interdependent, the authors propose a General Transportation Costs function expressed as follows:

$$GTC_{ij}^t = \min_{I'_{ij} \in \Theta_{ij}} (DistC_{ij}^t + TimeC_{ij}^t)$$

where i is the origin, j the destination, t the moment in time for which the function is estimated, I the means of transport and Θ the means of transport available (road, rail, air, sea, etc.). $DistC$ is the cost component depending on the distance between origin and destination, and $TimeC$, the cost component that is a function of the time needed to transport the cargo from i to j .

INTERNAL TRANSPORT INFRASTRUCTURE IN ARGENTINA

As can be seen in [Figure 1](#), transport infrastructure and the services it provides are spatially closely linked in Argentina and mutually influencing each other with the location of productive activities and the geographic distribution of the country's main urban clusters.

The geographic location of the busiest ports, airports, and border crossings, together with the direction and location of the busiest cargo and passenger corridors are radial in structure, deployed essentially around Argentina's main port cluster: the node between Rosario and Buenos Aires, the main exit for domestic exports. Below is a brief description of the main features

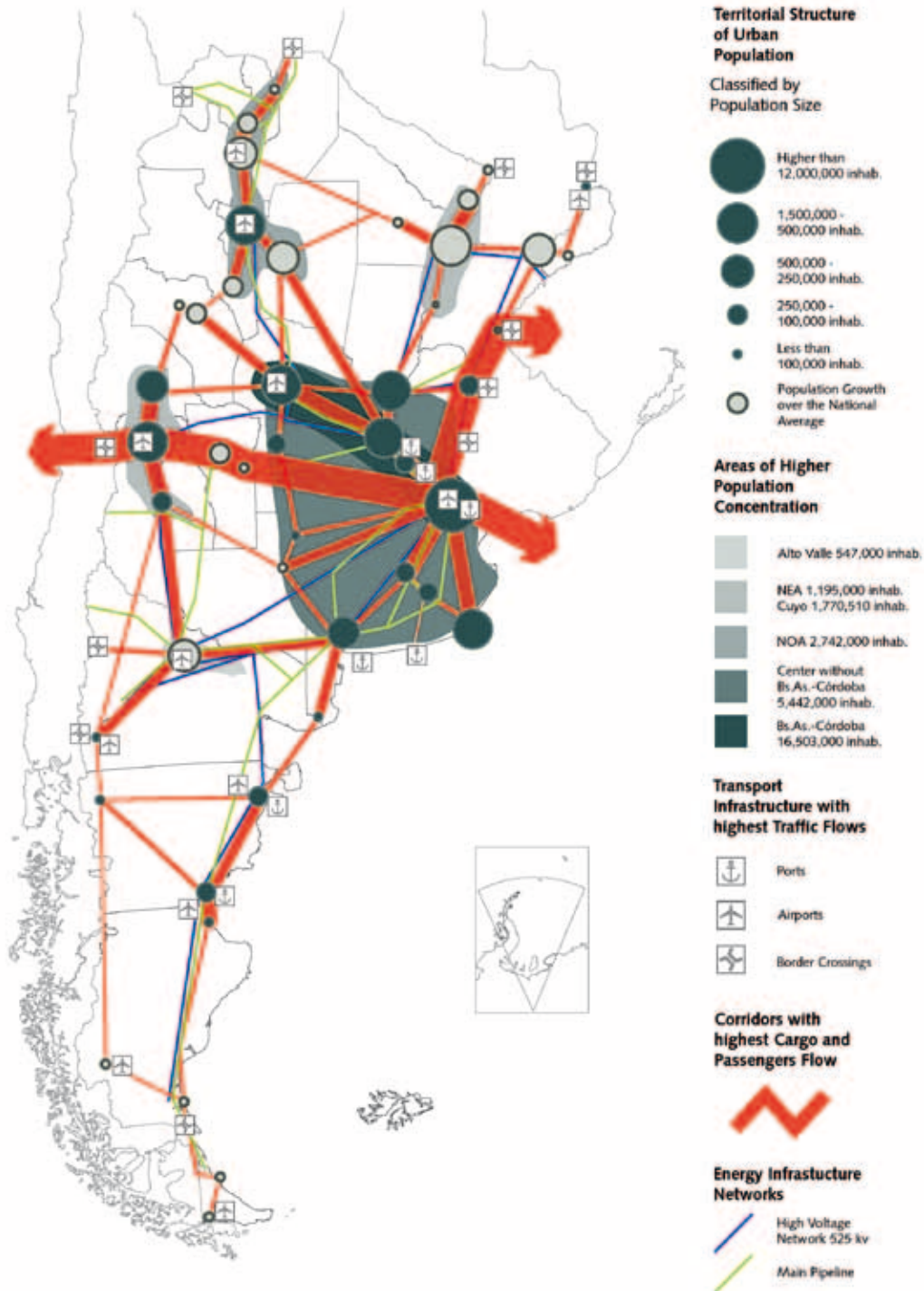
⁴ The gravitational model began to be used in the 1960s, with the contributions of Tinbergen, Poyhonen, and Linnemann. The gravitational model suggests that the explanatory variables of the volume of trade between two countries are due to three types of factors: the exporting country's potential supply, the importing country's potential demand, and natural or artificial resistance to trade. Among the variables most commonly used to monitor through the influence of the first two factors is the GDP and *per capita* GDP of the countries involved, whereas distance is used as a proxy for resistance to trade. More recent analyses add in other variables that could also affect trade, such as indicators of cultural affinity, sharing a common geographic boundary, or whether or not they are colonies, islands, etc.

⁵ These include Coughlin & Wall (2003) and de Sá Porto (2005).

⁶ This holds true for Benedictis *et al.* (2006) for Ecuador, for Combes & Lafourcade (2008); Lafourcade & Paluzie (2008) for France, and for Edmonds & Fujimura (2008), who analyze the Asian territory of the Greater Mekong.

Figure 1

TRANSPORT INFRASTRUCTURE IN ARGENTINA



Source: Ministerio de Planificación Federal, Inversión Pública y Servicios (2008), p. 46

of physical infrastructure corresponding to the various different means of transport on the basis of the most up-to-date information we have been able to find.

ROAD TRANSPORT

The road sector represents almost 80% of total cargo movements in Argentina: in other words, it plays a key role in long-distance domestic traffic (World Bank, 2010). Argentina's national and provincial network has just under 75,000km of paved roads and 160,000km of gravel or dirt roads (Secretaría de Provincias, 2010). The vast majority of these are roads with just two lanes.⁷

As might be expected, the provinces with the highest share of the country's road network, paved and unpaved, are: (a) those in the center and east of the territory (Buenos Aires, Córdoba, and Santa Fe), (b) those linked to the center-west corridor (San Luis and Mendoza), (c) Entre Ríos in the Litoral corridor, and (d) Tucumán, in the center of the Argentine northwest.⁸

Regarding the paved road network's importance in terms of territorial surface area, the provinces that stand out, with a density of more than one point above the national average are: Tucumán, Misiones, San Luis, Buenos Aires, Santa Fe, Córdoba, and Entre Ríos. They are generally the provinces with denser road infrastructure and higher-than-average total of roads.⁹

Table 1 provides more details about the quality of the roadways in the national (not provincial) network. According to information provided for 2006 by the Dirección Nacional de Vialidad (2010), 41% of paved roadways were in good condition, 27% in regular condition, and 32% in poor condition.

⁷ The only available data states that just 1,085km were motorways in 2007 (Fundación Metas Siglo XXI, 2007).

⁸ The "Litoral" refers to the geographic area covered by Santa Fe, Misiones, Corrientes, Entre Ríos, Chaco, and Formosa Provinces.

⁹ In general, several of these provinces contain a higher percentage of paved roadways. However, there are cases such as the provinces of La Rioja, Santa Cruz, Catamarca, La Pampa, and San Juan that, despite their relatively low road density, nevertheless have a high percentage of paved roads. This is closely bound up with the wealth of rural roads that have grown up over time in the provinces of the center-east, the Litoral, and Mendoza, as against what happens in provinces with an extremely low population density (and spatial dispersal).

Table 1

TRANSPORT INFRASTRUCTURE IN ARGENTINA (List)

Province	Bueno	Regular	Malo
Buenos Aires	77.7	155.7	81.3
Catamarca	166.4	55.0	54.5
Chaco	19.2	162.1	149.1
Chubut	77.0	74.5	150.0
Córdoba	68.0	62.3	171.6
Corrientes	99.2	101.8	99.5
Entre Ríos	84.9	93.5	124.3
Formosa	136.8	78.7	71.8
Jujuy	142.5	100.5	46.4
La Pampa	91.6	105.1	106.3
La Rioja	144.3	138.1	12.7
Mendoza	62.6	81.5	162.2
Misiones	97.6	187.9	29.4
Neuquén	69.5	74.8	159.3
Río Negro	211.5	10.9	35.0
Salta	26.0	78.9	210.3
San Juan	50.4	186.9	89.4
San Luis	156.0	90.1	38.3
Santa Cruz	93.9	173.7	46.0
Santa Fe	111.6	88.5	95.1
Santiago del Estero	66.9	101.4	140.3
Tierra del Fuego	135.5	116.0	42.1
Tucumán	113.4	113.2	72.1
<i>Country Total</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>

Note: Kms assigned to B.A. are extracted from DNV data for B.A. and Bahía Blanca districts.

Source: Authors' elaboration based on data from Dirección Nacional de Vialidad (2010).

Among the provinces whose roadways are in better condition Catamarca, San Luis, Jujuy, Formosa, and Tierra del Fuego. Among the worst are Salta, Córdoba, Mendoza, Neuquén, Chaco, and Santiago del Estero. Moreover, most of their paved roads in the central provinces and those on the main corridors were in poor or regular condition, with the exception of Santa Fe and San Luis.

RAIL TRANSPORT

As with road transport (*Figure 2*), the plan of the rail network is radial, converging toward the Rosario-Buenos Aires port cluster. Unlike the road system, however, railroads play only a minor part in domestic goods transport and their part in international trade is almost non-existent (Centro de Estudios para la Producción, 2004).¹⁰

Nonetheless, it should be remembered that, since 2001, there has been a rise in the levels of rail activity, partly explained by the extension of the agricultural border to extra-Pampean areas, such as the Argentine northwest and northeast, farther removed from the ports (Secretaría de Transporte, 2010).

According to Bloch (2009), the most relevant problems of railroad supply (infrastructure, rolling stock, and personnel) in Argentina include: (a) the poor state of roads and bridges, (b) the lack of tracks across broad swathes of the country, (c) the inadequate rail connections with ports, silos, storage centers, and warehouses, and (d) the shortage of rail-truck transfer centers. The compounding of these problems leads to lower speed, lower cargo capacity, lower safety levels, and -crucial to the competitiveness of Argentine products-scant opportunity to follow through with multimodal logistics.

RIVER AND SEA TRANSPORT

Both sea and river transport are priorities in terms of Argentina's foreign trade (Sánchez *et al.*, 2008). The country's port operations, in both internal and external trade, take place in the provinces of Buenos Aires and the Argentine Litoral (where the vast majority of river ports are located), and in the sea ports of Patagonia and Buenos Aires Province (*Figure 3*).

According to data from the Secretaría de Transporte (2009), between 2001 and 2008, most shipping was in the ports of Buenos Aires Province (43%), Santa Fe (36%), Chubut (12%), and the Autonomous City of Buenos Aires (CABA) (6%), while container traffic

was seen in the ports of Buenos Aires Province and the Argentine capital.

This is partly explained by the consolidation of port operations in Rosario, Buenos Aires, Dock Sud, and Puerto Nuevo, and by the installation of major port complexes in the provinces of Santa Fe and Buenos Aires. According to Javier Dulce, President of the *Centro de Navegación*, the adaptation and maintenance of the branch of the Parana River has been one of the greatest breakthroughs for river transport of the last 15 years (Dulce, 2009).

AIR TRANSPORT

Air is a means of transport with a low share in Argentina's cargo traffic: just 3.5% of the total and 0.07% of the volume exported in 2006 (Sánchez *et al.*, 2008). According to Secretaría de Transporte figures (2010a & 2010b), between 2002 and 2005, there was a 21% annual rise in total cargo traffic (cabotage and international), the share of international transport overtaking cabotage as of 2004.

According to Martin Sánchez Zinny, president of the *Fundación para la Formación Profesional en el Transporte*, despite evidence of growth in cargo traffic, air transport in Argentina has been on the wane. He points out, for example, that Argentina is a few tonnes behind Chile and just one sixth of Brazilian levels in 2008 (Sánchez Zinny, 2009).

While Argentina has several fully-operational international airports, almost all international cargo traffic is through Ezeiza International Airport in Buenos Aires Province, just a few kilometers outside the Argentine capital. As can be seen on the map in *Figure 4*, cabotage air traffic, like overland traffic, radiates out from CABA to the main destinations in the Argentine interior like Córdoba and other tourist areas.

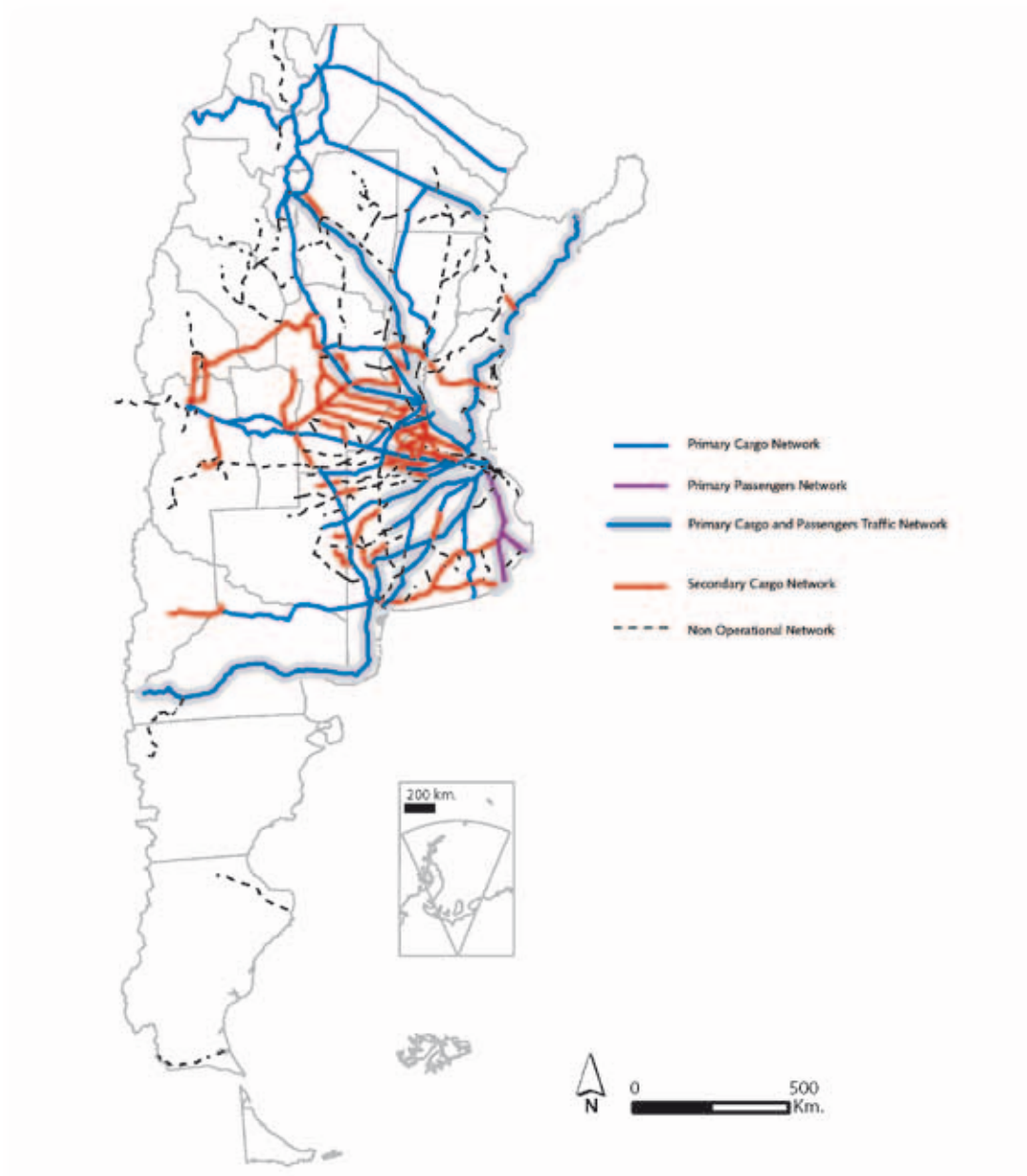
SOME REFLECTIONS

As we have seen, Argentina's transport infrastructure is radial in plan, based around the Rosario-Buenos Aires port cluster, and the services it provides are concentrated in the center-east of the territory with branches spreading out to the Litoral (the Uruguayan and Brazilian border), the west (the Chilean border) and, to a lesser extent, the Northwest (the Bolivian and Chilean border).

¹⁰ For example, whereas the road system transports 84% of the internal movement of grain, rail accounts for just 14.5% (Bloch, 2009). In terms of international trade between 2000 and 2003, rail was used to transport 1.3% of the value and 0.7% of the volume of exports (Centro de Estudios para la Producción, 2004).

Figure 2

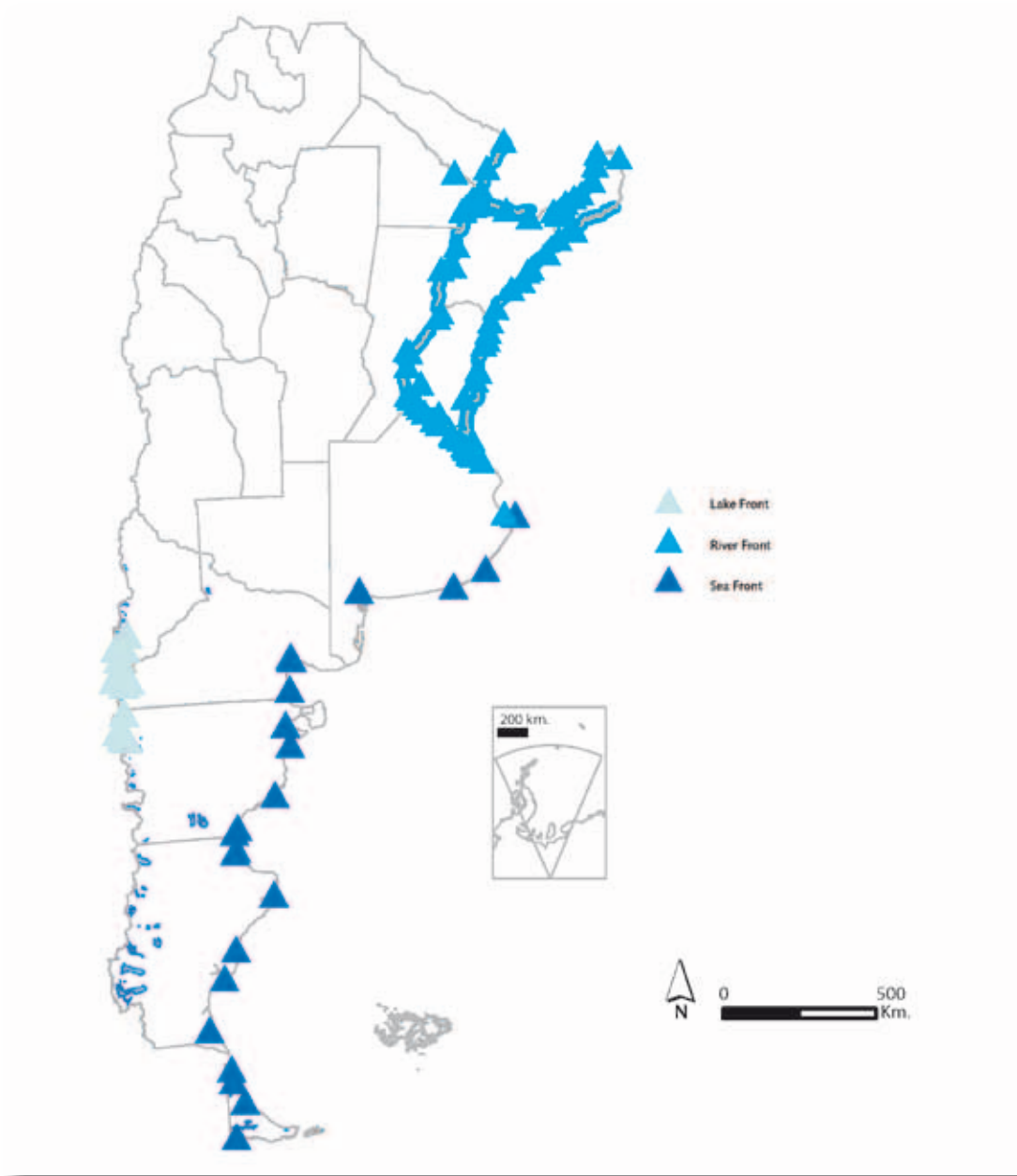
**RAILWAY INFRASTRUCTURE
(Current Infrastructure)**



Source: Ministerio de Planificación Federal, Inversión Pública y Servicios (2008), p. 52

Figure 3

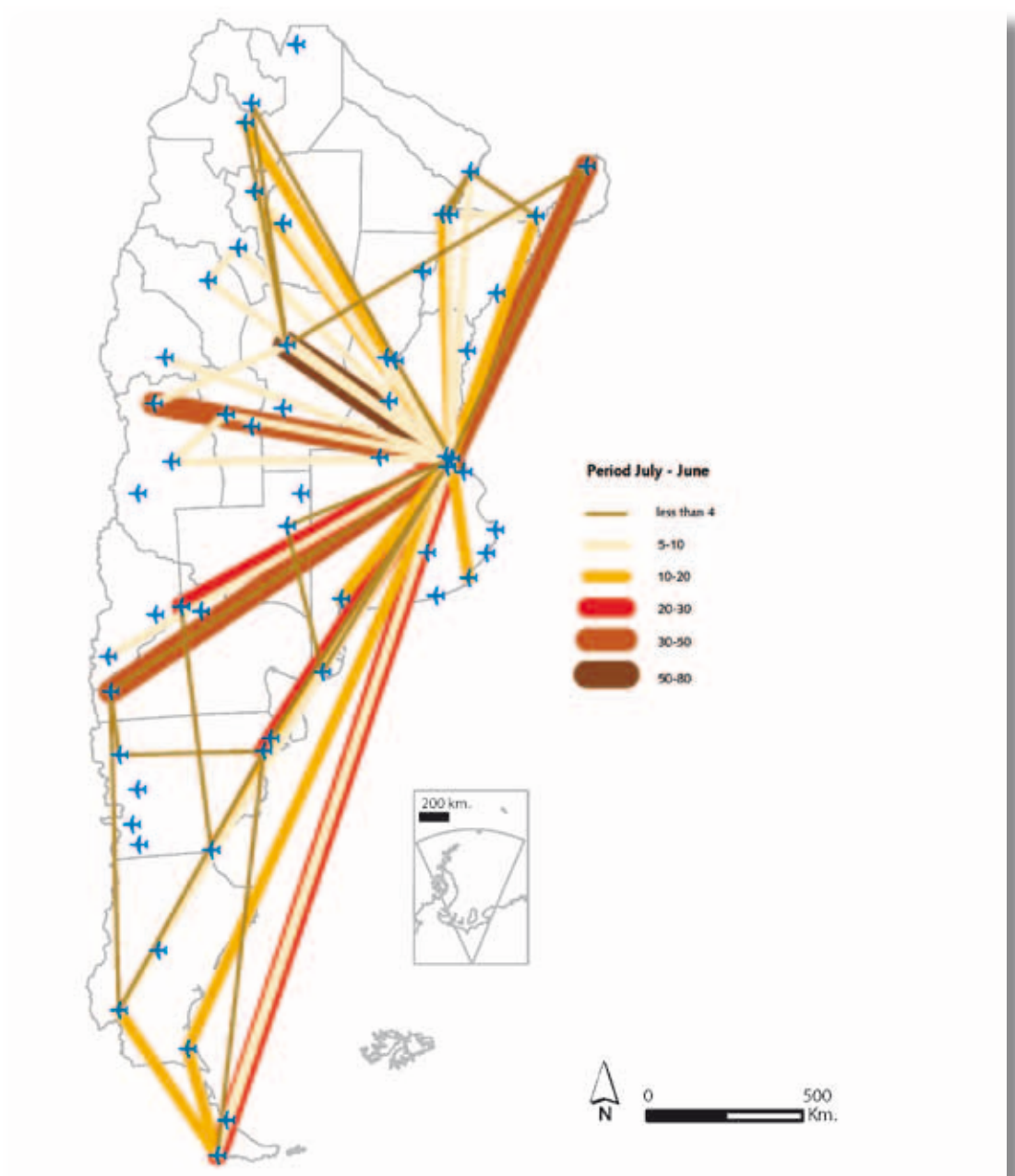
PORT INFRASTRUCTURE
(Port Locations)



Source: Ministerio de Planificación Federal, Inversión Pública y Servicios (2008), p. 53

Figure 4

AIRPORT INFRASTRUCTURE
(Airports and Frequency of Domestic Flights)



Source: Ministerio de Planificación Federal, Inversión Pública y Servicios (2008), p. 54

As emerges from this section, there is a need to improve infrastructure and services for most means of transport. Improvements include the creation and improvement of road infrastructure, the development of waterways, refurbishment, and extension of the railroad network, the reduction of any related charges and fees, etc.

Another relevant point that public infrastructure policies should consider is to do with the spatial plan of the transport system. As we have seen, there are areas of Argentine territory that have been left disconnected from the national system and also, in part, from the outside world. The provinces of Chaco, Formosa, Catamarca, La Rioja, and Patagonia are exceptions to the advantageous position of the abovementioned areas and corridors. These territories appear to have been omitted from Argentina's development model.

THE RECENT EVOLUTION AND STRUCTURE OF PROVINCIAL EXPORTS

When approximating the impact of internal transportation costs along the lines of Combes & Lafourcade (2005), we must keep in mind the fact that the significance of these costs depends on the types of goods exported, the exports' destination (their exit point depending on this), and the distances between where the good is produced and the exit point abroad (itinerary).¹¹ In this light, and with the previous section (the primacy of road transport for domestic cargo traffic) in mind, we will now concentrate on road distances.

There follows an analysis of the structure of foreign trade in subnational territories and of each territories accessibility to Argentina's main customs.

PROVINCIAL EXPORTS BY TYPE OF GOOD

In the triennium from 2007 to 2009, Argentina's export structure found a fairly stable balance between Primary Commodities (24%), Manufactures of Agricultural Origin (MOA) (40%), and Manufactures of Industrial Origin (MOI) (36%). But this is not the case in Argentina's various different territories. While

primary commodity exports in eleven territories are at least twice that of the national total (*Figure 5*), the relative importance of primary commodities falls below the national average in just 8 provinces.

MOA exports range from 1% in Santiago del Estero to 76% for Santa Fe, and in five cases (Córdoba, Misiones, Mendoza, Santa Fe, and La Rioja) are the most important heading. MOI exports, on the other hand, accounted for between 2% of La Pampa and 68% of San Juan's external sales, and in six cases (Buenos Aires Province, CABA, Chubut, San Juan, San Luis, and Tierra del Fuego) form the most important export sector.

PROVINCIAL EXPORTS BY DESTINATION

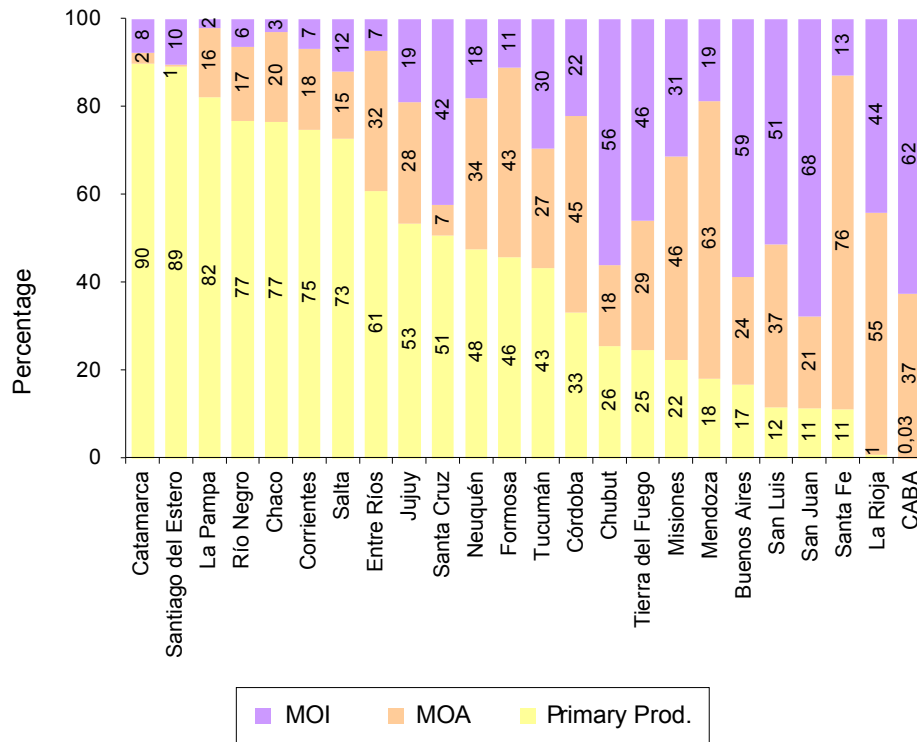
In the same triennium, Argentina exported to a total of 209 destinations but the values exported were often very small. *Table 2* shows the three main destinations' share in each province's exports, across the three groups of goods.

The first thing to be noticed is that the concentration of the destination of Argentine exports is quite high. MOI exports have the highest geographic concentration, with a 70.2% average share for the three main destinations. For Primary Commodities and MOA, these averages are 52.8% and 51.5% respectively.

In terms of the differences between provinces, at one extreme are Buenos Aires and Entre Ríos with the lowest concentrations (*Table 3*), then come Córdoba, Mendoza, Salta, San Luis, and CABA with low and medium concentrations, and at the other end of the scale are Catamarca, La Rioja, Misiones, Río Negro, San Juan, Santa Cruz, and Santiago del Estero, with medium to high concentrations. The remaining territories exhibit intermediate or more variable concentrations, depending on the type of good considered.

As might be expected, Brazil is the most frequent destination to appear in the top three. Its share is more marked in the case of MOI exports, being one of the three main destinations for 19 of the 24 territories -and number one for 13 of them. In Primary Commodities, Brazil is the most common destination (14 occasions) and, in MOA exports, it is second only to the US (13 occasions). The US is the second most common country, in particular for exports of MOA and MOI. Also pronounced is Chile's share, the third most frequent destination for the three groups of goods. Next come

¹¹ Unless expressly stated, fuel and energy exports are excluded from the analysis, there being no information regarding provincial origin for approximately 25% of them.

Figure 5**PROVINCIAL EXPORTS 2007-2009**
(Sector Structure)

Source: Authors' elaboration based on INDEC data.

the Netherlands (MOA and Primary Commodities), Uruguay (MOI), and Italy (MOA).

EXPORT EXIT POINTS

Between 2007 and 2009, Argentine exports left the country through a total of 50 customs posts.¹² Two of these, in CABA and San Lorenzo, Santa Fe Province, account for 45% of exports. If, however, we distinguish between different types of goods or destinations, some customs posts are more important than others.

On the basis of this distinction, we analyzed events in greater detail at the 18 customs posts, through which close on 90% of exports leave Argentina (Table 4).

Unfortunately, having no information at the product level for the provincial origin, destination, or exit customs of exports, we worked with the structure that emerges from considering the country as a whole.

Given that the customs posts are mainly concentrated on Argentina's east coast (CABA and Buenos Aires Province) and in the Litoral, it comes as no surprise that the territories of Entre Ríos, Santa Fe, Buenos Aires, and CABA are the closest (in average kilometers) to them (Table 5, Column 1). They are followed in order of proximity by Corrientes, Chaco, and Córdoba, the latter benefiting from its landlocked location in the center of the country.

When the distances between the various different territories and exit customs are weighted by each customs' effective share in total exports (Table 5, Column 2), the best-placed territories are Santa Fe,

¹² The exit customs of 2% of exports is unknown. This figure falls to 0.1% when fuel and energy exports are excluded.

Table 2

PROVINCIAL EXPORTS 2007-2009
(% Share of the three Main Destinations)

		Buenos Aires	CABA	Catamarca	Chaco	Chubut	Córdoba
Primary Prod.	1°	Brazil	Paraguay	Germany	China	Spain	China
	2°	China	USA	Korea Rep.	Chile	Italy	Brazil
	3°	Peru	Uruguay	Philippines	Spain	China	Iran
MOA	1°	Brazil	Hong Kong	USA	Italy	Italy	Netherlands
	2°	Chile	Brazil	Brazil	Brazil	Germany	China
	3°	Netherlands	Russia	Chile	Mexico	Mexico	Chile
MOI	1°	Brazil	Germany	Canada	Brazil	USA	Brazil
	2°	Chile	Brazil	USA	Peru	Japan	Venezuela
	3°	USA	Uruguay	Uruguay	USA	Brazil	Mexico
		Corrientes	Entre Ríos	Formosa	Jujuy	La Pampa	La Rioja
Primary Prod.	1°	Brazil	China	Brazil	Belgium	Brazil	Italy
	2°	Chile	Brazil	Chile	China	China	USA
	3°	Iraq	Chile	Iraq	Brazil	Spain	Chile
MOA	1°	USA	Brazil	USA	Chile	Netherlands	USA
	2°	Chile	Chile	Brazil	Russia	Chile	Brazil
	3°	France	Venezuela	Italy	Uruguay	Russia	Hong Kong
MOI	1°	Brazil	Uruguay	Peru	Brazil	Brazil	Chile
	2°	USA	Chile	USA	Italy	South Africa	Peru
	3°	Paraguay	Brazil	Germany	Bolivia	Uruguay	Uruguay

Table 2

PROVINCIAL EXPORTS 2007-2009
(% Share of the three Main Destinations)

		Mendoza	Misiones	Neuquén	Río Negro	Salta	San Juan						
Primary Prod.	1°	Brazil	37.6	Belgium	33.3	Brazil	21.8	Brazil	27.6	China	21.1	Brazil	28.5
	2°	Russia	9.5	USA	14.3	Chile	19.7	Russia	19.9	Brazil	14.4	Netherlands	14.9
	3°	USA	9.1	Netherlands	7.2	Russia	15.6	Netherlands	9.2	Belgium	7.4	Russia	12.8
MOA	1°	USA	23.7	USA	34.0	USA	85.1	USA	64.8	Chile	16.7	USA	29.5
	2°	Brazil	15.2	Brazil	17.3	Germany	1.9	Italy	9.3	USA	14.2	Brazil	16.3
	3°	Canada	6.8	Syria	9.3	Netherlands	1.8	Germany	6.8	Netherlands	7.8	South Africa	6.0
MOI	1°	Brazil	28.0	Brazil	57.3	Chile	27.8	Brazil	55.8	USA	23.2	Switzerland	72.0
	2°	Chile	19.2	China	13.5	USA	24.5	Bolivia	12.3	Brazil	21.5	Canada	6.9
	3°	USA	11.8	South Africa	11.1	Brazil	11.9	Uruguay	4.7	China	20.8	Chile	5.9
		San Luis		Santa Cruz		Santa Fe		Santiago del Estero		Tierra del Fuego		Tucumán	
Primary Prod.	1°	China	17.0	Spain	51.3	China	42.3	China	42.9	France	24.3	China	12.9
	2°	Chile	7.5	Peru	7.9	Brazil	10.7	Brazil	5.4	Spain	19.0	Netherlands	10.8
	3°	Iran	6.6	Mexico	7.8	Iran	4.6	Spain	4.9	Canada	9.9	Russia	10.4
MOA	1°	Netherlands	15.6	Spain	29.9	China	11.5	USA	31.9	Japan	56.1	USA	16.1
	2°	Chile	14.7	Brazil	12.6	Spain	7.7	Chile	16.6	France	11.6	Netherlands	15.2
	3°	Germany	11.3	Italy	8.0	Netherlands	7.0	Italy	10.7	Germany	7.2	Chile	14.7
MOI	1°	Chile	29.6	Switzerland	87.4	Brazil	51.9	Brazil	98.9	Brazil	42.9	Brazil	52.8
	2°	Brazil	28.3	Germany	9.1	Chile	6.9	USA	1.1	Spain	14.7	USA	16.8
	3°	Paraguay	8.2	USA	3.0	Uruguay	6.1	Italy	0.0	Uruguay	7.8	United Kindom	6.4

Source: Authors' elaboration based on INDEC data.

Table 3

EXPORTS BY DESTINATION 2007-2009
(Total Share of the three Main Destinations)

Province	% of the three Main Destinations			Ranking*			
	Primary	MOA	MOI	Primary	MOA	MOI	**
Catamarca	62.3	71.0	91.8	4	4	3	High
La Rioja	97.8	62.2	68.1	1	6	14	High / Medium
Misiones	54.8	60.6	82.0	11	7	5	High / Medium
Río Negro	56.8	80.8	72.9	7	2	10	High / Medium
San Juan	56.2	51.8	84.8	8	10	4	High / Medium
Santa Cruz	67.1	50.5	99.4	3	12	2	High / Medium
Santiago del Estero	53.2	59.1	100.0	13	8	1	High / Medium
La Pampa	31.2	63.9	76.0	23	5	7	High / Low
Neuquén	57.0	88.8	64.2	6	1	19	High / Low
Chaco	47.9	49.4	77.5	16	14	6	Medium / High
Chubut	73.5	49.8	70.4	2	13	12	Medium / High
Tierra del Fuego	53.3	75.0	65.4	12	3	17	High / Low / Medium
Tucumán	34.0	46.0	76.0	22	16	8	High / Low / Medium
Corrientes	56.2	50.9	69.1	9	11	13	Medium
Formosa	51.2	52.5	35.6	15	9	24	Medium / Low
Jujuy	42.9	46.2	72.4	20	15	11	Medium / Low
Santa Fe	57.6	26.1	64.9	5	24	18	Lows / High
Córdoba	41.7	27.9	74.0	21	23	9	Lows / Medium
Mendoza	56.2	45.7	59.1	10	17	20	Lows / Medium
Salta	43.0	38.7	65.5	19	19	16	Lows / Medium
San Luis	31.2	41.6	66.1	24	18	15	Lows / Medium
CABA	52.2	36.5	39.3	14	20	23	Lows / Medium
Buenos Aires	46.1	31.8	54.8	17	21	22	Low
Entre Ríos	45.0	28.5	55.2	18	22	21	Low

Note: (*) In descending order re. total percentage of three main destinations. (**) High: ranking 1 to 8, Medium: ranking 9 to 16; Low: ranking 17 to 24.

Source: Authors' elaboration based on INDEC data.

CABA, Buenos Aires, and Entre Ríos, with Tucumán, Misiones, Chaco, and Entre Ríos at the other extreme.

Analyzing the different types of goods separately, we found that, in general terms, the different territories' positions remain the same. In terms of Primary Commodities, Santa Fe is still the best-placed. In MOA, San Lorenzo, Rosario (both in Santa Fe Province), and

the Federal Capital district (in CABA) have a virtual monopoly. Last, CABA is the top of the rankings for MOI, the Campana customs, just 70km from CABA, being the main exit point.

When we distinguish between exports to neighboring countries (Bolivia, Brazil, Chile, Paraguay, and Uruguay) and non-neighboring countries, the ranking of

Table 4

**PERCENTAGE DISTRIBUTION OF EXPORTS BY
EXIT CUSTOM PRODUCTS AND DESTINATIONS: 2007-2009**

Custom	Province	Total	Primary Products	MOA	MOI	Bolivia	Brazil	Chile	Paraguay	Uruguay	Border Countries	Non-Border Countries
San Lorenzo	Santa Fe	24.8	29.3	41.9	3.1	0.0	3.2	7.1	0.8	1.1	3.6	33.7
Capital	CABA	20.3	13.1	25.5	19.2	0.2	8.7	0.5	1.2	32.0	8.4	25.2
Campana	Buenos Aires	9.4	3.4	0.8	22.7	1.9	22.1	0.8	2.0	1.6	14.7	7.1
Rosario	Santa Fe	9.0	16.1	12.4	0.5	0.0	1.9	3.4	0.3	1.1	2.0	11.9
Mendoza	Mendoza	5.7	1.3	5.5	8.9	0.1	0.0	64.3	0.0	0.0	12.6	2.9
Paso de los Libres	Corrientes	5.4	0.8	1.7	12.6	0.0	28.5	0.0	0.0	0.0	18.4	0.0
Ezeiza	Buenos Aires	4.6	0.9	0.9	11.1	3.3	2.6	12.6	3.3	8.4	5.1	4.4
Bahía Blanca	Buenos Aires	4.3	12.4	2.6	0.8	0.0	4.9	1.3	0.0	1.9	3.6	4.6
Santo Tomé	Corrientes	2.7	0.7	0.6	6.4	0.0	14.2	0.0	0.0	0.0	9.2	0.0
Necochea	Buenos Aires	2.1	5.9	1.6	0.0	0.0	3.1	0.6	0.0	0.5	2.2	2.0
Iguazú	Misiones	1.2	1.2	1.2	1.2	0.0	6.2	0.0	0.3	0.0	4.0	0.0
San Nicolás	Buenos Aires	1.0	2.5	0.2	1.0	0.4	0.4	0.2	10.0	0.3	0.8	1.1
Clorinda	Formosa	0.9	0.2	0.5	1.8	0.0	0.0	0.0	70.6	0.0	3.1	0.0
Colón	Entre Ríos	0.8	0.3	0.4	1.6	0.0	0.0	0.0	0.0	33.5	2.7	0.0
Pocitos	Salta	0.7	0.2	0.3	1.4	70.1	0.0	0.0	0.0	0.0	2.4	0.0
Concordia	Entre Ríos	0.4	0.2	0.3	0.7	0.0	0.0	0.0	0.0	16.4	1.3	0.0
La Quiaca	Jujuy	0.2	0.1	0.4	0.1	20.6	0.0	0.0	0.0	0.0	0.7	0.0
Posadas	Misiones	0.1	0.2	0.0	0.3	0.0	0.0	0.0	10.7	0.0	0.5	0.0
Other Customs		6.4	11.3	3.2	6.8	3.3	4.1	9.1	0.8	3.0	4.9	7.1
Total (US\$ millions)		160,434	37,993	64,332	58,109	1,580	30,399	9,235	2,093	3,784	47,091	113,343

Note: Excluding fuel and energy exports.

Source: Authors' elaboration based on INDEC data.

Table 5

AVERAGE DISTANCE (KMS) BETWEEN PROVINCE CAPITAL CITIES AND CUSTOMS HEADQUARTERS LOCATIONS*

Province	Simple Average	Weighted Average **										
		Total	Bolivia	Brazil	Chile	Paraguay	Uruguay	Border Countries	Non-Border Countries	Primary Products	MOA	MOI
Buenos Aires	777	411	1,768	582	874	1,086	278	675	299	407	388	441
CABA	730	359	1,709	530	820	1,027	223	622	247	365	333	385
Catamarca	1,114	1,046	873	1,230	853	1,074	1,107	1,130	1,010	1,052	983	1,114
Chaco	845	873	1,138	723	1,311	378	830	840	887	920	847	874
Chubut	1,812	1,515	2,547	1,781	1,556	2,236	1,583	1,770	1,407	1,369	1,474	1,653
Córdoba	851	644	1,140	827	663	1,029	673	803	576	623	571	740
Corrientes	831	857	1,150	699	1,317	388	782	823	871	912	837	845
Entre Ríos	679	453	1,339	549	796	725	385	617	383	449	382	536
Formosa	999	1,037	1,300	896	1,475	308	999	999	1,052	1,086	1,012	1,034
Jujuy	1,298	1,397	474	1,413	1,369	1,242	1,465	1,369	1,409	1,437	1,359	1,417
La Pampa	1,045	725	1,708	991	738	1,404	749	968	621	642	683	824
La Rioja	1,151	1,035	1,019	1,250	743	1,200	1,111	1,134	993	1,039	968	1,110
Mendoza	1,235	992	1,554	1,300	292	1,596	1,092	1,116	939	992	928	1,065
Misiones	934	1,023	1,443	701	1,528	621	903	894	1,078	1,114	1,044	942
Neuquén	1,539	1,220	2,264	1,531	912	2,038	1,308	1,445	1,124	1,101	1,182	1,337
Río Negro	1,401	1,084	2,274	1,313	1,261	1,817	1,114	1,343	974	935	1,057	1,207
Salta	1,272	1,366	411	1,383	1,347	1,212	1,435	1,340	1,378	1,406	1,328	1,386
San Juan	1,253	1,047	1,434	1,324	427	1,553	1,163	1,157	1,001	1,046	985	1,119
San Luis	1,024	768	1,475	1,043	404	1,305	852	935	697	740	699	865
Santa Cruz	2,947	2,647	3,667	2,900	2,707	3,359	2,725	2,897	2,541	2,507	2,615	2,772
Santa Fe	683	330	1,441	560	699	831	397	615	209	285	231	472
Santiago del Estero	990	946	792	1,051	996	880	973	1,018	916	962	888	1,004
Tierra del Fuego	3,533	3,233	4,264	3,496	3,295	3,967	3,282	3,489	3,124	3,090	3,197	3,364
Tucumán	1,100	1,090	657	1,207	1,037	1,041	1,130	1,143	1,067	1,108	1,034	1,142

Note: (*) Considering main roads. (**) Weighted by participation in total exports of the 18 main customs.

Source: Authors' elaboration based on INDEC data.

territories undergoes no significant change. However, when we look at each neighboring country separately, the changes are considerably more significant. The territories that go up in the ranking are those having a border with countries they export to: (a) Salta, Jujuy, Tucumán, and Catamarca for exports to Bolivia, (b) Misiones, Formosa, and Tucumán for exports to Brazil, (c) Formosa, Misiones, Tucumán, Chaco, Salta, and Jujuy for exports to Paraguay, and (d) San Juan, Mendoza, Neuquén, La Rioja, and San Luis for exports to Chile. As Uruguay is near the main exit customs, there are no major changes.¹³

To summarize, we can say that provincial exports are heavily concentrated in the customs of Argentina's center-east. This is particularly true for sales of Primary Commodities and MOA to non-neighboring countries. In the case of sales to neighboring countries and MOI, the customs posts located in the northeast -the exit point to Brazil- and the center-west -particularly Mendoza- where sales are channeled through to Chile come to have greater importance.

INTERNAL MOTOR TRANSPORTATION COSTS AND THEIR IMPACT ON PROVINCIAL EXPORTS: A SIMULATION EXERCISE

As we mentioned in the Introduction, in this section, we approximate the potential effects of improvements in motor transport technology (lowering the freight rate) in a simulation exercise.

While, from a methodological point of view, it would have been interesting and appropriate to use the role of transportation costs proposed by Combes & Lafourcade (2005), the lack of information has forced us to adopt a different approach.¹⁴ In brief, as we pointed out above: (a) there are no data available at the product level regarding exports' provincial origin, destination, and exit customs, (b) there is no disaggregated information at that level on means of transport used, and (c) transportation cost data are extremely limited, particularly the most relevant (road

transport). We therefore intend to take a simpler, more realistic path.

On the basis of data for the different components of transportation costs provided in a study by the Centro Tecnológico de Transporte, Tránsito y Seguridad Vial (2007) of the National Technological University, and the distances between various Argentine provinces and customs posts, we will carry out a simulation exercise to approximate the potential effects of lowering the per-kilometer freight rate.

To begin with, using the data for the average per-kilometer freight rate for 2006 from the above study (for journeys of 150km, 500km, and 1,500km), let us see how said cost behaves in relation to distance traveled.¹⁵ On the basis of this information and its update, we found that in 2009, the per-kilometer freight rate for 150 km was US\$1.90, US\$1.225 for 500km, and US\$1.022 for 1,500km.¹⁶

A simple *back-of-the-envelope* calculation suggests that a 10% increase in the distance to be covered reduces the cost by about US\$0.0384 per kilometer. To put it another way, this is a measure of the per-kilometer freight rate's sensitivity. We can now carry out our simulation exercise.

Supposing the 1,500km per-kilometer freight rate benchmark is reduced by 10%, let us analyze what happens to the total freight rate (depending on total distance traveled) for different destinations and types of goods in relation to this sensitivity.¹⁷ As can be seen in [Figure 6](#) (Scenario 1), the territories farthest away from the exit customs are those that benefit most, with total costs falling by between 13% and 14%. At the other extreme, those territories located nearer export exit points benefit less, with reductions in total cost of about 6% to 8%.

¹³ Looking at non-bordering countries, however, there are no major changes in the rankings.

¹⁴ An example of the application of Combes & Lafourcade's approach is presented by Labraga (2009), who analyzes the impacts of trade infrastructure policy on industrial location in Uruguay.

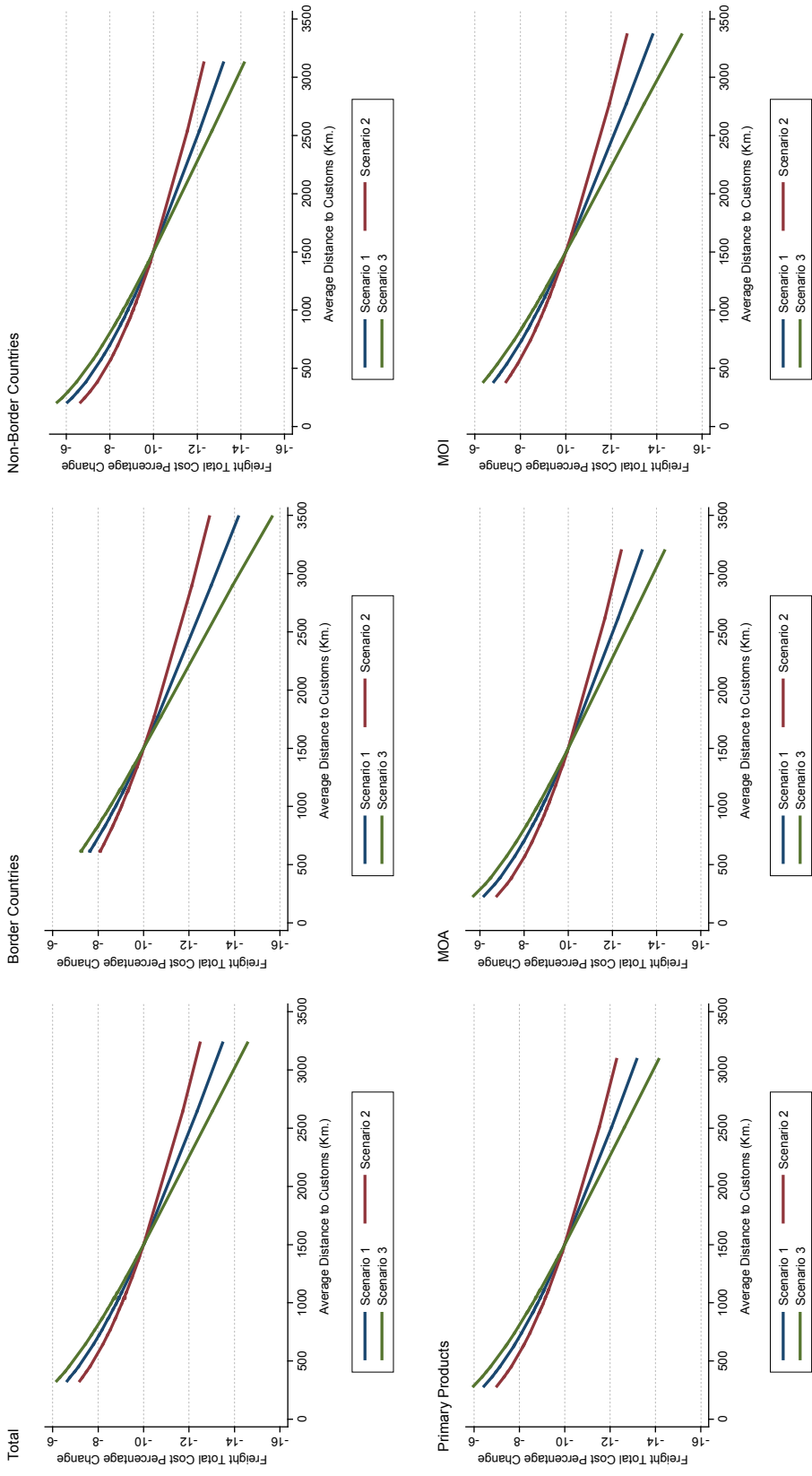
¹⁵ The study looks at the use of a 26-tonne truck in all three cases, assuming 50% use for the 150km section, 65% for the 500km section, and 95% for the 1,500km section.

¹⁶ The update uses the evolution of the Freight Rate Index prepared by the Argentine Federation of Cargo Motor Vehicle Transportation Companies and the evolution of the US dollar between 2006 and 2009.

¹⁷ The changing costs for different distances is arrived at using the per-kilometer rate's sensitivity to distance.

Figure 6

FREIGHT TOTAL COST RESPONSE TO A 10% AVERAGE COST REDUCTION PER KM FROM REFERENCE FREIGHT*



Note: (*) 1500 km.

Source: Authors' elaboration.

Table 6

CARGO TRANSPORT COSTSⁿ
(Scenario 1)

Before Cost Reduction per Km						
Total Exports	Border Countries	Non-Border Countries	Primary Products	MOA	MOI	
Best Positioned (US\$)	Best Positioned (US\$)	Best Positioned (US\$)	Best Positioned (US\$)	Best Positioned (US\$)	Best Positioned (US\$)	
Santa Fe	889	Santa Fe	Santa Fe	Santa Fe	CABA	634
CABA	891	CABA	CABA	CABA	Buenos Aires	703
Buenos Aires	897	Buenos Aires	Buenos Aires	Entre Ríos	Santa Fe	740
Worst Positioned (US\$)	Worst Positioned (US\$)	Worst Positioned (US\$)	Worst Positioned (US\$)	Worst Positioned (US\$)	Worst Positioned (US\$)	
Chubut	1,841	Jujuy	Jujuy	Chubut	Chubut	1,796
Santa Cruz	2,464	Santa Cruz	Santa Cruz	Santa Cruz	Santa Cruz	2,461
Tierra del Fuego	2,718	Tierra del Fuego	Tierra del Fuego	Tierra del Fuego	Tierra del Fuego	2,736
Variation Coeff.*	32.3%	Variation Coeff.*	Variation Coeff.*	Variation Coeff.*	Variation Coeff.*	36.0%
Range**	3.1	Range**	Range**	Range**	Range**	4.3
After a 10% Reduction in the Reference Freight Cost per Kilometer (1500 km)						
Total Exports	Border Countries	Non-Border Countries	Primary Products	MOA	MOI	
Best Positioned (US\$)	Best Positioned (US\$)	Best Positioned (US\$)	Best Positioned (US\$)	Best Positioned (US\$)	Best Positioned (US\$)	
Santa Fe	821	Santa Fe	Santa Fe	Santa Fe	CABA	591
CABA	823	CABA	CABA	CABA	Buenos Aires	653
Buenos Aires	828	Buenos Aires	Buenos Aires	Entre Ríos	Santa Fe	687
Worst Positioned (US\$)	Worst Positioned (US\$)	Worst Positioned (US\$)	Worst Positioned (US\$)	Worst Positioned (US\$)	Worst Positioned (US\$)	
Chubut	1,645	Jujuy	Jujuy	Chubut	Chubut	1,610
Santa Cruz	2,144	Santa Cruz	Santa Cruz	Santa Cruz	Santa Cruz	2,149
Tierra del Fuego	2,333	Tierra del Fuego	Tierra del Fuego	Tierra del Fuego	Tierra del Fuego	2,358
Variation Coeff.*	29.8%	Variation Coeff.*	Variation Coeff.*	Variation Coeff.*	Variation Coeff.*	33.7%
Range**	2.8	Range**	Range**	Range**	Range**	4.0

Note: ⁽ⁿ⁾ Assuming a 26 tonm. cargo truck at 95% capacity. (*) Excluding fuel exports. (**) Total Cost Variation Coefficient. (***) Quotient resulting from maximum cost and minimum cost.

Source: Authors' elaboration.

The results do not qualitatively change when working with different sensitivities in per-kilometer freight rates in terms of distance. Scenarios 2 and 3 in [Figure 6](#) display two alternative sets of circumstances. The former assumes a per-kilometer freight rate sensitivity 25% lower than the base case (US\$0.0288). The latter (Scenario 3), however, assumes a sensitivity 25% higher (US\$ 0.048).

Not surprisingly, the higher the sensitivity of per-kilometer cost to distance traveled, the greater the benefit of the territories farthest away from the customs exit. Whichever one comes about one way or another in practice will depend on the freight service's cost structure. A higher incidence of fixed costs (those not depending on the distance traveled) will lower the sensitivity, whereas the opposite will be true if the weight of the variable costs is higher.

When comparing the effects of the reduction in the freight rate between neighboring and non-neighboring countries, positive effects are more important for the former than the latter. If, however, we draw a distinction by type of good, the major impacts are seen in MOI transport, while the effects on primary commodity and MOA exports are fairly similar to one another. This is partially explained because Primary Commodities and MOA -unlike MOI- are mostly for non-neighboring partners (Europe, the USA, and more recently China) because of which they must be transported to the main exit, i.e. the Buenos Aires-Rosario port cluster.

To appreciate how far the greater effects on the territories farthest from the main customs posts help to reduce the disparity in transportation costs, [Table 6](#) summarizes some of the measures. First, we can see that the monotonous relationship between total transportation costs and distance implies that the territories' relative positions remain unchanged.

As expected, the two dispersion measures analyzed -the Variation Coefficient and the Amplitude Coefficient- undergo a fall because the greatest effects occur for the most remote territories.¹⁸ Also, the reduction is sharper for exports to neighboring countries and for MOI.

¹⁸ The Amplitude Coefficient is measured as the quotient of the territories with the highest and lowest rates.

It should be noted that, as with simulation exercises based on assumptions that are often too narrow, our results must be interpreted with caution. Certain additional elements should also be borne in mind. First, as already pointed out, to accurately assess the effects of the reduction in transportation costs, information would be needed on means of transport and journey/itinerary in terms of the type of good, destination, and origin, as shown in Combes & Lafourcade (2005). To quantify how far a reduction of transportation costs affects exports, it would also be necessary to ascertain the incidence of these costs as a proportion of the values exported, information that unfortunately is not available to us.¹⁹

CONCLUSIONS

Argentina is a vast country, but at the same time its population and economic activity is heavily concentrated in a fairly narrow geographic area, in the center-east of the country. There are several reasons for this geographic pattern that developed and became more pronounced as the twentieth century wore on.

In response to and helping to deepen this development, the busiest geographic location of ports, airports, and border crossings, together with the direction and location of the busiest freight and passenger corridors have a radial structure around the main port cluster and exit gateway for Argentina's exports, i.e. the Buenos Aires-Rosario port cluster. This spatial arrangement of infrastructure and services has put the regions farthest away from the port of Buenos Aires at a disadvantage.

In recent years, the creation of MERCOSUR and its growing importance as the main destination of Argentine exports (especially Brazil) has helped to reduce this trend, albeit only slightly. The growing importance of Chile as a destination for Argentine sales -currently the third largest- has improved the position

¹⁹ However, regarding this last point, if we remember that, for territories with lower shares in foreign trade, the spread of exported values is higher than that of transportation costs and they are also farther from the main customs. Any reduction in transportation costs will be more significant when measured in terms of exported values (which is, in turn, magnified by the sharper drop in transportation costs in the more distant territories).

of the center-west provinces. Despite these changes, the strip between Buenos Aires and Rosario remains the main exit point for foreign sales.

Owing to the disadvantage experienced by the provinces farthest away from the center-east of Argentina, we set out to analyze whether an improvement in motor transport technology, in terms of a reduction in the per-kilometer land freight rate, might benefit these provinces. A simulation exercise was conducted to that end, and the results (explained in detail in the previous section) would suggest that the territories farthest away from customs posts would benefit most.

From this result it would appear that improvements in motor transport facilitate the insertion of

exporting provinces farthest away from economic center of Argentina. To this we should add that an improvement in rail transport, characterized as it is by larger freight capacity than road transport and by operating costs not proportional to the distances traveled (a parabolic tariff), could bring extra benefits to these areas of Argentina.

Last, the peripheral provinces' commercial specialization in Primary Commodities and MOA -destined in the main to countries with which Argentina has no geographic boundary- makes them highly dependent on the ports located in the Buenos Aires-Rosario strip. Reducing this dependence should be a further goal of policy. ♦

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FREIGHT LOGISTICS IN LATIN AMERICA AND THE CARIBBEAN: AN AGENDA TO IMPROVE PERFORMANCE*

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REPORT OBJECTIVES AND CONTENTS

The purpose of this Technical Note is to identify the main obstacles to logistics performance in Latin America and the Caribbean ("the Region") and to offer an agenda for action. The note includes a didactic presentation of the conceptual foundations of freight logistics for those interested in the formulation of public policies across the diverse areas covered by this topic. The document studies the relative position of Latin America's logistics performance by reviewing the main available indicators and analyzing the probable causes of the performance gap between the Region and other countries. The study's methodology includes: an in-depth review of the most critical components that contribute to the weak regional performance, and an examination of documents that assess the logistics situation of 10 countries in the Region. Based on the results, a public policy agenda is formulated, to improve the Region's performance and identify country clusters with different requirements.

FUNDAMENTAL CONCEPTS OF FREIGHT LOGISTICS

Freight logistics -a key component of supply chain management- centers on the flow of goods (transport and storage) throughout the value chain. Players in the economy organize logistics based on their inventory, production, and distribution strategies, generally achieved through a balance of factors: transporting production inputs or finished products in large shipments, for example, can reduce freight costs but increase inventory costs, and vice versa. The advent of modern logistics has led to a significant change in freight transport demand, since those who decide to transport their products do not seek to reduce the (general) costs of transportation, but instead try to optimize a more complex function: to minimize the logistics costs, which include inbound and outbound transportation, storage, inventory costs during those stages, product deterioration, and other costs incurred in the movement of goods.

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The approach adopted in the development of the conceptual foundations of logistics has its roots in the causes that give rise to the movement of goods in the economy and in the models that aggregate these flows. It analyzes the flow of goods across the value chain, which links diverse units of production, trade, and consumption, and identifies the role of logistics as a group of processes and functions that are part of the supply chain. In this sense, we try to integrate three areas of knowledge: *spatial economics*, which takes the aggregate movement of goods in a country's economy (in spatial units and economic sectors); *supply chains*, which considers the flow of materials across economic actors organized into value chains (producers, consumers); and *freight logistics*, which centers on goods transport and inventory management.

In the last 25 years considerable changes have taken place in the way firms organize the flow of goods.

They have focused on *just-in-time* practices to reduce inventory costs; their product cycles have become increasingly shorter; they have chosen to produce to order *versus* produce to stock; and they have outsourced logistics functions to operators who -by providing services to several clients- can achieve important economies of scale. The reduction of inventory costs in the last few years has been immense, and the reliability of transportation services has become in most cases more relevant than freight costs. The process of modernization in logistics planning and organization includes both shippers' -as the organizers of the supply chain- as well as carriers to whom services are outsourced.

Several different perspectives are relevant when it comes to analyzing logistics problems: shippers' (firms that produce or sell goods); logistics operators (carriers, agents, and other players providing transport services); and government agencies (national or sub-national)

THE COMPONENTS OF THE LOGISTICS SYSTEM

	Activities	Functions	Typical components
Transport Infrastructure and Services	DOMESTIC FLOWS	Freight movement within national territory	<ul style="list-style-type: none"> ▶ Roads, trucking transportation ▶ Railroads ▶ Inland navigation ▶ Urban logistics
	TRANSFER NODES	International trade transfer nodes	<ul style="list-style-type: none"> ▶ Ports ▶ Airports ▶ Border crossing
	INTERNATIONAL FLOWS	Freight movement outside national territory	<ul style="list-style-type: none"> ▶ Air, maritime transport ▶ International road transport
	INTERFACES AND COORDINATION	Commercial and operations coordination between modes	<ul style="list-style-type: none"> ▶ Coordination of delivery and reception ▶ Multimodal transport
Business Logistics	SUPPLY CHAIN MANAGEMENT	Supply chain design and management	<ul style="list-style-type: none"> ▶ Materials and inventory management ▶ Distribution
	LOGISTICS OPERATORS AND INTERMEDIARIES	Provision of integrated logistics services	<ul style="list-style-type: none"> ▶ Logistics operators, 3PL, forwarders, agents ▶ Logistic platforms
Trade Facilitation	"SOFT" INFRASTRUCTURE AND CUSTOMS	Freight search and inspection on national territory and international movement	<ul style="list-style-type: none"> ▶ ICT ▶ Customs, maritime regulation
	COMMERCIAL POLICY REGIME	Design and implementation of government strategy	<ul style="list-style-type: none"> ▶ FTA, EPA, WTO ▶ Standard Harmonization ▶ Labor, Environmental measures
	BUSINESS ENVIRONMENT	Regulatory environment and its impact on the operation of industries	<ul style="list-style-type: none"> ▶ ISO, SPS, security ▶ Export promotion

The major building blocks of logistics are: (i) transport infrastructure and services; (ii) enterprise logistic and (iii) trade capacities of logistics operators and facilitators.

that try to improve logistics performance in their territories as a way to improve the competitiveness of their companies. This variety of perspectives explains the diverse set of issues pertaining to freight logistics. This document focuses on the third perspective and adopts a conceptual framework for the diverse factors that determine logistics performance in a country, as illustrated in the graph below.

The major building blocks of logistics are: (i) transport infrastructure and services, including internal and external freight flows, freight transfers, and trade interfaces and operations; (ii) business logistics, which covers the way that firms organize their supply chains and the capacities of logistics operators and intermediaries they rely on; and (iii) trade facilitation, which includes standard documentation and inspections, and safety in the physical movement of freight.¹ This complexity, along with the systemic nature of logistics problems, can only be addressed through a “cross-cutting agenda” where very distinct areas of public and private administration merge.

HOW TO MEASURE LOGISTICS PERFORMANCE

The performance of logistics in a given territory (a country, for example) is not easy to measure or interpret. There are three basic measurement approaches: (i) the macro approach, based on national accounts, which generally tries to estimate logistics costs as a percentage of gross domestic product (GDP); (ii) the micro approach, based on company surveys, which tries to estimate different performance indicators for production units (individually or in the production chain); and (iii) the perception approach, based on indexes taken from surveys to stakeholders. These indexes are relatively new measuring instruments in the logistics field and should be added to the vast array of perception indicators already identified in every country. The complexity of the logistics functions and processes makes it difficult to design indicators, take measurements, or estimate values.

¹ The trade facilitation agenda has broadened in the last years, adopting a perspective for integrated supply chain organization that partially overlaps with the agenda for freight logistics.

COMPARATIVE LOGISTICS PERFORMANCE IN LATIN AMERICA AND THE CARIBBEAN

According to worldwide measurements, logistics costs as a percentage of GDP in LAC are between 50% and 100% higher than in Organisation for Economic Cooperation and Development (OECD) countries. A similar proportion is estimated for inventory costs, a major component of logistics. Moreover, similar results were found for the logistics costs of companies, although such measurements cannot be used to estimate overall logistics costs by country.

According to the Logistics Performance Index (LPI) -the most specific perception indicator for logistic activities- Latin American countries perform relatively low: out of 150 countries, all but two countries in the Region are ranked below the fiftieth position. Furthermore, the Enabling Trade Index -an indicator recently developed by the World Economic Forum to measure factors specific to international trade logistics- showed Latin America below the United States, Canada, several other countries in Western, Central, and Eastern Europe, the Middle East, and North Africa. Other indicators such as the World Bank's Doing Business yielded similar results.

MOST CRITICAL COMPONENTS

The available international logistic performance indicators provide a clear and consistent message, regardless of the objections that may be raised against their consistency: there is ample space for improvement in the Region. An in-depth review of the various indicators reveals six critical factors that may explain the Region's weak performance:

EXTENSION AND CONDITIONS OF ROADS NETWORK

The Region's roads network has structural deficiencies as observed by its reduced spatial coverage and the physical state of its assets. In addition, it faces the consequences of an intensive growth in traffic due to increased business activity, trade, and more motor traffic. Both challenges -the expansion, rehabilitation, modernization, and maintenance of the network on the one hand, and an increase of its capacity on the other hand- require considerable financial and management efforts, which makes the infrastructure sector to have the greatest need for resources. The improvements

made to the roads network have a direct influence on freight logistics costs and simultaneously satisfy many other mobility needs of the population.

THE PERFORMANCE OF ROAD FREIGHT TRANSPORTATION

The main problem faced by the trucking industry is the inefficiency of many of its sectors, the effects of which are multiplied since it touches almost every link of the logistics chain. Although road freight is the most important mode of domestic transportation in the region, it has few information sources and there is very little analysis of the sector. The impact of improvements on road freight transportation in logistics is not limited to a reduction of fare rates and travel time; it promotes the development of better management strategies on the part of shippers, which induces innovation and improves the efficiency of companies that produce and trade goods.

PORTS

Ports are the most critical nodes in the Region because 80% of all international trade passes through them. Although most ports have achieved acceptable levels of performance in loading and unloading ships due to effective public-private partnership (PPP) coordination, organizational problems persist in the port services community, in the coordination among actors, and in their relationship with the city. In some cases, ports continue to operate under inadequate management models and become relegated in the process. The potential impact of port improvements on international trade logistics is formidable, since it is probably the area where major advances can be made to improve country competitiveness.

FREIGHT RAILWAYS

In recent years freight railways have managed to widen and modernize their business activity and have specialized in bulk transportation (raw materials), with a strong orientation toward exports. Their transport potential is huge and their ability to reduce negative externalities will continue to make them an attractive option for a sustainable transportation model. Private-sector participation has resulted in important management improvements and some investments, but the active participation of the public sector is going to be necessary for substantial increases in the quantity and diversity of freight and in the quality of service. Increased usage of railroads will have a significant

impact in bulk logistics and may also play a role in main container transportation corridors connected to ports. However, the benefits go beyond improvements in logistics, as it also contributes to reducing externalities that are gaining importance in the public policy agenda of many countries in the Region (such as contaminating emissions and greenhouse gases, accidents, congestion).

TRADE FACILITATION AND BORDER CONTROL

The set of processes that make up trade facilitation (as understood in the strict sense, including formalities, procedures, and administrative issues pertaining specifically to international trade and transportation) show considerably lower levels of development in the Region than in developed countries and other developing countries. The performance indicators show a large dispersion and heterogeneity among facilitation processes, a difference that can be more important than that observed in the infrastructure sector, as high costs and time delays can cancel out any benefits accrued from large infrastructure investments. Recent studies indicate that, following port efficiency, the factors that most influence competitiveness are customs efficiency and e-commerce. Thus, the actions that improve performance have been clearly identified, and many international organizations (the United Nations in particular) have already developed appropriate programs.

LOGISTICS MANAGEMENT PERFORMANCE OF SMALL AND MEDIUM-SIZE ENTERPRISES (SMEs)

Even though the impact of SMEs on international trade is relatively small, their importance cannot be understated as they are a major source of employment creation. For this reason, their competitiveness is of major interest to countries and national institutions. Exportoriented SMEs prefer intraregional trade, which contributes to the integration process, but their logistic performance is clearly inferior to that of large enterprises. In the Region, their logistics costs are two to three times larger than those of big companies. Analyses and proposals on this subject are scarce, especially considering the impact that improved logistics performance of SMEs could have for a given country. Factors inhibiting the competitiveness of SMEs include: a clear disadvantage in scale (their shipments are sporadic and do not fill up a truck or a container), and other cultural components, such as the difficulty that small entrepreneurs have in valuing the

importance of managing inventory costs. International experience suggests that a variety of policies to support

private-sector development can be implemented to increase the competitiveness of SME clusters.

SUMMARY OF THE ANALYSIS BY CRITICAL COMPONENT OF REGIONAL LOGISTICS

	Roads	Trucking industry	Ports
Current situation	Low coverage and poor quality conditions	Low efficiency, lacking professionalism	Intermediate, high impact of reforms and the PPP
Main needs	Multiple needs: more coverage, maintenance, broaden capacity, modernize standards, rural roads	Modernize operating management	Increase capacity and improve performance; reforms that were not done and adjustments where there were reforms
Differentiation by country type	Poorest countries: high investment; large countries, with territorial voids: need to expand network	Problems more salient in countries with lower incomes; duality in mid-income countries	Differences due to management model more than to country income levels
Investment, public and private	High investment needs; mainly public sector; financing sources?	Private investment; the public sector can facilitate upgrading a cleaner and more efficient fleet	Ample space for PPPs; need for good designs and regulatory capacity
Sector's level of knowledge	Generally good	Very low	Generally good
Impact on logistics	High but difficult to measure, affects mobility as a whole; pressure toward increased motorization	Very high, not only on freight but downstream in the value chain, on domestic and international logistics	Very high in foreign trade, with the ability to influence entire ground and maritime chain

	Railroads	Trade facilitation	SMEs and regional logistic development
Current situation	Intermediate to good in freight where there were reforms; great potential for expansion	Intermediate, improvements underway; heterogeneity, cases of extreme backwardness	SMEs with very high logistics costs
Main needs	Improvements in infrastructure, access to ports, belts in urban areas	Expeditious and transparent procedures, paperless systems, single window schemes, facilitate transportation	Training, integration, platforms (logistics platforms), strengthen operators, institutional development
Differentiation by country type	More potential in large countries, with large-scale freight	More related to institutional quality than income	More appropriate in mid-income countries
Investment, public and private	Room for PPP; requires adequate regulation	Basic responsibility of the public sector	State as promoter of private-sector development
Sector's level of knowledge	Generally good	Generally good	Very low
Impact on logistics	High for bulk transportation; potential in general freight when joined with domestic and international multimodal transportation	Very high on foreign trade	Probably high; impact on SMEs involved in regional trade

The following two Tables summarize the conclusions of this analysis. In general, the current situation is weak for a few components (roads, road freight transportation) and is average for others (ports, railroad). Emerging needs are diverse, since they inherit longexisting “unresolved matters” that overlap with newer needs requiring greater capacity and service quality, derived from newer and larger demands. These needs vary according to the country’s income level and size. This suggests that different agendas will have to be prepared for groups of countries. Countries that already reformed their regulated services will probably require adjustments to the regulations (second-generation reforms), while countries that have not undergone reform should in most cases carry them forth to catch up on their delay. There are opportunities for public-private partnerships, but they require considerable public capacity-building to structure projects and regulate services.

There is basic knowledge on most components of freight logistics, but this knowledge is markedly low in road freight transportation and the performance of small and medium-size enterprises. Improvements in one component are relevant and/or beneficial for all (that is why they were selected), but for certain components the benefits of those improvements are exclusively centered on international trade logistics or even on specific types of products, such as freight railroads that transport minerals and grains. The benefits accrued from improvements in roads, however, go beyond freight logistics.

ANALYTICAL STUDIES RELATED TO LOGISTICS BY COUNTRY

A review of the logistics situation of various countries in the Region was carried out on the basis of studies performed by different organizations and institutions. What these studies have in common is that they focus on freight logistics problems in general (and do not boil down to a single component), and are relatively current. This approach allows for the identification of needs in greater detail according to specific country characteristics. The factors that initially appear to be most relevant to detect common patterns across countries are a country’s level of development, size of territory, quality of institutions,

quality of infrastructure, degree of trade liberalization, and landlocked status.

A preliminary analysis of the correlation between logistics performance of the Region’s countries -through the LPI index- and variables representing those factors shows that economic development (GDP per inhabitant) is clearly the factor with the highest correlation (correlation coefficient of 0.80). Other important correlations include: the institutional quality, with a correlation coefficient of 0.50 the quality of infrastructure, with a slightly lower coefficient of 0.47, and to a lesser extent territorial size ($r=0.33$). Trade liberalization (the sum of exports and imports as a percentage of GDP) has no correlation with logistics performance. Paraguay and Bolivia are the only landlocked countries in the Region, but their weak logistics performance is clearly associated with poor economic development.

A detailed analysis on the most critical issues of the cases reviewed, while grouping countries according to their levels of economic development, shows that the main weaknesses of countries with middle to lower incomes stem from the supply of basic infrastructure, the need for first-generation reforms in the provision of services (ports, railroad), and trade facilitation and border control. However, mid-to high-income countries have more complex needs that cover not only infrastructure but also services. These include: second-generation reforms (especially railroad, ports, and freight transportation), the search of an institutional organization that facilitates the administration and monitoring of public policies, the emphasis on logistics improvements in SMEs, the development of logistics parks, and the improvement of trade facilitation that promotes unified and paperless control procedures, based on information systems shared among public and private-sector agents.

In addition to this general description, a few trends are noteworthy:

- Some countries try to develop logistics activities to take advantage of opportunities other than their own trade and seek to establish regional logistics platforms; this trend is particularly observed in small countries (Panama, Uruguay) or countries with neighbors generating large trade flows (Mexico).

- Larger countries show a growing interest in logistics performance at the sub-national level (Mexico, Brazil, and Argentina).
- The Caribbean islands are a special case. Because of their small size, internal logistics is not relevant, and the administration of ports and airports as well as maritime and aerocommercial accessibility seems to take on greater importance. Studies on logistics performance seem to exclude smaller countries, thus making existing literature ineffective to identify needs.
- Countries with significant portions of territory that are isolated from main production and consumption centers need to promote the implementation of projects that ensure internal connectivity (Brazil, Bolivia, Colombia, Chile, Peru, Paraguay). The integration projects with neighboring countries relates to this need for cohesion within domestic territory.
- Road vandalism and theft seem to constitute the most serious security issue, greater than the need to control export freight as a result of the events of September 2001.

THE AGENDA FOR PUBLIC POLICIES

A comprehensive analysis of components and countries under review identified five priorities for public action to improve logistics performance and thus enhance the levels of competitiveness of the Region's economies:

- The first priority is the provision of basic infrastructure for generic use and not solely for freight logistics -basically for the roads network. The distinctive qualities and considerable financial commitment required for the provision of basic infrastructure (including network maintenance) deserve that this action be considered separately from the rest.
- The second priority action area covers a range of infrastructure services for freight logistics, where the role of the private sector in operations is dominant and where private-public partnerships and regulations are of utmost importance. This includes ports and railroads.
- The third priority is linked to services that the state manages independently or secondary

PRIORITY AREAS OF ACTION IN THE REGION

Priority action areas	Sector-problems	Priorities in medium to low-income countries	Priorities in medium to high-income countries
Development of basic infrastructure	Main roads, rural roads. Maintenance	Basic infrastructure: principal and rural; ensure maintenance	Higher capacity, accesses to port, level crossings, urban by-pass. Toll roads, PPPs.
Infrastructure services and regulations	Ports, railroads	First generation reforms, improve operational efficiency	Second-generation reforms: adjustments. Major investments, PPPs.
Service in charge of the State	Customs controls, border crossings	Customs procedures, time, cargo security, reduce corruption	Integrated border management, unified paperless inspections, cargo security, reduce corruption
Support to private-sector development	SMEs, carriers and logistics operators, logistics parks, human resources	Professionalization of carriers and forwarders	Professionalism and HR development, logistics platforms, regional hubs, outsourcing and 3PL development
Organizational and institutional strengthening	Logistics Councils.	Strengthen and coordinate government areas; training	Inter-sectoral and inter-jurisdictional articulation; private participation; promotion and training

The table summarizes the main elements in each priority action area according to the level of income of the countries.

activities that it outsources. It includes customs and customs barriers management (immigration controls, phytosanitary controls, etc.) that facilitate trade. The main operations issues are at border crossings and ports.

- The fourth area of action is the support of private-sector development. This includes providing assistance with supply chain management to smaller enterprises as well as to those who offer logistics services, such as transport operators, logistics operators, or

intermediaries and their trade associations. Key instruments include the development of logistics platforms (or platform networks), the integration of operations, and training.

- The fifth refers to organizing the public sector to promote quality policies for logistics performance, including multisector, crossjurisdictional, and public-private coordination; the development of monitoring systems for tracking logistics performance; and general human resource training and development. ◆



Selection from the Call for Papers:

**“PHYSICAL INTEGRATION FOR THE INTERNATIONAL INSERTION
AND REGIONAL CONNECTIVITY OF LATIN AMERICA
AND THE CARIBBEAN”**

"HARD" INFRASTRUCTURE AND REGIONAL CONNECTIVITY IN LATIN AMERICA AND THE CARIBBEAN: DEVELOPMENTS IN THE REGION'S LAND-LOCKED ECONOMIES

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Despite the substantial reduction in tariffs over the past few decades, the competitiveness of the Latin American and Caribbean region (LAC) has suffered due to a history of underinvestment in hard infrastructure. This paper specifically focuses on transport infrastructure, utilising statistics from the World Bank's most recent Logistics Performance Indicator (LPI 2010) and the World Economic Forum's Global Competitiveness Report (2009) to identify the infrastructural gap in the LAC region. Bolivia and Paraguay are flagged as particular areas of concern, with the quality of transport infrastructure significantly below the global and LAC average, particularly with regard to road and air infrastructure. Whilst efforts are being made to improve the situation (such as the upgrading of Encarnación trading hub in Paraguay), enhanced regional connectivity will require not just more substantive infrastructure spend than at present, but also the assignation of funds to ensure the maintenance of existing infrastructure.

INTRODUCTION

In 1994, Gert Rosenthal (then Executive Secretary of ECLAC) highlighted the critical role that infrastructure could play in the developmental process, acknowledging that: "every enterprise, no matter how efficient it may be, will see its competitive potential affected if communication with its clients and suppliers fails, if road, customs and port conditions and management add avoidable costs, and if the bureaucratic proceedings of banks and public services excessively delay foreign trade procedures". Rosenthal's observation coincided with a renewed emphasis on integration in the Latin American and Caribbean (LAC) region. In Central America the Protocol of Guatemala (1993) heralded a new phase of integration for the isthmus' common market (Central American Common Market - CACM), and the following year Mexico joined with the US and Canada to create a trilateral trade bloc (North American Free Trade Agreement - NAFTA)

while the integrationist impulse in the Southern cone (South American Common Market - MERCOSUR) was reinforced with the signing of the Treaty of Ouro Preto.¹ That same year, December's Miami Summit also saw the genesis of a project that would subsequently metamorphose into proposals for a Free Trade Area of the Americas (FTAA).

A *sine qua non* of such integrationist schemes is the expansion of intra-regional trade. However, such expansion is critically dependent on the development of transport infrastructure -specifically its connectivity with the rest of the trading bloc- and associated trade-enhancing/facilitating measures. Yet, while tariffs across the region have tumbled from 40% or more

¹ In the Caribbean major change occurred in the decade after, as CARICOM evolved into the Caribbean Single Market and Economy (CSME) in 2006, an agglomeration of twelve regional nations.

in the 1980s to around 10% in 2008, intra-regional trade in LAC -where just 13% of total merchandise exports were directed to the region in 2007- lags sharply behind the levels recorded in other regional trading blocs (25% in ASEAN, 74% in the EU), a failing Guerrero *et al.* (2009, p. 4) ascribe to “their inability to cope with a globalisation process that is inherently transport-intensive and where supply chains are now being organised on a global scale”.

This inferior level of regional connectivity directs attention towards the sub-standard condition of the transport infrastructure² across LAC and highlights the need for investment. One reason for this infrastructural deficit can be traced to the austere neo-liberal fiscal policies introduced across much of the region following the debt crisis of the early 1980s, with public infrastructural investment tumbling from 3% of GDP in 1988 to just 1.6% of GDP a decade later (Mia *et al.*, 2007, p. 4). A deteriorating infrastructure base fed through into higher per unit transport costs and an accompanying reduction in LAC competitiveness in global markets (Calderón *et al.* 2003). The region spends almost double what the US does to import its goods, leading Moreira *et al.* (2008, p. 13) to propose that trade volumes and diversification would benefit immensely if transport costs were put “at the centre of the region’s trade agenda”. Thus, while the neo-liberal agenda successfully removed the tariff elephant from the regional living room, it was replaced by a new transportation elephant.

That is not to say that hard infrastructure spend has been wholly ignored across the region in recent years. High rates of economic growth at the start of the last decade were translated into increased expenditures in transportation infrastructures so as to ameliorate the effects of past under-investment in a number of countries.³ Panama, for example, is in the process of investing to widen its Canal (US\$5,250 million), Brazil is extending the airport at Campinas (US\$1,400 million) and increasing the number of lanes in the Belo Horizonte to São Paulo highway (US\$1,300 million), while Colombia has invited tenders for the construction of the

Ruta del Sol. In total, between 2009 and 2010, over US\$45,026 million worth of investment was destined for large (>US\$240 million) transportation projects across the region (own calculations from Thompson, 2010). Regional connectivity has also been emphasized, particularly in the context of integrationist schemes, since the Millennium. The *Plan Puebla Panamá/* Mesoamerican Integration and Development Project (dating from 2001), a US\$8 billion development plan, was primarily oriented towards improving transportation links from southern Mexico through to Colombia. In South America, the Initiative for the Integration of the Regional Infrastructure in South America (IIRSA), a US\$74,500 million project encompassing 510 projects across 12 countries, also promotes regional physical integration with a strong transportation focus.⁴ Nevertheless, if regional integration is to proceed apace, enhanced connectivity is of paramount importance -and this paper is intended to contribute to the investigation of, and debate upon, “hard” (and specifically transport) infrastructure across the region.

This paper is organised as follows. The second section provides an overview of the links between growth, infrastructural development and trade expansion, highlighting the magnitude of the infrastructural “gap” facing the region. The third section interrogates existing indices and data-sets to pinpoint the two LAC countries currently most deficient in “hard” infrastructural terms, while the fourth section identifies factors hampering infrastructural investment in these two land-locked economies. A fifth section concludes.

INFRASTRUCTURE, TRADE FACILITATION AND LOGISTICS COSTS: A REVIEW OF THE LITERATURE

Infrastructure can enhance growth, even if the precise spill over relationship has been problematic to establish (Sutherland *et al.*, 2009, p. 13). Hulten *et al.* (2006), for example, find that infrastructure growth (specifically roads and electricity-generating capacity) over the years 1972 to 1992 accounted for almost half the growth of the productivity residual in India’s formal manufacturing sector, while Démerger (2001) has shown that provincial differentials in

² “Hard” infrastructure in the parlance of Portugal-Pérez and Wilson (2010).

³ However, González *et al.* (2007, p. 29) point out that the region would need to invest between 3% and 6% of GDP on infrastructure (as opposed to the 2% to 3% at present) if it wished to match the investments being made in the Asian region.

⁴ Guerrero *et al.* (2009, p. 32) calculates that transportation accounted for 59.3% of investment and 69% of the projects in the IIRSA portfolio.

Chinese growth performance from 1985 to 1998 was significantly related to geographic location and infrastructure differences (in this case transport infrastructure and telecommunications facilities). With regards to infrastructure development and the level of income, Easterly and Servén (2003) suggest the infrastructure gap could account for as much as one-third of the income gap between LAC and East Asia.

A further branch of the literature examines the impact of infrastructure on export performance and trade growth. Krugman's early work on foreign trade (Krugman, 1980; Helpman and Krugman, 1985) embraced transportation within a transactions costs/services "iceberg technology" framework that envisaged freighted goods values "melting" as they were transferred to the final consumer. The greater the melt down (transactions costs as a proportion of final consumer price), the more circumscribed international trade was likely to be. Gravity models are one empirical application of this, the greater the distance between trading nations commonly being used as a *de facto* proxy for transport cost charges (Jansen and Nordhås, 2007, p. 4). Limão and Venables (2001), for example, found US shipping costs rose by around 8% per shipment for each additional thousand miles travelled, this rising to 50% in the case of landlocked countries. Solf *et al.* (2010) notes that the current time taken to complete procedures for imports and exports in LAC (which takes an average of 20.9 and 18.6 days for imports and exports, respectively) far exceeds the OECD average (of 10.5 and 11 days). A study by Moreira *et al.* (2008), calculated that LAC transport costs could be slashed by as much as 20% if national ports were able to match the efficiency of their US counterparts (achieving US tariff and competitiveness levels would cut transport costs by a further 13%).

Trade facilitation reform was analysed by Soloaga *et al.* (2006), who applied the four dimensional -port efficiency, customs environment, regulatory environment, and business e-commerce use- framework first applied by Wilson, Mann and Otsuki (2003), to develop a gravity model simulation of Mexican trade reform. Their findings suggested that unilateral reforms in this area could see Mexican exports growing by 22% and imports by 11%, while research by Portugal-Pérez and Wilson (2010) found Bolivian exports would increase by 49.1% and Venezuelan exports by 26.1% if these two countries could respectively improve their infrastructural quality and business environment to half the level of Chile (the best LAC performer).

Moreover, as such logistical costs⁵ ascend to as much as 32% (case of Peru -with slightly lower proportions for Argentina [27%], Brazil [26%], Mexico [20%] and Chile [18%]) of total product value, markedly higher than the OECD average (9%), such costs present a much more significant impediment to regional trade growth than tariff barriers (González *et al.*, 2007, p. 9). As a consequence, a growing research literature has thus focused on examining the links between improved connectivity and hard infrastructure (and how these in turn help to enhance LAC trade), a literature to which this paper now adds.

"HARD" INFRASTRUCTURE IN LAC: A COMPARATIVE SURVEY

There is a strong positive correlation, as one might expect, between infrastructure and GDP *per capita* in LAC. Infrastructural data⁶ from the World Bank's most recent Logistics Performance Indicator (LPI 2010), a subjective bi-annual assessment by logistics professionals of the qualitative and quantitative challenges to improved logistical support to trade in the region,⁷ confirms this relationship (Figure 1).

Infrastructure quality is scored on a one (very low/poor quality) to five (very high quality) basis. As can be seen, Brazil has better than expected infrastructure given its level of GDP -a somewhat unexpected outcome given the logistical difficulties posed by the Amazon and its tributaries to internal road and rail transport, and one that merits further examination perhaps. Conversely, Uruguay and Venezuela underperform in infrastructural terms relative to national income. While,

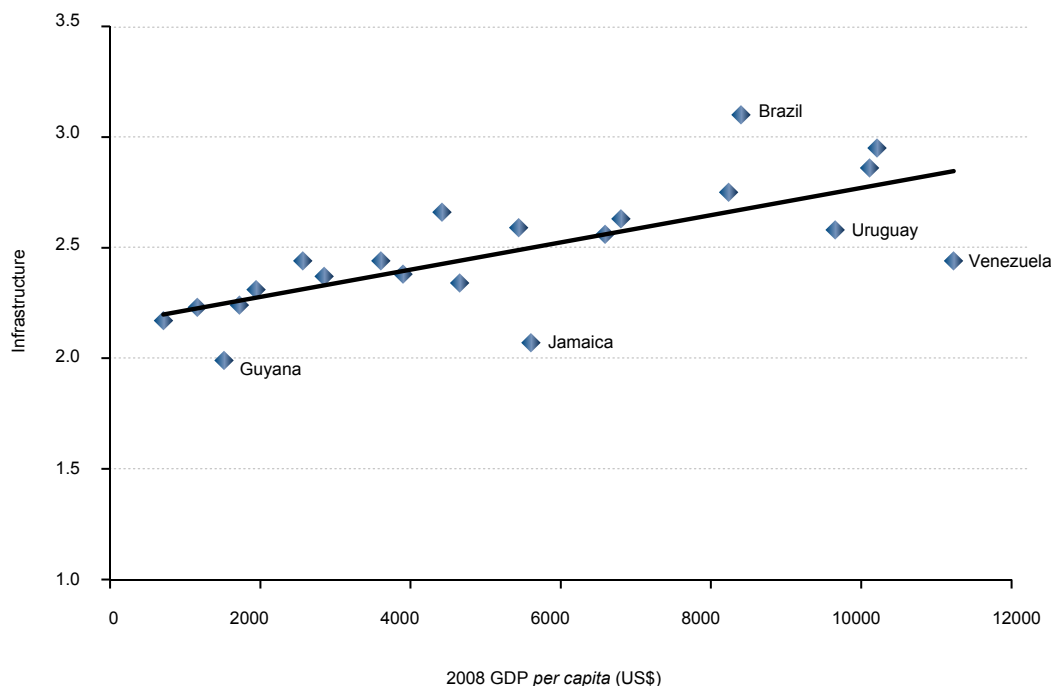
⁵ The authors acknowledge there is no one accepted definition of logistics costs, and in their research conflate transaction (transport and trade processes-permits etc.), financial (inventory and storage), and non-financial (insurance) costs. The same is true of trade facilitation -Portugal-Pérez and Wilson (2010, p. 6) notes that it can be "widely defined as any policy measure aimed at diminishing trade costs", while Milner *et al.* (2008, p. 4) note the term can be used in a narrow or broad, unilateral or multilateral sense.

⁶ On average, infrastructure scores are one of the weakest components of the LPI rating for each LAC country (just behind border procedures), as appears to be the trend for different regions across the world.

⁷ Factors assessed include infrastructure (ports, airports, roads, rail, warehousing and ICT provision), supply chain reliability, border procedures and time, and the logistical services (competences of freight forwarders, service sector regulation among others).

Figure 1

LPI - INFRASTRUCTURE INDICATOR IN LAC



Source: Infrastructure indicator is taken from the LPI (2010), GDP per capita is sourced from the World Bank International Trade and Transport Department.

arguably, causality could be bi-directional -higher income countries have potentially more funds to spend upon improving infrastructure, while strengthened infrastructure can have beneficial impacts upon a country's economy- a simple Granger causality test on LAC data reveals that improved infrastructure impacts upon growth and not *vice-versa* (reinforcing the LPI 2010 observation that a good logistical performance can add 1% to economic growth rates, 2% to trade growth rates).

An alternative measure of infrastructure -and infrastructural deficiency- in the LAC region is available from the *Global Competitiveness Report* published by the 2009 World Economic Forum (Schwab *et al.*, 2009) using data from an Executive Opinion Survey undertaken across 133 countries. The Report breaks infrastructural quality down into four constituent components; road, rail, port and air transport, and measures quality on a score of 1-7 -where 1 is extremely underdeveloped and 7 is viewed as extensive

and efficient by international standards. Railroad infrastructure is viewed as particularly poor in LAC, scores ranging from 1 to 2.5 (average 1.55), well below the global average of 3.17 (which in turn is the lowest in comparison to other transport infrastructures). This tallies with LPI 2010 findings, where all respondents in the ten LAC countries reporting on this indicator categorised railroad infrastructure quality as varying from "low" to "very low".

The gap between the world and LAC average for air transport infrastructure is the smallest (0.24 compared to 1.55 for railroad infrastructure), implying that the region is fairly advanced in this area, although air transportation facilities in Paraguay (2.4), Argentina (3.4), Bolivia (3.5), Venezuela (3.5), Guyana (3.6) and Uruguay (3.7) score poorly. Port infrastructure is variable -with facilities in Panama, Chile, Jamaica, Honduras and Uruguay rated as better than the global average (score 4.2) while port installations in Venezuela, ranked by Executives sampled as particularly poor, score

barely half this value. The road infrastructure in the majority (15) of LAC countries also lie below the world average (3.9) most notably in Paraguay, Bolivia, Costa Rica, Ecuador, Colombia and Brazil, although road quality scores in Chile (5.8) and El Salvador (5.3) were markedly higher. This shortcoming is somewhat critical, given the correlation between roads and productivity growth identified by Hulten *et al.* (2006), as we have noted earlier in this paper.

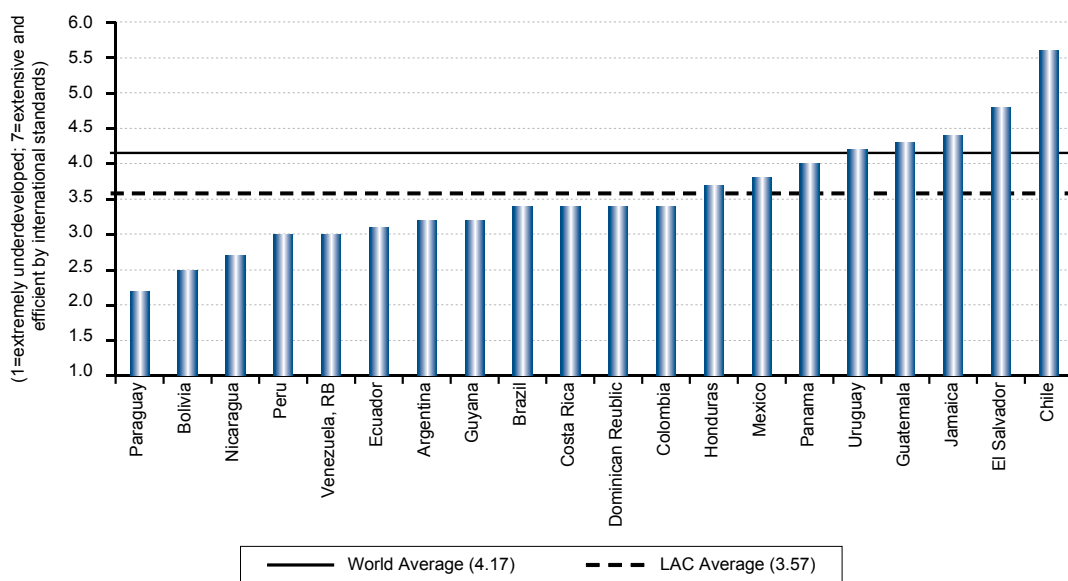
While Chile, El Salvador and (to a lesser extent) Jamaica and Guatemala exceed the global average in aggregate terms, in general infrastructural quality in LAC is lagging in comparison to the rest of the world (Figure 2). Nowhere is this more so than in the region's two landlocked economies -Paraguay and Bolivia. Paraguay, for instance, not only scores the lowest in the region for the quality of its air transport infrastructure, but is also equally deficient in terms of road quality and rail infrastructure. Hence the following section of the paper identifies the factors presently inhibiting transport connectivities in Bolivia and Paraguay.

FACTORS HAMPERING TRANSPORT SYSTEMS DEVELOPMENT IN BOLIVIA AND PARAGUAY

While topography, most notably in Bolivia, presents particular problems in infrastructural terms, a number of further factors have militated against the emergence of an efficient transport system in the two countries. *First*, past levels (and the nature of past) infrastructural investment in the two countries. In Paraguay, recognition that past investment levels had failed to close the infrastructural gap, bequeathing the country a network that is "inadequate in relation to the size of the country", prompted the 2008-2013 *Plan Estratégico Económico y Social* (PEES) to pledge to increase the network of paved and improved roads to 6,000 km (from 4,600 km) and 6,600 km (from 3,600 km) respectively, and to double the road maintenance programme to 51,000 km by 2013 (Equipo Económico Nacional, 2008, p. 96). Insufficient historic attention had also been paid to road safety issues, causing the 2008-2013 National Road Safety Plan (Ministerio de Obras Públicas y Comunicaciones, 2008, p. 48) to

Figure 2

QUALITY OF OVERALL INFRASTRUCTURE IN LAC



Source: World Economic Forum (WEF), *Executive Opinion Survey* (2009).

request US\$15.9 million be set aside for improving roads from a safety perspective. While Bolivia directed almost 40% of public investment into the transport sector over the period 2000-2008 -more than US\$2,650 million- this has been insufficient to redress years of prior underinvestment in the road network dating back to the introduction of the structural adjustment programme in August 1985. Moreover, the strategy emphasized new construction over maintenance -just US\$0.3 million annually being assigned to maintain the existing network over this period (Suárez, 2009, p. 32).

Second, and perhaps most importantly, both countries have **weak institutional frameworks** that hampers strategic investment in the transport sphere. In the case of Bolivia, while legislation exists to regulate different transportation modes,⁸ and other legislation has implications for the sector (such as the 1994 Capitalization Law), there is presently no unifying General Transport Law that clearly defines the precise remit of the different institutions operating within the sector, and ensures coherence between the objectives of the National Development Plan and sectoral planning targets (Suárez, 2009, p. 39). A similar scenario prevails in Paraguay where the PEES emphasizes not only the necessity to modernise and restructure the Ministry of Public Works and Communications, but also update the National Transport Policy by developing a Transport Master Plan (*Plan Maestro de Transporte*) that identifies existing bottlenecks and establishes transport priorities (Equipo Económico Nacional, 2008, p. 39). As a consequence, there is a real danger than investments are undertaken in an uncoordinated and fragmented manner.

A *third* (and somewhat connected) factor, relates to the **role of private investment** in resolving the infrastructural deficit. In Bolivia, recognition of this infrastructural shortfall led to the 1994 Capitalisation Law being deployed to transfer both the national rail company (*Empresa Nacional de Ferrocarriles* - ENFE) and airline operator (*Lloyd Aéreo Boliviano* - LAB) from state into private hands. This was reinforced by

Law 1874 (*Ley de Concesiones de Obras Públicas de Transporte*) of June 1998 which placed the responsibility for financing, constructing and administering new roads, airports, rail and port facilities in private (national and/or international) hands. Unfortunately, the expected investment/refurbishment failed to take place. Suárez (2009, p. 28) notes that no private transport concessions have been granted to date under Law 1874. While ENFE was subsequently split by its Chilean purchasers (*Cruz Blanca*) into separate Western and Eastern nodes -the former, sold in 2000 to the US Company Genesee Wyoming, has largely fallen into disuse. In response, in early 2010 President Morales revealed plans to renationalise the network (Business Monitor, 2010). In a similar vein, greater competition within the civil aviation sector allied to declining air passenger and cargo traffic numbers, caused LAB to suspend all its operations in 2008. While Paraguay has more recently developed a private investor/concessions scheme, offering 30 year road maintenance concessions over its main road arteries (*Rutas 1, 2, and 6*) to private investors, the scheme has encountered strong opposition from public-sector trade unions, and is currently stalled (Business Latin America, 2009). Private involvement -at least to date then- has not been a panacea to the infrastructural problems of LAC's two land-locked economies.

In addition, there are a number of **location-specific factors** that deter infrastructural investment until the underlying constraint is removed. The failure of Paraguay's main international airport at *Silvio Pettrossi* (Asunción), for example, to meet minimum international standards militates against private and state investment in facilities there until these shortcomings have been addressed. Rail network unification between the Puno-Guaqui (Peru) and the El Alto-Guaqui (Bolivia) railroads needs to reconcile the different rail gauges of the respective systems, while falling water levels in the Paraguay river are more problematic to resolve -and have prompted consideration of new port construction to the south of Asunción (see highlighted projects in *Table 1* and *Table 2*).

While the respective governments have elaborated/commenced a series of national projects intended to improve domestic transportation infrastructure, these are supplemented by a growing number of bi-national investment projects -reflecting recognition of the role that wider regional connectivity can play in enhancing

⁸ Civil aviation is regulated by Law 2902 of October 2004, road cargo traffic by Law 1769 of March 1997, and passenger traffic by Law 1874 of June 1998, while Law 3507 of October 2006 created the *Administradora Boliviana de Carreteras* entity within the Public Works, Services, and Housing Ministry, for example.

Table 1

**NATIONAL, BI-NATIONAL AND TRI-NATIONAL TRANSPORTATION PROJECTS COMPLETED,
BEING EXECUTED OR PENDING IN BOLIVIA**

Scope	Type	Location	Nature of Project	Value (US\$ millions)
National				
	Road	Potosí-Tarija	361 km road paving	163.2
		Santa Cruz-Argentina	Road widening	105.75
		Puerto Suárez-Mutún	Road paving	18.8
		Hito Br94-Uyuni	474 km road paving	29.0
		Cucho Ingenio-Villazón	291 km road paving	252
		Pailón-Puerto Suárez	594.4 km road paving	416
		Concepción-Brazil	474 km road paving	260
		Puente Banegas	Bridge construction	40
		Los Troncos-Okinawa	Road paving	Pending
		Santa Cruz-Cochabamba	30 km Road Rehabilitation	120
		Oruro-Pisiga	232 km road paving	54.5
		La Guardia-El Churo	265 km road rehabilitation	35
		Puente de la Amistad	Bridge construction	3
		Desaguadero-Yucumo	433 km road paving	550
		Cobija-Riberalta	439 km road paving	80
		Yucumo-Trinidad	Road paving	200
		Cobija-Extrema	74 km road paving	29
	River	Madre de Dios	Improve river navigability	Pending
		Beni	Improve river navigability	Pending
		Ichilo-Mamoré	Improve river navigability	Pending
	Rail	Aiquile-Santa Cruz	388 km rail link	700
	Rail/Port	Motacucito-Mutún-port	Enhance cargo transport	202.85
Bi-National				
(Argentina)	Road	Puente Yasma	Unify road network	23
(Argentina)		Puente La Quiaca	Bridge restoration	15
(Brazil)		Puente Rio Mamoré	Bridge construction	150
(Chile)		Ollagüe-Abaroa	Improve border transit	1.6
(Paraguay)		Infante Rivarola-Oruro	Improve border transit	1.7
(Brazil)		Puerto Suárez-Corumbá	Improve border transit	2
(Brazil)		San Matías-Cáceres	Improve border transit	2
(Chile)		Pisiga-Colchane	Improve border transit	10
(Peru)		Desaguadero	Improve border transit	7.5
(Peru)		Bolivia-Extrema	Improve border transit	2

➔ Table 1

NATIONAL, BI-NATIONAL AND TRI-NATIONAL TRANSPORTATION PROJECTS COMPLETED, BEING EXECUTED OR PENDING IN BOLIVIA

Scope	Type	Location	Nature of Project	Value (US\$ millions)
Bi-National				
(Brazil)		Epitaciolândia-Cobija	Improve border transit	Pending
(Brazil)	River	Paraguay	River navigability study	1.5
(Peru)	Rail	Puno-Guaqui	Unify railroad systems	198
Tri-National				
(Braz/Para)	River	Paraguay	Maintain river navigability	4.3
(Braz/Para)	River	Paraguay	Water level prediction	Pending

Note: Red = being executed, Blue = funding being solicited, Green = completed, Black = not yet initiated.

Source: IIRSA.

Table 2

NATIONAL, BI-NATIONAL AND TRI-NATIONAL TRANSPORTATION PROJECTS EXECUTED, OR CURRENTLY PENDING IN PARAGUAY

Scope	Type	Location	Nature of Project	Value (US\$ millions)
National				
	Road	Rutas 2 and 7	Maint. concession to private sector	136
		Caazapá-Coronel Bogado	140 km road paving	180
		Ruta 6	Maint. concession to private sector	136
		Pozo Hondo	Improved border transit	1.5
		Pozo Hondo-Neuland	288 km road paving	144
		San Estanislao-Pto. Rosario	Road rehabilitation/widening	33.5
		Santa Rosa-Pto. Antequera	69 km road paving	27
		Concepción-Vallemí	Road paving	90
		Troncal II	57 km road paving	25.65
		Villeta-Alberdi	70 km road paving	35
		Encarnación	Access road improvement	26
		River Paraná access roads	320 km road paving	142
		Carmelo Peralta-Loma Plata	Road paving	140
		Ruta 9 - Transchaco	Various roadworks	170
		Pozo Colorado- Concepción	Road Rehabilitation	32
		Concepción-P. J. Caballero	Road Rehabilitation	12.5
		Bella Vista-Puente R. Apa	80 km road paving	Pending
	Airport	Mariscal Estigarribia	Cargo and logistics centre	30

➔ Table 2

NATIONAL, BI-NATIONAL AND TRI-NATIONAL TRANSPORTATION PROJECTS EXECUTED, OR CURRENTLY PENDING IN PARAGUAY

Scope	Type	Location	Nature of Project	Value (US\$ millions)
National				
		Asunción	Modernisation	Pending
		P. J. Caballero	Extend airport	2.5
		Guaraní	Extend airport	50
		Encarnación	Construct new airport	25
	Rail	Asunción-Ciudad del Este	Railroad paving	297.5
		Ciudad del Este-Pilar	Railroad paving	438.6
		Depto. de Itapúa	150 km railroad rehabilitation	90
	Port	Asunción	Port relocation	25
		Villeta	Inc. Traffic due to port relocation	30
		Paraguay	New river port to be constructed	120
		Encarnación	Container port construction	18
		Puerto Indio	Extend port facilities	1.2
		Salto de Guairá	Rehabilitate port facilities	0.8
		Asunción	Impact study on port facilities	Pending
		Kaarendy	Container port on Paraná	9.9
	River	Paraguay	Improve river navigability	40
Bi-National				
Argentina	Road	Nodo Clorinda-Asunción	Improve road crossings	100
Brazil		Puente Presidente Franco	Bridge construction	80
Argentina		Puente Neembucú	Bridge construction	60
Argentina		P. Posadas-Encarnación	Restore existing bridge	52.26
Argentina		Puente P. Franco-Iguazú	New bridge	75
Brazil		Carmelo P.-P. Murtinho	Improve border transit	Pending
Bolivia		Infante Rivarola-Oruro	Improve border transit	1.7
Brazil		Carmelo P.-P. Murtinho	Improve border transit	0.15
Brazil	Rail	Cascavel-Foz do Iguazú	Construction of rail bridge	70
Brazil	River	Itaipú	Transfer containers past dam	Pending
Brazil		Itaipú Reservoir	Imp. navigability on reservoir	Pending
Argentina		Paraguay/Paraná	Improved navigability	?
Argentina		Corpus Christi HEP plant	Sluices to help river traffic pass	Pending
Argentina		Upper Paraná	Improve navigability	Pending
Tri-National (besides those noted in Table 1 above)				
(Arg/Uru)	Rail	Asunción-Montevideo	380 km railroad reconstruction	150

Note: Red = being executed, Blue = funding being solicited, Green = completed, Black = not yet initiated.

Source: IIRSA.

trade and consolidating integration in the LAC region (Table 1 and Table 2). Bolivia, in particular, views participation in regional initiatives as a “win-win” scenario, allowing the country to exploit its strategic position in the centre of the continent to facilitate the transcontinental movement of commerce.⁹

A final factor inhibiting the enhancement of transport connectivities is the project gestation period. New infrastructure can rarely be installed overnight, and an extended process of; project identification/elaboration, the completion of the requisite technical, economic and environmental studies, the obtention of funding, contract preparation and the subsequent appointment of contractors, all serve to defer execution of the project. This is apparent in the Tables above. In the case of Paraguay, of the 49 projects identified in Table 2, just 11 have advanced beyond the drawing board (of these the most notable are those relating to the upgrading of Encarnación from a local to an important border trading hub, equipped with new port and air transport facilities and accompanying road infrastructure development). Bolivia fares somewhat better: 17 of the 37 projects identified in Table 1 being implemented to date, including the paving of over 2,000 kilometres of road.

CONCLUSION

It is clear that historic underinvestment in hard infrastructure unintentionally introduced a new “elephant into the living room” at precisely the time trade liberalisation removed the tariff elephant from the LAC house. Ejecting this new elephant is no easy task, and (a belated) acknowledgement of the local infrastructural deficit now underpins much of the regional integration literature. Guerrero *et al.* (2009, p. 38), for example, lament that “the region’s infrastructure network in general and transport infrastructure in particular have suffered chronic underinvestment”, with Moreira *et al.* (2008, p. 13) stating unequivocally that “... putting transport costs at the centre of the region’s trade agenda will produce

great gains in volumes and diversification of trade”. The infrastructural gap -and the associated [elevated] cost of transportation- is particularly acute for landlocked countries as Guerrero *et al.* (2009, p. 37) surmise, and Section Three of this paper shows.

In response, national initiatives have emerged (Table 1 and Table 2) -often focussing upon the development of internal trade corridors (Pailón-Puerto Suárez in Bolivia) and the formation of domestic trade hubs (Encarnación in Paraguay), initiatives which are increasingly intent on co-opting the private sector into service delivery via maintenance/concession schemes. These are supplemented by regional initiatives -the *Plan Puebla Panamá*/Mesoamerican Integration and Development Project in Central America, and both *Fondo para la Convergencia Estructural del MERCOSUR* (FOCEM) and IIRSA in South America- signalling that connectivity of markets should not be constrained by national, historically defined, borders. While these national and regional initiatives are to be welcomed, improved regional connectivity -and hence enhanced trade- for the region’s land-locked countries remains critically dependent upon addressing the factors (identified in Section four) as hampering increased infrastructural spend.

Most importantly, attention needs to be directed towards strengthening the institutional and regulatory framework governing the sector in both countries. In the case of Bolivia this will require the delineation and approbation of an overarching General Transportation Law that clearly defines the jurisdiction of different stakeholders concerning road, rail, river AND air transportation, details the rights and responsibilities of the different user and supplier groups, ensures legislative coherence across the different transport branches, and embraces long-term planning horizons. In Paraguay the need is more for a strategic planning tool -a Master Transport Plan which can identify and prioritise projects across the sector, highlighting in the process the precise role that state, local government, and the private sector can play in bringing the project to fruition. While, as we have noted (Section four), renewed economic growth has led to a concomitant increase in state infrastructural spend, it is clear that supplementary private investment is needed to help close the infrastructure gap in both countries. However, private involvement in infrastructure provision to date in both Bolivia and Paraguay has been limited, a factor in part attributable to the prevailing institutional frameworks, and in part to the less than successful

⁹ To this end, a paper published by the government’s Economic and Social Policy Analysis Unit in December 2009 (Suárez, 2009), identified five “integration” corridors around which transport investments would be concentrated (these include the creation of an East-West bi-oceanic corridor project -approved by Bolivia, Brazil and Chile in 2009).

past private forays in the field. While the institutional reconfiguration proposed above will go some way to providing a more congenial environment for private investment in the sector, it is unlikely to be sufficient in itself -and *further research is required to identify how best to bring the private sector "on board" in each country.*

Further, while **project gestation times** will always prevent an immediate fixing of any transportation deficit, it seems the principal bottleneck in the current project identification-elaboration- execution cycle lies in obtaining the investment financing necessary (Moreira *et al.*, 2008, p. 13, and [Table 1](#) and [Table 2](#)) particularly in Paraguay. In this sense, the reunion in Chile in 2009 of Finance Ministers from across the region to discuss strategies to promote physical infrastructure and reduce intra-regional trade costs (IDB/ECLAC/World Bank, 2010) is to be welcomed.

One final connectivity caveat too is in order.

González *et al.* (2007, p. 29) caution that it is not simply a case of funding physical investment (as was perhaps the case in the past), but also ensuring sufficient funds are assigned to the *maintenance of the constructed facilities* (ports, roads etc.). Suárez (2009, p. 32), for example, informs that just US\$300,000 was assigned annually to cover all transport maintenance needs in Bolivia during most of the last decade. Hence there is a very real need to balance the sectoral investment budget between rehabilitating and renovating EXISTING transport infrastructure, and financing NEW infrastructure projects. If not, there is a very real likelihood that increased infrastructure spend will not remove the transportation elephant from the LAC living room -but merely transform said incumbent into a "white elephant". ☹️ ☹️

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BRAZILIAN REGIONS' TRADE IN MERCOSUR: AN ANALYSIS OF COMPARATIVE ADVANTAGES*

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This paper analyzes the characteristics of the trade flows of Brazil's Northeast, Southeast and Southern regions in MERCOSUR, in terms of the leverage, or lack thereof, of comparative advantages. The analysis was conducted for the period 1990-2004, using the input-output technique. Products were classified according to factor intensities on the basis of the endowment triangles method, developed by Leamer (1987) and adapted by Londero and Teitel (1992). Considering the existing regional disparities in Brazil, it is natural to study international trade conducted by Brazilian regions, particularly the Northeast, Southeast and Southern regions, which jointly considered account for more than 90% of Brazil's international trade, and for 95% of Brazilian trade within MERCOSUR. Results show that there seems to exist a paradoxical behavior in the Northeast region in terms of the leverage of comparative advantages, as there is a larger share of capital-intensive goods and a lower share of natural resource and labor-intensive goods. As for the Southeast and Southern regions, exports are more capital-intensive than imports; hence they are consistent with the principles of comparative advantages, if it is admitted that these two regions are relatively more abundant in capital than the MERCOSUR partners.

INTRODUCTION

In the international economic literature there is consensus over the fact that regional economies, both in developed and developing countries, suffer the effects of economic integration. In less advanced economies, however, domestic issues are more severe; consequently, solving regional inequalities and, at the same time, integrating regional economies in the

international trade system is a challenge that requires effort and knowledge of their potentialities, so that regions may make better use of comparative advantages, scale economies and economic complementarities.

In Brazil, given the territorial dimensions and productive heterogeneity of its different regions, foreign trade effects are not expected to be distributed homogeneously. In this context, it is worth noting

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that, over time, Brazilian exports and imports have not performed uniformly from the spatial point of view, in relation to the exchange with both the rest of the world and MERCOSUR.

The implementation and consolidation of MERCOSUR in the 1990s led to a substantive increase in Brazilian exports to the countries in the bloc,¹ where the heterogeneity of Brazilian regions stood out. *Table 1* shows that, in 1990-1992, the Southeast region was responsible, on average, for 69.8% of Brazilian exports to this bloc; the Southern region accounted for 21.2% in that same period, while the Northeast region contributed only 7%. In 2002-2004, this situation changed somewhat: the Southeast region contributed 58.2% of the total Brazilian exports to MERCOSUR, the Southern region saw its average share grow to 26.8%, and exports from the Northern region increased slightly to 10%. Thus, the Northeast, Southeast and Southern regions represent, in 1990-1992, 98% of Brazilian exports to MERCOSUR, while in 2002-2004, this share decreased slightly to 95%.²

Assuming that trade flows and comparative advantages are related, recognizing the increase in trade between Brazil and the other members of MERCOSUR, and even taking into consideration the existence of regional disparities in the Brazilian economy, the main purpose of this paper is to explore the effects of Brazil's entry into MERCOSUR, considering its impacts on the Brazilian regions in terms of the leverage, or lack thereof, of regional comparative advantages. Based on the above, and in view of the dissimilar productivity and the relative importance of the Northeast, Southeast and Southern regions in trade relations, this

paper seeks to gain more insight into the nature and pattern of trade of each one of these regions relative to MERCOSUR.

Table 1

REGIONAL SHARE IN BRAZILIAN EXPORTS BY DESTINATION, 1990-2004

In percentage

Destination Regions	Rest of the World		MERCOSUR	
	1990-1992*	2002-2004*	1990-1992*	2002-2004*
Northern	5.6	5.8	0.0	2.8
Center-West	1.8	4.0	2.0	2.2
Northeast	9.8	8.4	7.0	10.0
Southern	21.9	26.3	21.2	26.8
Southeast	60.9	55.5	69.8	58.2
Total	100.0	100.0	100.0	100.0

Note: * Average share in the period.

Source: ALICE-Web System/Ministry of Development, Industry and Trade (MDIC), Brazil.

The study of this question is relevant, as the economic integration of MERCOSUR is expected to bring economic gains to all regions through the efficient expansion of trade based on the proper use of regional economic vocations.

This paper is meant to make a contribution to the economic literature, via specific analyses of the Brazilian regions, and add information to the studies conducted so far with a view to aiding in foreign trade policy-making efforts. With that purpose in mind, this study has been structured into two sections, in addition to the introduction and conclusion. Section two is intended to describe the methodological procedures to be used in the analysis of the trade pattern between Brazil's Southern, Southeast and Northeast regions and MERCOSUR. The third section presents the results obtained from this analysis.

¹ The effects on MERCOSUR's trade were immediate, as trade across member countries grew significantly even in the first years of integration. In 1995, around 20% of total trade was intra-bloc, while in 2004 that share grew to 28%. As for Brazil, in 1990, exports to the MERCOSUR accounted for only 4% of the total exported. In 1999, that percentage grew to approximately 14%, to then fall to 9.2% in 2004. As regards Brazilian imports from the other countries in the bloc, they remained almost constant, as in 1990 more than 11% of them were sourced from MERCOSUR, while in 1999 that percentage grew to more than 13%, and, in 2004, stood at 10%.

² In *Table 1* it can also be seen that the Northeast, Southeast and Southern regions were responsible, on average, for more than 90% of the total exported by Brazil to the rest of the world in 1990-1992 and 2002-2004.

METHOD FOR CALCULATING THE USE OF PRODUCTION FACTORS³

The standard theory of international trade based on the intensities of factors posits the existence of only two factors of production. For the purpose of this study, we will postulate the existence of three types of products:⁴ natural resource-intensive products, labor-intensive products, and capital-intensive products.⁵

Even when the existence of three factors may be theoretically plausible, the relative problem of how to classify goods according to their factor intensities is encountered. The solution to that dilemma was found by Leamer (1987), who developed the endowment triangle method. Londero and Teitel (1992) adapted Leamer's endowment triangle method to analyze the composition of the primary inputs of some manufactured products exported by Argentina and Colombia.

The measurement of factor intensities was performed on the basis of the contribution of labor and capital to output formation in each economic sector. For the natural resource content of products, the direct coefficient of natural resources was used as indicator. The direct requirements coefficient of natural resources is computed on the basis of the input-output matrix data, estimating, for each industry sector, the share of products in the farming, metal ore extraction and mineral fuels groups. Such variable is used as a proxy for the direct use of natural resources.

³ The method employed for the calculation of factor content in foreign trade is based on Hidalgo (1985) and Feistel (2006). See also Feistel and Hidalgo (2009).

⁴ The analysis of the factor proportions theory can further be applied to the case where there exist three factors of production, based on the hypothesis that there are three or more goods in the economy; see Kemp (1969). Samuelson (1954) challenges certain aspects of the factor proportions theory when m factors and n goods exist in a general equilibrium model.

⁵ Although relevant, the inclusion of a third factor of production (natural resources) in the analysis poses certain problems, both theoretical and empirical in nature. Natural resources and capital, for instance, may be complementary and act jointly as gross substitutes in relation to labor. On the other hand, the information available about land rent is extremely partial. Vanek (1963) discusses the difficulties encountered when the existence of a third factor (natural resources) is taken into account in the theory of international trade.

The measurement of factor intensities was performed with the input-output matrix, the methodology of which, developed by Leontief (1953), contains information about income generated, broken down into wages, social security contributions, operational surplus and other remunerations. Based on this information, it is possible to compute the factor content of products according to the contribution of production resources to the generation of income in each sector. Thus, based on the data about labor remuneration and value added in each sector, it is possible to obtain, as a residual value, the remuneration of capital. On the basis of the calculation of direct and indirect requirements of natural resources, as well as of labor and capital remunerations in each sector, it was finally possible to determine the factor intensities in each production sector.⁶

RESULTS

By applying the above-described procedures, and using data from the input-output matrix for each of the regions analyzed, it was possible to calculate the factor intensity of each product in each region. *Annex I and Annex II* indicate data sources and product classification according to their factor intensity, respectively.

FACTOR INTENSITIES OF BRAZIL'S NORTHEAST, SOUTHEAST AND SOUTHERN REGIONS IN THEIR TRADE WITH THE REST OF THE WORLD AND MERCOSUR

The main results obtained for Brazil's Northeast, Southeast and Southern regions in their trade relations with the rest of the world are contained in *Figure 1*, for the period 1990-2004. In the Northeast region, the share of natural resource-intensive products in 1990 accounted for 71.3% of total exports, to then drop to 34.3% in 2004. Only 11.4% of exports were capital-intensive in 1990, but such percentage rose to 52.1% in 2004. On the other hand, although the share of labor-intensive products showed certain variations,

⁶ Some adjustments were required to determine the final content of labor and capital in each product. Calculations underwent adjustments to reflect the existence of distortions in the price of factors and the rural-urban price differential in the Brazilian economy.

overall, it exhibited a declining trend. In sum, exports of capital-intensive products from the Northeast region to the rest of the world experienced a sharp growth, while labor-intensive products had little share. This is contrary to what was expected, given the region's natural advantage in labor-intensive products.

As for the Southeast region, results show that in 1990-2004 no significant changes occurred in the relative share of the groups of products. An analysis of the evolution of the use of factors of production indicates that exports of natural resource-intensive products account, on average, for 32.6% of exports. Worth noting is also the predominance of exports of capital-intensive goods, which contributed, on average, over 56.8% of total exports. The share of labor-intensive goods in the region's exports to the rest of the world remained stable at around 10.6% during the period under study (see *Figure 1*).

As far as the Southern Region is concerned, it appears from the results shown in *Figure 1* that the relative share of capital-intensive goods in exports shifted from

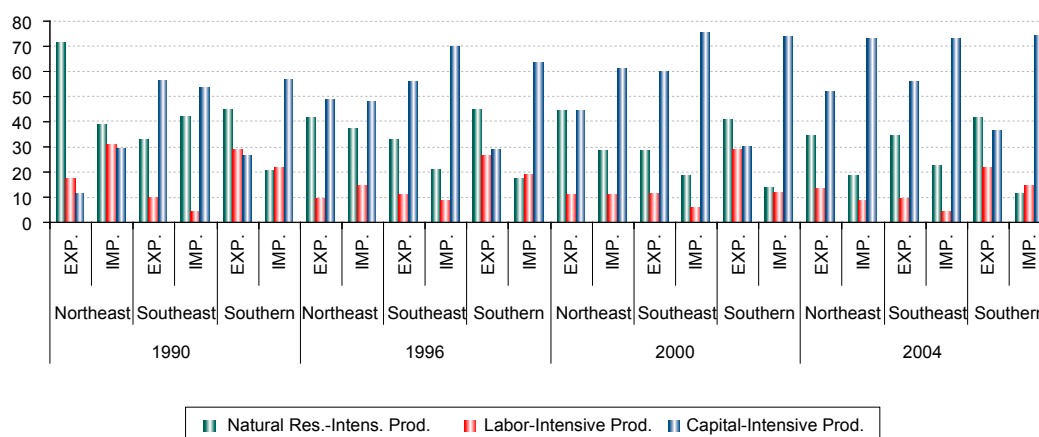
26.3%, in 1990, to 36.3%, in 2004. Meanwhile, the share of exports of natural resource-intensive products in the region's total exports remained, on average, at 40%, during the period under study. Labor-intensive goods saw their share in exports fall from 28.8%, in 1990, to 22.1%, in 2004.

Figure 1 further depicts the evolution of the composition of imports in the Northeast, Southeast and Southern regions, according to their relative factor intensity for the period 1990-2004. The results exhibited in this Figure show a significant growth in the share of imports of capital-intensive goods in the Northeast region, which more than doubled, from 29.6%, in 1990, to 72.8%, in 2004. In 1990, labor-intensive imports accounted for 31.2%, while in 2004 they fell to 8.5%. On the other hand, the share of imports of natural resource-intensive products fell to 50%, from 39.2%, in 1990, to 18.7%, in 2004.

In relation to the imports from the Southeast region to the rest of the world, *Figure 1* reflects an increased share of capital-intensive goods which, in

Figure 1

**FACTOR INTENSITIES IN INTERNATIONAL TRADE
NORTHEAST, SOUTHEAST AND SOUTHERN REGIONS
Exports and Imports - Rest of the World, in %**

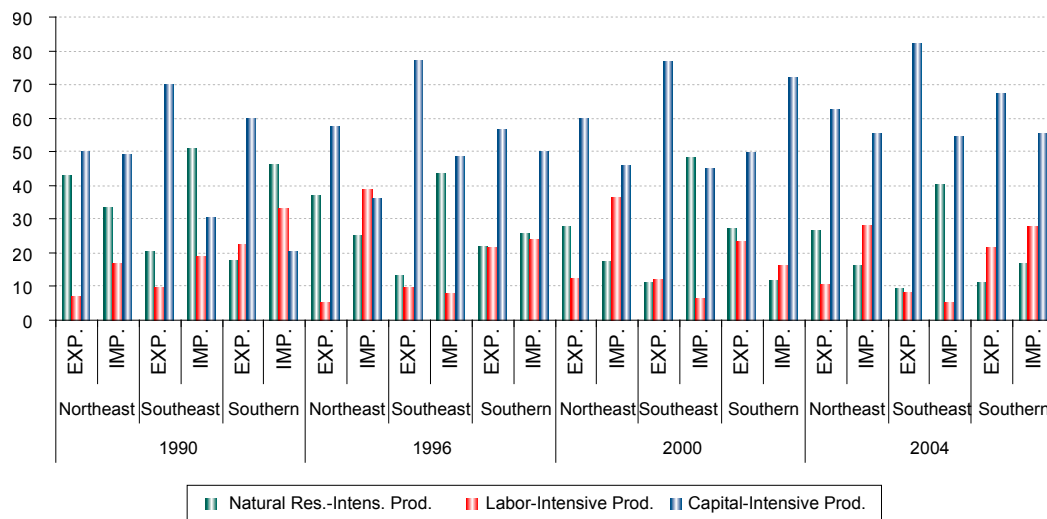


Source: Prepared on the basis of data from the Input-Output Matrix of the Northeast region, 1997, of the State of Rio Grande do Sul, 1998 and São Paulo, 1999, and trade flow from the ALICE-Web System/MDIC, Brazil.

Figure 2

FACTOR INTENSITIES IN INTERNATIONAL TRADE NORTHEAST, SOUTHEAST AND SOUTHERN REGIONS, 1990-2004

Exports and Imports - MERCOSUR, in %



Source: Prepared on the basis of data from the Input-Output Matrix of the Northeast region, 1997, of the State of Rio Grande do Sul, 1998 and São Paulo, 1999, and trade flow from the ALICE-Web System/MDIC, Brazil.

1990, stood in the neighborhood of 53.3%, rising to 73% in 2004, and a reduction in the share of imports of natural resource-intensive goods, which fell from 42.1%, in 1990, to 22.3%, in 2004. The growth in capital-intensive imports was due to the increase in imports of products from the vehicles, aircraft, vessels and associated transport equipment sector. Labor-intensive goods, however, experienced less significant variations, their relative share ranging from a minimum 4.4%, in 1990, and a maximum 8.7%, in 1996, during the period under analysis.

As for imports to the Southern region, *Figure 1* evidences a growth in the share of capital-intensive goods, which in 1990 was 57.2%, to 74.4% in 2004, and a significant decrease in imports of natural resource-intensive products, from 20.7%, in 1990, to 11.3%, in 2004. Labor-intensive goods also saw their relative share fall considerably, from 22.1%, in 1990, to 14.3%, in 2004.

In sum, exports from the Northeast region seem not to have behaved consistently with the use of

the region's comparative advantages. The Northeast had a significant growth in the share of exports of products that are intensive in a factor that is scarce in the region (capital) and a decrease in the share of products that are intensive in an abundant factor (labor). As far as imports are concerned, however, the results seem to point to a behavior that is a little more consistent with the region's comparative advantages. There was an increase in the share of imports of goods intensive in capital, a scarce factor in the region.

Finally, to further one of the goals, we calculated the factor intensities in the foreign trade of the Northeast, Southeast and Southern regions with MERCOSUR in 1990-2004; results are shown in *Figure 2*.

In the Northeast region, there is a predominance of exports of capital-intensive products to MERCOSUR. The share of capital-intensive goods sold to MERCOSUR is 10% higher than the share of those products sold to the rest of the world. In the last year of the series under study, capital-intensive goods made up 62% of

MERCOSUR-bound exports.⁷ As for the share of labor-intensive goods, it can be seen that they accounted for only around 10% of the total exported to MERCOSUR in the last years of the series under study. It is worth emphasizing that the share of labor-intensive exports from the Northeast is much larger in the case of exports to the rest of the world than to MERCOSUR.

As for the Southeast region, *Figure 2* shows a preponderance of exports of capital-intensive goods, which accounted for 69.9% of exports, while at the end of the series that share rose to 82.1%. It must be said that this increase is partly explained by the growth of a capital-intensive sector: vehicles, aircraft, vessels and associated transport equipment. In addition, during this period, there was a reduction in the relative share of natural resource-intensive exports from 20.4%, in 1990, to less than half of it, i.e. only 9.5%, in 2004. Exports of labor-intensive goods to MERCOSUR, however, experienced little change, accounting on average for around 10% of the total exported in the period under analysis.

In the case of the Southern region, *Figure 2* shows a growing predominance of capital-intensive exports, which accounted for 59.9% of the total in 1990, while in the last year of the series that percentage stood at 67.3%. As for exports of natural resource-intensive goods, in spite of an initial increase in their relative share from 17.6%, in 1990, to 27.1% in 2000, their relative share has declined as from 2001, until reaching 11.4% in 2004. In the case of labor-intensive products, their relative share remained stable, accounting on average for 22% of exports to MERCOSUR during the period analyzed.

Moving on to Northeast imports from MERCOSUR, *Figure 2* evidences an increase in capital-intensive products, whose relative share was 49.4% in 1990, while in the last years of the series, accounted for more than half of imports. Northeast imports of natural resource-intensive goods, which accounted for 33.5% of total imports in 1990, saw their share drop to only 16.3% in 2003. Imports of labor-intensive goods, after rising from 17.1% in 1990 to 42.1% in 1994, saw their share decline to 28.2% in 2004. From a comparison of *Figure 1* and *Figure 2*, it becomes

⁷ That difference will be greater if we consider that exports to MERCOSUR are included within exports to the rest of the world.

apparent that Northeast imports from MERCOSUR are more labor-intensive than Northeast imports from the rest of the world.

In sum, the results obtained in relation to the Northeast region, in addition to being similar, confirm Hidalgo's findings (1996). Exports to the rest of the world, including MERCOSUR, show a significant growth in capital-intensive goods, a behavior that is not consistent with the region's comparative advantage, which is hypothetically assumed to be labor-abundant.⁸

As for the Southeast region's imports from MERCOSUR, *Figure 2* shows that imports of capital-intensive goods accounted for 30% in the early 1990s, rising to 54.6% in 2004, mainly due to the growth in imports of products from the vehicles, aircraft, vessels and associated transport equipment sector. On the other hand, imports of natural resource-intensive goods which, in 1990, accounted for around 50% of the region's imports, experienced abrupt fluctuations, and then a gradual recovery of their relative share, which was 40.3% in 2004. As for imports of labor-intensive products, their relative share during the period under study declined from 18.7%, in 1990, to only 5.1% in 2004.

It can further be seen in *Figure 2* that the Southern region saw its imports of capital-intensive goods from MERCOSUR grow from a low 20.4% in 1990 to more than 50% in 2004. This evolution, just like with exports, was due to the growth in imports of machinery and equipment, as well as the vehicles, aircraft, vessels and associated transport equipment groups. Imports of natural resource-intensive goods, which in 1990 accounted for practically half of the imports of the Southern region, saw their share fall to 16.9% in 2004. As for imports of labor-intensive goods, their share decreased from 33.1%, in 1990, to 27.7%, in 2004.

⁸ We assume that the Brazilian Southeast and Southern regions are relatively capital-abundant in relation to the other members of MERCOSUR. This hypothesis is grounded on the evidence that Brazil has a higher level of industrialization than the other partners in the bloc, as well as on the high concentration of industrial activity in those two regions. In addition, the Northeast region is considered to be relatively labor-abundant. It is characteristically one of Brazil's relatively least developed regions, with significant rural poverty and labor surplus. This surplus in labor supply fuels migration flows to other regions in the country. Hence, all this evidence suggests that the Northeast is relatively abundant in labor in relation to the MERCOSUR partners.

Results in relation to the factor intensities shown for the Northeast, Southeast and Southern regions indicated that the total trade flow of these regions had a substantive and growing relative share of both exports and imports of capital-intensive products, to the detriment of labor and natural resource-intensive goods.

This same trade trend was verified in relation to the trade with MERCOSUR, although with greater intensity, which translated into a significant increase in exports and imports of capital-intensive goods.

It is worth emphasizing that the substantive share of the Northeast region's imports of labor-intensive goods from MERCOSUR is not consistent with a proper use of the region's comparative advantage, which is deemed by economic literature to be labor-abundant.

CONCLUSIONS

This paper analyzes the contribution of the MERCOSUR intra-bloc flow of trade, as well as its characteristics in terms of the leverage, or lack thereof, of comparative advantages at the regional level. The data show that most of the Brazil-MERCOSUR trade was carried out by the Southeast and Southern regions, which accounted for an average 85% of the total exported to the bloc in 2002-2004. In addition, the share of those two regions in exports to the rest of the world is slightly lower: 81.8%. The explanation for this larger share of the Southeast and Southern regions in the trade with MERCOSUR—in addition to integration, geographical proximity and lower transport costs—lies in

the fact that Brazilian industrialization is concentrated in those two regions.

The factor composition of exports and imports relative to the rest of the world as well as to MERCOSUR shows that there was an increase in the exports and imports of capital-intensive goods, to the detriment of labor and natural resource-intensive goods. Exports from the Southeast, Southern and Northeast regions to MERCOSUR seem to be even more capital-intensive as compared to exports to the rest of the world. Considering that capital-intensive goods have more technical complexity and greater value added, we can infer that trade between those regions and MERCOSUR seems to add more knowledge than exports to the rest of the world.

As for the use of factors, in the case of exports from the Northeast region to MERCOSUR, results seem to point to a paradoxical behavior in the use of comparative advantages, as there is a substantive increase in the share of exports of capital-intensive goods to the detriment of natural resource and labor-intensive goods, as this region is known to be relatively labor-abundant. On the other hand, the results for the Southeast and Southern regions seem to be more consistent with the principles of comparative advantages, if we take these two regions to be relatively more capital-endowed than the MERCOSUR partners.

Finally, it is worth noting that the growing trade in capital-intensive goods in MERCOSUR seems to lend support to the concerns of Yeats (1998) about trade diversion within the bloc. ♦

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ANNEX I

Database
Northeast Region: Data were obtained from the Input-Output Matrix of the Northeast of the BNB for the year 1997, which may be consulted in Azzoni, C. R. <i>et al.</i> (2001).
Southeast Region: Data from the Input-Output Matrix of the State of São Paulo for the year 1999, available in Guilhoto, J. J. M. <i>et al.</i> (2003), were used as proxy.
Southern Region: The use of factors was computed taking as a proxy the dataset obtained from the Input-Output Matrix of the State of Rio Grande do Sul for the year 1998, Fundação de Economia e Estatística (FEE), and prepared by Neto, A. A. (2002).
Trade flows of the Northeast, Southeast and Southern regions, by product and countries of destination and origin were sourced from the Ministry of Development, Industry and Trade (MDIC), and available through the ALICE System. The information about trade is available in the MERCOSUR Common Nomenclature (NCM).

ANNEX II

Classification of Factor Intensity of Products of the Northeast, Southeast and Southern Regions
<p><i>Natural Resource-Intensive Sectors</i></p> <ul style="list-style-type: none"> i. Northeast Region: Industrial Crops; Grains; Fruit Culture, and Olericulture; Bovine Cattle Breeding, Poultry Production, and Pig Husbandry; Alcohol; Sugar; Animal Slaughter and Preparation; and Milk and Dairy Products. ii. Southeast Region: Farming; Mineral Extraction; Non-metallic Minerals; Food Industry; and Wood and Furniture. iii. Southern Region: Farming; Wood and Furniture; Vegetable Product Processing; Animal Slaughter; Tobacco Industry; and Dairy Products.
<p><i>Labor-Intensive Sectors</i></p> <ul style="list-style-type: none"> i. Northeast Region: Other Agricultural Products; Textile, Apparel, Accessories and Footwear; Leather, Hides, and Skins. ii. Southeast Region: Cellulose, Paper and Graphic Industry, and Textile Industry (Apparel and Footwear). iii. Southern Region: Footwear, Leather, Hides and Skins and Other Industries.
<p><i>Capital-Intensive Sectors</i></p> <ul style="list-style-type: none"> i. Northeast Region: Oil & Gas Extraction; Other Mineral Extractions; Iron & Steel Manufacture, Metallurgy and Mechanics; Electrical and Electronic Industry; Vehicles, Aircraft, Vessels and Associated Transport Equipment; Non-Metallic Minerals; Paper and Cardboard; Refined Oil, Petrochemicals; Other Food Industries, and Miscellaneous Industries. ii. Southeast Regions: Plastic Articles; Iron & Steel Manufacture; Machines and Equipment; Electrical Material; Automobiles, Trucks, Buses, Parts and Other Vehicles; Oil & Gas, Refined Oil, Miscellaneous Chemicals, Pharmaceutical and Veterinary and Miscellaneous Industries. iii. Southern Region: Metallurgy; Machines and Tractors; Electrical and Electronic Material; Vehicles, Aircraft, Vessels and Associated Transport Equipment; Paper and Graphic Industry; Chemical Industry; Petrochemical Industry, and Other Food Industries.





I N T E R V I E W S



PANEL INTERVIEWS ABOUT REGIONAL DISPARITIES, INFRASTRUCTURE, AND EXPORT COMPETITIVENESS

Issues related to connectivity and physical integration in the Latin American and the Caribbean countries are currently under discussion in the region. Logistics, infrastructure and transport costs largely impact on the countries and regions' capacity to access foreign markets and trade benefits. Private and public policies being developed in the transport infrastructure area not only contribute to improve the integration of the domestic economic space but also helps to strengthen the countries' export performance. In order to collect and contrast/compare different scenarios around this issue, this section presents the results of a series of interviews addressed to a group of public policy experts from different countries in Latin America. Guiding questions were provided to direct the focus into highlighting the main characteristics of the economic activity of the specific territory, crucial connectivity difficulties and its effect on the export competitiveness of the countries. These questions have elicited some written pieces and also personal reflections on video and presentations.

1. How deep are regional disparities in your country considering the geographical location of export activities? For instance, are exports concentrated in just a few regions? How has that concentration evolved throughout time?
2. To what extent can inappropriate connectivity between the country's regions and between these and the rest of the world affect the areas that lag behind the most?
3. Do you believe that the infrastructure and operation of international transport services, including logistics, is a factor that affects competitiveness of the region's (country's) exports?
4. What are the problems of the transport sector, particularly in the regions that lag behind the rest: high transport costs? Lack of supply? Limited variety of services?
5. With regard to transport infrastructure, which are the main factors that impede having more and better infrastructure, especially in the most backward regions? Does the sector's development strike a balance between the public and private spheres? Where do the main deficiencies and strengths lie in each of these environments?

6. What factors limit a better transport service provision? Are there any regulatory aspects that hinder an efficient operation of the sector? How do these problems affect the most backward regions?
7. Do you believe that the government -at its different levels- satisfactorily performs its duties in developing the transport sector? Could this sector hinder the growth of the country's export capacity?
8. What is the importance of multimodal transport to improve integration of the domestic economic space and, particularly, of the most backward regions? What limitations does the development of multimodal transport face?

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INTERVIEW

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Video

Only in Spanish

1. Connectivity and Regional Disparities

With a surface area of 3,800,000km², Argentina is a country of vast dimensions. Throughout the length and breadth of its territory, we can find a diversity of climates and natural resources that unquestionably determine individual regions' production activities.

However, since the phenomenon of globalization, we have been seeing a geographical relocation of economic activity and there has been a clear deepening of certain asymmetries and disparities between Argentina's regions, and their production and exports.

For anyone familiar with the state of the country's production, one might almost intuitively think that most of the country's production and exports are concentrated in the so-called Pampas belt, which takes in the provinces of Buenos Aires, Santa Fe, and Córdoba.

There are indeed studies by various different consultants, including those by the ProCórdoba Agency, in which these three provinces represent approximately 70% of the country's total economic activity. The correlation is similar for foreign sales, which account for over 60% of Argentine total exports.

If Buenos Aires Province accounts for 38% of Argentina's total exports, Santa Fe for 19%, and Córdoba for 12%, it is easy to deduce that the share of the other provinces is limited. There are shares of under 4% and a share of less than 1% is recorded in more than five Argentine provinces.

In terms of the concentration of production and exporting activity, regional disparities are significant and conspicuous. These differences unquestionably have a direct impact on local economic development, the welfare of the regions' populations, and the distribution of the benefits of international trade. Many of these disparities are also conclusively explained by the location of Argentina's main customs and ports.

Most Argentine exports are channeled through the ports of Buenos Aires (one of Argentina's main ones) and Rosario, which are relatively close to the provinces of the Pampas belt, thus benefiting the region's foreign sales.

2. Connectivity and Competitiveness

Connectivity between the regions within a country, and between these regions and the world has a direct effect on the development of the most backward areas or provinces. If by connectivity we mean the degree of general infrastructure development, paved roads, cargo transportation services, logistics services, availability or development and access to information and communication technologies (ICTs), etc., we will see that the less developed a region's connectivity, the less its connectivity with the world, and the more isolated it will be from the regions closest to the leading export centers, which are better equipped with this kind of infrastructure.

From the point of view of exports or international trade, Argentina's geographical situation entails additional sea freight costs in its export operations, compared to other countries such as Brazil and Chile. As mentioned above, the long distances between areas located far from the ports also implies higher costs, directly reflected in these exports' lower competitiveness compared to exports from cities or regions located close to the ports.

Cazadores de mercados. Comercio y promoción de exportaciones en las provincias argentinas, is a highly recommended book by Lucio Castro and Daniel Saslavsky. In the wide-ranging information and detailed analyses presented by the authors, the complete work draws some extremely interesting conclusions about infrastructure endowment and its direct relationship with provincial exports. The following data are particularly interesting and speak for themselves:

- A 10% improvement in the number of paved kilometers *per capita* would involve a rise of around 3% in volumes exported.
- A 10% improvement in electric power output would result in almost between 0.5% and 2.5% more exports to the Pampas and Cuyo regions.

- The Argentine North-East (NEA) and Argentine North-West (NOA) are the regions most affected by geographical remoteness, with a decline in provincial exports of 0.6% and 0.4% respectively for every 10% increase in the average distance to export markets.
- A 10% increase in the average distance to the Autonomous City of Buenos Aires (CABA) reduces the probability of the province exporting by almost 2% and the volume of exports by 7.6%. But the distance to the Argentine capital does not affect all regions equally. NEA is the region most affected, followed by NOA.

This is because, as in most emerging countries, the organization of their connectivity systems or logistics networks for exports is concentrated in specific geographical centers. This is true of Buenos Aires, which has Argentina's main port, accounting for the higher volume of exports of Manufactures of Agricultural Origin (MOA) and Manufactures of Industrial Origin (MOI), and of the port of Rosario on the banks of the Río de la Plata, Argentina's main exit port for grains/commodities. If we add to this reality the further difficulty of a lack of adequate connectivity between the other regions and these centers, the result is clear: the regions close to these spaces will develop faster and the most remote are the least favored in terms of development and competitiveness, either nationally or internationally. The asymmetries and disparities of the regions within the national territory are thus accentuated.

3. Infrastructure and competitiveness

The issue of the quality and general state of infrastructure arises directly from the situation described above and this has a major impact on the export competitiveness of Argentina and its regions. Furthermore, the low availability of land transport and containers, congestion in port terminals, and various aspects linked to the procedures and documentation of foreign trade operations at border crossings or customs are just a few of the difficulties affecting companies' competitiveness when it comes to exports.

There are provinces in Argentina that are very similar in terms of production and economy, and we would expect them to have similar levels of competitiveness when it comes to exporting. Yet the impact on export costs for companies located in a region with a deficit in infrastructure and the supply of transport and international logistics services is extremely significant.

Córdoba Province, the axis of the Bioceanic Corridor, has a significant density of national and provincial roadways connecting it to the main points of departure worldwide and an ample supply of logistics services. The products exported by the region should certainly be more competitive than those of other provinces, such as those of NOA or NEA, regions with limited development of its road transport infrastructure, made worse by their geographical distance from the main points of departure of Argentine exports.

Indeed, various different studies have shown that the impact of infrastructure and logistics on export competitiveness is considerable, especially in NOA and NEA. The first of these regions is most affected by logistics costs, which are almost 50% higher than the average for the Center, NEA and Cuyo regions. A World Bank survey shows that SMEs' logistical costs are general around 45% higher than large companies. And if these regions' main exports are primary commodities, logistical costs for exportation can rise as high as 23% of the sale price.

Another aspect that directly affects the competitiveness of the Argentine interior provinces' exports is the issue of cargo consolidation services. SMEs located in the interior usually export small volumes. This means they have to consolidate their cargo in a container with other cargo, and consequently the provision of these services in this region is limited, making for higher logistical costs for these companies, unlike SMEs close to the main export centers, where the provision of these services is higher and the costs become less excessive.

So, in terms of the factors affecting competitiveness and the general costs of Argentina's exports, transport infrastructure and logistics are undeniably aspects to be considered and improved.

It is worth insisting on the fact that, while transport infrastructure is extremely important, as we have seen, I believe there is a need to stress that, when talking of improvements in infrastructure, we should not just mention transport, but should include all aspects linked to the export process. These certainly have a relevant impact on businesses' competitiveness when it comes to internationalizing, even more in firms geographically distant from the main centers of departure worldwide.

I am particularly talking about working to improve the provision of international cargo transport by road, rail, and air, improving customs clearance and the customs service itself, banking operations, the handling of container operations at freight terminals and their transfer centers, and also access to energy, access to technology and communications, the availability of a skilled labor force, etc.

Greater importance should also be given to the multimodal transport system. This system of transport could solve major problems where connectivity is concerned. The use of several means of transport for exports is a system that would greatly simplify operations regarding the transportation of cargo for export, as has occurred in most countries in the world, or at least the most developed countries, where there are regional multimodal transport agreements. This is one of the most effective and widely-used systems.

For example, due to Córdoba's landlocked situation, the optimization of the multimodal transport system, together with the improvement and sound development of cargo transfer centers at transport switching points and the services this system requires, has become a matter of urgency: it would bring Córdoba and other landlocked provinces significant benefits in terms of the competitiveness of its exports.

Unfortunately, as in Argentina, most countries in South America have created laws for multimodal transport. But these only apply within national territories and are difficult to extend for international use. The problem lies mainly in the vagueness of the law on issues of carrier liability limitation. This is just one example. The Multimodal Transport Law in Argentina has been around for ten years but needs to be reworked in order to resolve its main limitations and try to establish a macroregional multimodal system. I mean, it can be regulated and coordinated mainly with the legislation of MERCOSUR and Chile, even if this means a greater effort, as it is only in this case that this transport system will be able to provide its users with all its potential benefits.

4. Public-private partnerships and export competitiveness

In my own view, it is essential for the public and private sectors to work together if such improvements are to be achieved. The role of public institutions and the role of the State

-national or provincial- in working to improve infrastructure endowments and in improving the regulations inherent in international trade facilitation are needed to generate the sustainable, balanced development of exportable regional and provincial supply.

Certainly, if no progress is made in this direction, the export capacity of Argentina's regions and of the country as a whole will be compromised. As I explained earlier, the connectivity between most backward regions and the main points of departure worldwide requires structural improvement, not just in the development of transport. At the same time, there is an urgent need to improve logistical operating capacity in these centers in its broadest sense so as to avoid congestion and loss of efficiency in the departure of products worldwide. These are just two examples of the immediate action that should be taken in order to accompany the growth of Argentina's exports country and not restrict them.

The need for interinstitutional work by building public-private partnerships is urgent. There are certain efforts in this regard. Thus we have settled our public-private export promotion agency and are working under an export competitive strategic scheme to develop our program. This mixed alliance model should be implemented to develop joint actions in the provision of better infrastructure and the search for facilitation and speeding of export operations in the medium and low term. There should also be actions in the search for solutions to current problems such as disparities and asymmetries among regions and those reflecting the growing countries exports demand such as the lack of containers and the collapsing land transport service by roads.





INTERVIEW

EDEON VAZ FERREIRA

A Business Administrator with a postgraduate degree in Strategic Business Management, Edeon Vaz Ferreira has an extensive executive background in agricultural associations. He is at present an Owner-Partner in FACN Consultoria de Negócios Ltda., Executive Coordinator of the Mato Grosso Pro-Logistics Movement, and a Consultant for the Board and Manager for the Logistics and Infrastructure Commission of the Mato Grosso State Soy Producers' Association (APROSOJA), among other activities.



Audio & Presentation

Only in Portuguese

Edeon Vaz Ferreira, Executive Coordinator of the *Movimento Pró-Logística do Mato Grosso*, describes the Mato Grosso infrastructure context, as the main Brazilian State in the domestic soy production and second in corn. Along his speech, Mr. Vaz Ferreira remarks the serious competitiveness problems faced by the region due to the currently high transport costs. To tackle these problems the "*Movimento Pró-Logística*" puts forward as its main goal the implementation of big infrastructure works to improve the State condition. He describes main deficiencies in roadways and maritime traffic and the projects proposed to solve them.

Mr. Edeon Vaz Ferreira presentation can be accessed by chapters:

Chap. I - General context of the Mato Grosso Region. (11:48 min.)

Chap. II - Description of the main Mato Grosso roadways and its problems. (8:43 min.)

Chap. III - Current status and projected works for the region ports. (8:26 min.)

Chap. IV - Current status and importance of the Hidrovía de Teles Pires-Tapajos construction. (4:15 min.)





INTERVIEW

SAÚL PINEDA HOYOS

An economist from the University of Medellín, Colombia, Saúl Pineda Hoyos is an Economic Policy Specialist at the University of Antioquia and a Visiting Scholar at the Institute of Urban and Regional Development of the University of California, Berkeley. He has served both as Economic Director of the Medellín Chamber of Commerce, and as Vice-President of Civic and Social Management of the Bogotá Chamber of Commerce. From 2002 to 2006, he was associated with the General Secretariat of the Andean Community of Nations (CAN) as an Adviser to the organization's Secretary-General. He has been a Consultant to the United Nations Development Program (UNDP) in the capacity of Competitiveness Adviser to Medellín and Executive Secretary of the Medellín Strategic Plan and the Metropolitan Area, and to the United Nations Center for Regional Development (UNCRD). Since January 2008, he has worked as Director of the Competitive Thinking Strategies Center (CEPEC) at the University of Rosario.



Video

Only in Spanish

1. How deep are regional disparities in your country considering the geographical location of export activities? For instance, are exports concentrated in just a few regions? How has that concentration evolved throughout time?

With regard to exports, in Colombia there are remarkable differences among regions. Out of the 32 departments, 22 of them total a 10% share of the country's exports while six account for almost half. It must be mentioned, however, that such disparities worsen mainly in view of Colombia's territorial development modality which has concentrated production in the center of the country and only recently in the north and west, while the south and east still have big areas with no economic activities. That is why the exports of several departments barely amount to three million dollars *per annum*.

On the other hand, it is noted that the regions that have industrial centres and the most important services at country level (Antioquia, Bogotá and Valle) or extractive industries (Cesar y Guajira) continue to be the most dynamic areas for Colombian foreign trade. This trend has kept steady in time, although it should be stated that the share of the mining departments has varied significantly in the last ten years as a result of the high volatility of raw material prices.

At present the country has started to experience a relatively important mining/energy boom resulting from significant oil and coal fields, which turn it into an important actor in the regional energy picture. This situation has to some extent cast a shadow on the leading role played by certain traditional exports such as coffee, flowers and clothing, and has strengthened the export share of mining regions compared to agricultural and industrial ones.

These asymmetries in the development of Colombian regions are not only due to infrastructure problems. Long-term evidence shows that the country's "closed economy" model during a great part of the 20th century essentially benefitted three main cities (Bogotá, Medellín and Cali), where businesses came together and the privileges of the import-substitution scheme were mostly tapped. More recently, and in line with Sánchez Reaza's findings on the Mexican case, disparities relate to a local economic development framework that has allowed certain cities and regions -again emphasizing the territories with a greater initial infrastructure- to better tap the work of their institutions in accessing competitiveness and productivity sources in aspects such as human resource training, the promotion of science, technology and innovation and the development of cluster communities, among others.

2. To what extent can inappropriate connectivity between the country's regions and between these and the rest of the world affect the areas that lag behind the most?

Inadequate connectivity has ostensibly significant effects on the regions' development. In this regard, the analyses of the *Banco de la República* point out that Colombia is missing trade opportunities because it does not improve "the country's current road network, access to maritime ports as well as the conditions of river waterways so that they can be jointly utilized for cargo mobilization".

This situation, however, should be more carefully examined to avoid generalizations. On the other hand, Colombia has been unable as yet to complete a task inherent in the industrial revolution which is the efficient connection of the domestic market. This has led areas with a productive potential to lag behind with regard to the main consumption centres.

On the other hand, today the country is experiencing a situation of "re-primarization" of its exports which can be noted in a share of over 50% of oil and coal in Colombia's sales abroad, for which specialized infrastructure has been developed. Therefore, economic performance has improved in those regions with extractive industries, but this has not necessarily translated into better productive chains or a convergence of social indicators.

In any case, nowadays the impact that low connectivity in the domestic market has on the development of other regions is obvious. Departments facing huge productive challenges -such as Chocó in the western part of Colombia, with coasts that give onto the Pacific Ocean but that are isolated from the country- have precarious road infrastructure, which remarkably affects the competitiveness of their products because of high transport costs that impede closing the gaps with regard to regions that have better infrastructure. The same happens in several departments in the south of the country.

Along these lines, there is evidence that Colombian territorial development tends to be more unequal while connectivity is prioritized mainly in those areas with a greater productive dynamics. Despite its territorial decentralization as provided for in its Constitution, Colombia has been unable to generate -in practice- an economic development system that could lead to

narrow the gaps between the most advanced and backward regions. Indeed, a study carried out by Barón & Meisel showed that “the huge fiscal decentralization that Colombia implemented as from 1991 has not contributed to reducing regional disparities”, an assertion supported by the trend to increase “regional polarization” as stated in the coefficient of variation of the *per capita* GDP logarithm in the period 1991-2000.

3. Do you believe that the infrastructure and operation of international transport services, including logistics, is a factor that affects competitiveness of the region's (country's) exports?

The lag in road infrastructure and logistics is probably one of the clearest points of consensus nowadays in the country when assessing long-term actions in this matter and their impact on the competitiveness of Colombia and its different regions in international markets. According to a recent report of the Private Competitiveness Council: “Regarding certain infrastructure indicators such as the size of the paved trunk road network *per capita*, Colombia is ranked even below the level of lower-income countries such as Bolivia or Ecuador”. On the other hand, a joint report of this Council and the *Universidad del Rosario* unveils that “there is a significant lag in building routes that are instrumental for competitiveness. For instance, Chile, a country with less surface area and inhabitants than Colombia has over 2,400km of dual-carriageways, compared to 800km in Colombia”.

Apart from the above, there are important bottlenecks in the logistics chain that limit productivity growth and result in poor country outcomes as published in the World Bank 2010 Logistics Performance Index. As to this indicator, Colombia was ranked 72 out of 155 countries. The Private Competitiveness Council ratified that “When analyzing the outcomes of the index, there appear frictions in the country between carriers and users as well as a lack of incentives for carriers -many of them working in the informal sector- to become more competitive and render better quality services”.

A study by Fedesarrollo -the most important private research and consulting centre in the country- quantified that an increase of a one percentage point in the number of paved kilometers of highway would in time generate a 0.4% increase in GDP. On the other hand, a decline of one percentage point in logistics costs would lead to a 0.5% increase in exports. In my opinion, these figures may be underestimated, given the country's currently high potential for foreign trade openness resulting from the FTAs negotiated in the last four years and that would mean an increase from two agreements and access to five markets in 2002, to a total of 12 agreements and 47 markets in the forthcoming two years.

In the midst of this situation which is certainly challenging, the country has experienced ostensible improvements through the consolidation of Cartagena as a logistics and transport hub for products shipped out of the Caribbean Sea. At present, this port not only has two modern maritime terminals but has also developed an important logistics and industrial platform that has allowed them to become positioned as one of the most important cargo hubs in the Caribbean. This does not apply to other port terminals, especially Buenaventura, in the west of Colombia, which reports the greatest freight movement along the Pacific coasts.

In brief, when the time comes to compete in a global scenario, there is broad evidence and business consensus in the sense that the biggest bottlenecks faced by exporters in the country's different regions are the high domestic transport and logistics costs. For a region like Bogotá -embedded in the middle of the country- the price of domestic freight by highway is

sometimes even higher than international freight costs, which evidently affects its capacity to compete on foreign markets. As pointed out by Mauricio Reina, a Fedesarrollo researcher “Provided it is more costly to carry merchandise from the plants to the country’s ports than from there to the destination market, any efforts to move forward in the internationalization of the Colombian economy will be useless”.

4. What are the problems of the transport sector, particularly in the regions that lag behind the rest: high transport costs? Lack of supply? Limited variety of services?

In the country’s most backward regions, there is a lack of integration in the domestic market because of the rugged national geography which has historically been an obstacle to connecting these areas with the main urban consumption centres. From this standpoint, high transport costs are one of the main hindrances to overcoming the productive exclusion of vast areas of the country.

In the case of regions with an export potential -besides the above-mentioned difficulties in road infrastructure- there are also “bottlenecks” related to logistics services for storing products in urban areas, as well as for receiving goods at maritime and air terminals. With regard to these aspects, the National Logistics Survey carried out by MDAS-USAID and the National Planning Department found the country’s logistics costs to be the equivalent of 12.5% of total company sales.

5. With regard to transport infrastructure, which are the main factors that impede having more and better infrastructure, especially in the most backward regions? Does the sector’s development strike a balance between the public and private spheres? Where do the main deficiencies and strengths lie in each of these environments?

A report coordinated by CEPEC -*Universidad del Rosario*- and the Private Competitiveness Council of Colombia (see <http://www.urosario.edu.co/competitividad>), based on a paper by Germán Ospina, points out that the backwardness in the country’s roads and logistics stems from a lack of public policies in this field, from a weak articulation among the different players participating in the infrastructure and logistics chain and from the lack of institutionality helping towards the necessary regulation and generation of appropriate incentives to strengthen the sector as a true value chain.

One of the country’s main difficulties in consolidating an appropriate road network is the deficient management of road concessions. According to a Fedesarrollo study, concessions in Colombia have faced problems due to the lack of priority setting in competition, a poor design, guarantees in excess to concessionaires and complexities in terms of award of works, among others.

These observations on road concessions should not be considered elements that can distort this road development option. Otherwise, the public sector has proven to be greatly inefficient in developing big road infrastructure projects. Concessions are an important instrument to consolidate a road platform based on public/private interaction. It is however necessary to fine-tune the mechanism and evaluate certain elements that have been taken into account in successful experiences such as in Chile.

6. What factors limit a better transport service provision? Are there any regulatory aspects that hinder an efficient operation of the sector? How do these problems affect the most backward regions?

In Colombia it is worth highlighting three factors that hinder the provision of transport services:

Firstly, it must be pointed out that one of the difficulties of the so called “freight panel” that is in place in Colombia to regulate relationships between freight agents and individual carriers is that, in practice, all operate on the basis of a regulated price scheme that somehow subsidizes the inefficiency of carriers and goes against a healthy competition.

Secondly, there are still certain difficulties in terms of institutional articulation and coordination, as already pointed out above. In this regard, the government in office has drawn up a roadmap that proposes the convergence of public and private entities to optimize the functioning of road corridors, to define priorities in logistics and road infrastructure and to build short, medium and long-term solutions.

Finally, the country still lags behind in the development of a set of services to offer comprehensive support to transport-related activities. Within this rationale, it is essential to promote at private sector level, venture options that offer innovative solutions to the different challenges faced by goods transport in the country.

7. Do you believe that the government -at its different levels- satisfactorily performs its duties in developing the transport sector? Could this sector hinder the growth of the country's export capacity?

Although there is visible national consensus on the fact that road and port infrastructure and logistics management is one of the great limitations to a country's competitiveness, the public sector has been adopting a series of measures that should have an impact in the next 10 years. In this regard, the *National Competitiveness Report 2009-2010* has identified actions in the following fields:

- Speeding up the building of dual carriageway projects along the so-called “country competitiveness corridors”.
- Approving the National Logistics Policy (COMPES 3547) which has had important results such as the strengthening of the committees to facilitate trade and transport logistics (COMIFAL); carrying out the National Logistics Survey; and preparing feasibility studies for logistics platforms linked to the Bogotá-Buenaventura corridor.
- Implementing the financial reform that opens the door to private resource (pension funds) channeling to infrastructure projects.
- Making progress to have integrated massive transport systems in the country's main cities.
- Granting airport concessions in the country's different areas.

The country faces great challenges in this field; nonetheless, it must be pointed out that the public sector, as can be noted in the decisions made in the last few years, has triggered efforts to bridge the country's competitive gaps with regard to its infrastructure and logistics platform, which could have an incidence on the country's export capacity and, to a lesser

extent, on the integration of the traditionally more backward territories into the domestic and international markets.

8. What is the importance of multimodal transport to improve integration of the domestic economic space and, particularly, of the most backward regions? What limitations does the development of multimodal transport face?

Multimodal transport is a very significant aspect of the country's competitive development as shown by Germán Ospina in the report *Institutions and Colombian Competitiveness (Competitividad e Instituciones en Colombia)*, published by the Private Competitiveness Council and the *Universidad del Rosario*. This report points out that, despite the ongoing lack of prestige of the railway and rivers as means of transport for the country's products, these are a viable option as can be noted in important productive chains such as those of coal, hydrocarbons and bananas.

Furthermore, the World Bank's study *Connecting to Compete* points to the fact that there is a lack of articulation between railways, roads and rivers in Colombia which translates into an increase of over 50% in the companies' logistics costs. These over-costs are accounted for mainly by the great difference in the use of multimodal transport between Colombia -that currently utilizes this mechanism for 1.5% of its total transport- and Europe that uses multimodal mechanisms in 60% of the cases.

Fortunately, in the last few years, different public and private players have become aware of this reality and have moved forward in planning and building different alternatives to allow the consolidation of multimodal platforms at strategic points in the country which, in turn, connect to the so-called "competitiveness corridors".



INTERVIEW

LUZ MARÍA DE LA MORA



A graduate in International Relations from the College of Mexico, with an ITAM diploma in Foreign Trade, a postgraduate degree in International Political Economy from the University of Carleton, Ottawa, and a doctorate in Political Science from Yale University. She has been Head of the Economic Relations and International Cooperation Unit at the Mexican Foreign Ministry and Head of the International Trade Negotiations Unit at the Mexican Economy Secretariat. She has been a Representative of the Economy Secretariat in Brussels, Mexico's Alternate Representative to LAIA, Economic Advisor to the Trade Office in the Mexican Embassy in Washington, D.C., and a member of Mexico's negotiating team for the North American Free Trade Agreement (NAFTA). She is currently a Research Fellow at the International Studies Division of the Center for Research and Teaching in the Social Sciences (CIDE), Mexico, and is a founding partner of LmmConsulting, specializing in international trade and development cooperation.



Video

Only in Spanish

Despite its dynamic trading performance since the 1980s, Mexico has been unable to maximize its export potential in regional development terms or in the opening of new markets for its export supply. The development of an efficient infrastructure that will promote the connectivity of all the Mexican regions is a crucial aspect of public policy that would enable Mexico to seize the opportunities provided by its network of trade treaties and agreements.

Beginning in the 1980s, Mexico reoriented its development model toward making the export sector the driver of economic growth. In a little over two decades, Mexico became the tenth largest exporter and the ninth largest importer at world level (counting the European Union - EU - countries as a single country), as well as the leader in both categories among the Latin American countries. Mexico is responsible for around 2% of world exports and imports, equivalent to its contribution to world Gross Domestic Product - GDP (WTO, consulted September 19, 2009). In 2009, the country's trade with the world was over US\$465 billion, a little over 55% of its GDP.

If we look at Mexico's foreign trade figures since the 1980s, its exports have clearly grown and have come to represent a very significant part of national GDP. In fact, Mexican exports

to the world grew almost eleven-fold from US\$21.8 billion in 1986 to nearly US\$230 billion in 2009, representing around 25% of Gross National Product (GNP).

Mexico's foreign trade, however, has been distributed unevenly across regions, sectors, and businesses, making any existing inequalities even more apparent. Indeed, Mexico's foreign trade is characterized by high concentrations in export destinations, the kind and number of exporting companies, and the regions involved in foreign trade.

Let us start with export markets. Mexico has negotiated 11 free trade agreements (FTAs) offering preferential access to their products in 43 countries. It has signed seven Economic Complementarity Agreements (ECAs) and three partial scope agreements (PSAs) with Latin America in order to export to these markets on preferential terms.¹ But this network of trade treaties and agreements has not been successful in reducing the concentration of Mexican exports in a small number of markets. Mexico directs 95% of its exports at ten markets and allocates over 80% of its sales to United States alone, the world's biggest importer. This is not the case with Mexican imports, which *have* diversified the output destined for the US market requiring an increasing amount of inputs from Asia, where Mexico has only negotiated an FTA with Japan. So, today Mexico *has* diversified its imports sources and only 50% of its foreign purchases from its northern neighbor.

The next point relates to who is engaged in foreign trade. As in the previous point, Mexico has a high concentration of actors engaged in trade. Over 90% of Mexican exports are made by around 300 major domestic and foreign firms, as well as around 3,500 *maquiladora* firms mainly in the north and northeast, and center and center west. These companies have been the drivers of exports and have shown a clear pattern of intraindustry and intrafirm trade. Mexican SMEs, representing around 95% of formal businesses in Mexico, have a mere 10% share in exports, with around US\$22 billion in 2009.

A third point has to do with the ability of various different Mexican regions and states to engage in and benefit from export activity. In Mexico there are clearly major regional disparities in development and competitiveness and this is reflected in the ability of each of the 32 federal bodies to exploit international trade opportunities. At the regional level, just ten states accounted for 75% of exportable potential.² They have traditionally been the site of most manufacturing output in the automotive, electrical and electronic, electrical appliance, chemical, and, more recently, aerospace sectors, which make up a substantial part of Mexico's exportable supply.

¹ Mexico currently has free trade agreements (FTAs) with United States and Canada (NAFTA), Chile, Colombia, Costa Rica, Israel, Nicaragua, and the countries of the Northern Triangle (Guatemala, Honduras, and El Salvador), Uruguay, the European Union (EU), the European Free Trade Area (EFTA), and Japan. Venezuela reported its membership to the G-3 FTA, November 19, 2006, and Bolivia did likewise, June 7, 2010, effectively reducing Mexico's FTA network. In the framework of LAIA, Mexico has negotiated economic complementarity agreements (ECAs) with Argentina (ECA 6), Bolivia (ECA 66), Brazil (ECA 53), Cuba (ECA 51), Peru (ECA 8), and MERCOSUR (Framework ECA 54), and with MERCOSUR in the automotive sector (ECA 55). Partial scope agreements (PSAs) have been negotiated with Ecuador (PSA 29) and Paraguay (PSA 38). The PSA with Panama (PSA 25) is unilateral and provides no preferential access for Mexican products (<http://www.aladi.org>). When industrial tariff elimination for the Mexico-Japan FTA is complete 2016, almost 97% of Mexico's exports to the world will be tariff-free.

² These are DF, Mexico State, Puebla, Guanajuato, Jalisco, Chihuahua, Morelos, Querétaro, Nuevo León, and Hidalgo. (Sánchez Almanza, 2010, Plate 12).

The success of Mexican exports has also highlighted the gap in the levels of development of the northern and central states', on the one hand, and the southern states, on the other. While the states engaged in exporting are seizing the opportunities provided by Mexico's network of FTAs and ECAs, the states that have always lagged behind in the competitiveness and human development indexes have not found a way of successfully engaging in export activity, thus deepening the inequality gap. This is the case for states such as Baja California Sur, Colima, Michoacán, Nayarit, or Zacatecas, and those of the south and southeast such as Campeche, Chiapas, Oaxaca, Quintana Roo, or Tabasco, which have not so far succeeded in meaningfully engaging in Mexico's exports. This point is not a minor one inasmuch as Mexico has staked its growth and development on trade, exports, and attracting foreign direct investment (FDI). As long as these states are unable to integrate with export activity, they will be unable to kickstart growth in this direction.

So the question is what kind of support could or would the State have to provide in order to overcome these inequalities, which have been exacerbated by the export success story of the northern regions and the low share in foreign trade of states and regions lagging behind in terms of national development. In addition to implementing a development policy of production chains and exportable value added supply, a fundamental contribution would be the development of transport infrastructure and logistics to provide the connectivity these regions need to be better positioned to benefit from export activity. In fact, the World Economic Forum (WEF) survey for business executives on the most problematic factors for doing business in Mexico, 7.1% of respondents identified an inadequate supply of infrastructure in the country. This issue was the sixth more recurrent response from a total of 15.

What is the relevance of good transport infrastructure and logistics for Mexican competitiveness and in order to maximize its export capacity?

Let us begin by looking at transport infrastructure and then concentrate on logistics to support trade at regional level.

Infrastructure is a basic determining factor where different production activities are located, as well as the type of economic sectors a country may specialize in. With a special emphasis, infrastructure is key to the development of the economy's tertiary sector (services), which in turn are indispensable for accelerating and increasing a country's competitiveness, and mitigating economic disparities and social inequality among a country's different regions.

A World Bank study (Calderón & Servén 2010) finds a direct correlation between growth and infrastructure in the sense that growth increases with the stock of infrastructure assets. The study also identifies a correlation between income inequality and infrastructure in the sense that, the bigger and better the infrastructure, the more inequality tends to shrink. A more sophisticated element is the impact of the *quality* of the infrastructure. Several studies have concluded that differences in infrastructure effective use account for over 25% of the differences in growth between Africa and East Asia, and even more than 40% of the differences between high- and low-growth countries. Calderón & Servén found that both the quantity and quality of infrastructure has a robust impact on economic growth and income distribution (also implicitly on the reduction of regional inequalities and backwardness).

The WEF's 2009-2010 and 2010-2011 *Global Competitiveness Reports* enable us to make international comparisons and visualize Mexico's competitiveness in full in the infrastructure pillar and its ramifications in export performance. The Global Competitiveness Index (GCI)

sees infrastructure as essential to boost the competitiveness of production factor growth-based economies and in those where efficiency holds the key to their competitiveness.³

In the 2010-2011 Report, Mexico came 75th of 139 countries in infrastructure, below Chile (40th), Tunisia (46th), Russia (47th), China (50th), Uruguay (53rd), Turkey (56th), and Brazil (62nd). Among the Organisation for Economic Co-operation and Development (OECD) countries, Mexico ranks last in this pillar and is now below the average for the group of countries in transition (*per capita* GDP between US\$9,000 and 17,000). Of the 9 subpillars analyzed in the GCI's infrastructure pillar, Mexico has an 8-point competitive disadvantage and only performs well in available seats/km.

Table 1

Infrastructure Pillar - Mexico

Subpillar	Global Position		
	2009-2010 (of 133)	2010-2011 (of 139)	Change
<i>Total</i>	69	75	6
Quality of Global Infrastructure	71	79	8
Quality of Road Network	57	62	5
Quality of Rail Infrastructure	66	76	10
Quality of Port Infrastructure	82	89	7
Quality of Air Infrastructure	56	65	9
Available Seats/km	20	20	0
Quality of Electricity Supply	88	91	3
Number of Telephone Lines	65	72	7
Mobile Telephone Subscriptions	n.a.	93	n.a.

The GCI identifies Mexico's infrastructure as a factor in the erosion of the country's competitiveness, to which have to be added significant regional disparities in connectivity and infrastructure between north and center, where there are regions of high development, and the south and southeast, where the most backward areas are to be found. These inequalities, which become evident in economic and demographic concentration, negatively impact the country's competitiveness and determine different regions' capacity to engage in export activity.

³ The following concepts or subpillars are evaluated in this pillar: (a) Transport infrastructure (50% of total), examining global infrastructure quality, road network quality, rail infrastructure quality, port infrastructure quality, air infrastructure quality, and available seats/km, and (b) Energy and telephone infrastructure (50% of total), including electricity supply quality, number of telephone lines, and cellular telephone subscriptions (a new sub-pillar in the 2010-2011 report).

1. Mexican Infrastructure in International Trade

Transport in Mexico represents 8% of GDP, with land transport the country's most important means of delivery (60% of cargo). Notwithstanding its economic and strategic relevance, vehicular infrastructure is inadequate. Mexico ranks 18th in vehicular infrastructure at world level with 132 billion kilometers of paved roadways, 6,300km of which are freeways, mainly in the north and center of the country. Since the 1990s, Mexico's road network has been developed through public-private partnerships. According to the Mexican Ministry of Communications and Transport (SCT, 2008a, Table 3), investment in vehicular infrastructure projects was close to US\$4.5 million in 2007, around US\$2.7 of which was public investment.

In multimodal transport, backwardness in infrastructure is even more marked, stemming particularly from a limited rail network, and a dearth of inland terminals and ports. Until privatization began in 1995, the Mexican rail network remained virtually unchanged, and the extent of rail tracks was very similar to what the country had in 1910. Mexico ranks 16th in the world with 17,500km of rail tracks connecting it with destinations in United States. The lack of momentum for this means of transport has meant that under 12% of cargo transport is today carried this way.

Mexico's exports have until today been mainly by land, whereas imports are by land or sea. About 75% of Mexican exports to United States are by road, via border crossings in Texas and Tamaulipas (Nuevo Laredo/Laredo), Texas and Chihuahua (Ciudad Juárez/El Paso), Arizona and Sonora (Nogales/Nogales), or California and Baja California (San Diego/Tijuana). The southern states do not have the same type of transport infrastructure and logistics to export to the north to seize the opportunities provided by NAFTA, or to the south to seize the trading opportunities in the five countries of Central America with whom we have FTAs.

The map of Mexico's roadways, railroads, and ports shows that the highest concentration of the development of this infrastructure lies in the country's north and center states, whereas those of the south have far more limited connectivity. The states that have in the main exported to the North American market and have seized the opportunities provided by NAFTA have been those of the north and center, and have in turn enjoyed better road and rail infrastructure. This has meant they are better connected to their export market: United States. In terms of rail use, the north-east and North Pacific segments are the most commonly used and profitable routes. Traffic on these two lines is directly linked to the demand for exports in the US market. When Mexico privatized its rail transport services in 1995, the country's rail system was broken up into five companies that were offered 50-year concessions. Regional networks were allocated to promote competition, but, since these concessions were granted, there have been disputes over rights of way and these have blocked investment and further development of the services of this means of transport.

The most backward states of the south and southeast in terms of poverty, inequality, and competitiveness have found it very difficult to seize the opportunities opened up by NAFTA seventeen years ago because, among other factors, they do not have the road network to deliver their limited exportable supply. In the south, the Southeast Railways (FERROSUR) route has less than half of the traffic of the two northern routes. Companies such as Ferrocarriles Chiapas-Mayab S.A. de C. V. (FCCM) that connect the states of Yucatán, Tabasco, Campeche, Chiapas, Oaxaca, and Veracruz in the south and south-east represent just a tenth of the volume of traffic of their northern counterparts. Furthermore, in October 2005, natural disasters like Hurricane Stan in Chiapas destroyed bridges and rail tracks between Ciudad Hidalgo and Arriaga, Chiapas, which took a long time to be rebuilt.

Mexico's trade with its southern neighbors has been limited precisely by the lack of physical infrastructure for the efficient transport of goods to these markets. Since 1995, Mexico has had FTAs with Central America (Costa Rica in 1995, Nicaragua in 1998, and Guatemala, Honduras, and El Salvador in 2001). These instruments have driven trade flows from Mexico to its neighboring region. Between 1993 and 2009, Mexico's trade with Central American countries was up five-fold, from US\$1,100 to US\$5,500, driven, to a great extent, by the preferential conditions generated by such agreements. But Mexico's total trade with those five countries (US\$4.683 billion) has not exceeded 1% of its total trade with the world in 2009 (US\$465 billion). Similarly, these five countries' imports from Mexico represent just 7% of its total purchases from the world.

With the 2001 Puebla Panama Plan, and now with the 2007 Meso-American Integration and Development Project, attempts have been made to work toward breaking this bottleneck and promoting physical integration in the region. It is hoped that, by 2015, the Pacific Corridor of the International Network of Meso-American Highways (RICAM), which would take in 3,160km across six borders and seven countries, making it potentially the shortest route between Mexico and Panama. This corridor would transport around 95% of goods traded in the region.

Logistics⁴

A second factor that affects and reflects regional inequality to engage in foreign trade is logistics. For most countries, including Mexico, logistics costs are the most significant component in the total cost of trade, far outweighing tariffs. The availability and quality of infrastructure is key to determining transportation costs and indirectly to the level of inventories, and consequently regarding financial costs, the main component of logistics costs.

The World Bank study, *Doing Business 2007*, provides information on aspects of trade facilitation that directly impact transaction costs, one of which is logistics costs. According to this Mexico Study, logistics costs as a percentage of GDP are between 15% to 20%, as against 9.5% for United States, 9% for OECD countries, and 8.5% for Singapore. In other words, these costs in Mexico are between 50% and 100% higher than the costs in its main export market. In the Logistics Perception Index, which gauges the perceptions of logistics and shipping operators in areas like effectiveness and efficiency in the shipping and cargo process, and infrastructure availability and quality for the use of logistics operations, Mexico ranked 45th, below South Korea (25th), Chile (29th), and Argentina (40th). When customs and fiscal processing in Mexico is compared with OECD countries, it takes six days in Mexico as against 4.8 for OECD countries for exports, and eight as against 5.9 for imports. These additional days have a financial impact on foreign trade and adversely affect the country's competitiveness. One last point is in reference to inventory levels. When a country has poor transport infrastructure, companies need to have high inventory levels to cover contingencies, which is costly because it involves high capital costs. This significantly enhances unit costs and reduces an economy's competitiveness and productivity. The estimates for Latin America to keep the high inventories needed to replace a poor logistics transport system are over 2% of GDP. While businesses in United States keep

⁴ Logistics means many things. Logistics seeks to strategically manage purchasing, movement, product storage, and inventory control, as well as the associated information flow. This increases a business's profitability in terms of cost and effectiveness.

inventories of approximately 15% of GDP, it is often double that amount in Latin America. For example, the ratio for Mexico's raw materials inventory is, on average, 1.58 times higher than United States and 1.46 times higher for final goods.

Intermodal Transport

Mexico is betting on the development of intermodal transport as an option to make the transport of goods and their exportation more efficient, especially to the US market. Intermodalism in Mexico is only as yet at the gestation phase, with 67 intermodal terminals and about 8% of containers being handled by intermodal means in 2007. At present, the main user of this type of transport is the automotive terminal industry for the export of vehicles to the US market. In fact, nine intermodal terminals connect to automotive plants in the north and center of the country with their parent companies in United States (Hermosillo, Ramos Arizpe, Puebla, San Luis Potosi, and Toluca, among other origins and destinations).

Figure 1

MEXICO: MAP OF RAIL CONCESSIONS



Source: Sharp (2005), p. 36.

Figure 2**MEXICO: MULTIMODAL CORRIDORS TO 2007**

Source: SCT (2008b), p. 28.

This modality is one option to be explored to raise the Mexican economy's efficiency and competitiveness, having been shown to help reduce costs and optimize the supply chain, as well as being a good alternative to road transportation. Intermodal transport requires major investment to substantively improve the capacity of the rail network, and create better new terminals and ports. Investment in railroads totaled US\$480 in 2007, US\$380 of which was from private investment.

The intermodal transport system in Mexico has been intended to facilitate interconnection with the markets of North America, Asia, and Europe, and to a lesser extent Latin America. The main multimodal corridors are currently located in the north of the country and along its Pacific coast. They include the Trans-Pacific Corridor, which takes in routes such as Lázaro Cardenas-Mexico City-Laredo, Shanghai-Lázaro Cardenas-Kansas City, and Shanghai-Lázaro Cardenas-Laredo-Galveston. Northbound is NAFTA Corridor, including routes such as San Antonio-Texas-Pantaco, San Antonio-Texas-Lázaro Cardenas, Mexico City-Atlanta-Charlotte, and Toluca-Mexico-Saint Lin-Laurentides-Quebec. Other routes are Mexicali-Hermosillo-Obregón; Silao-Guadalajara-Mexico, and Guadalajara-Monterrey-Silao-Mexico City.

One project that has sought to create a multimodal port for United States' growing trade with China is Punta Colonet in Baja California. The El Baluarte Bridge, located between Mazatlán and Durango, will also create logistical advantages for the port of Mazatlán, positioning it as a competitive port for shipments to the industrial zone of Monterrey and the south of Texas.

Intermodal transport is being developed particularly in the north and northeast, and center regions, with the risk of once again deepening the inequality between them and the south and southeast states of Mexico. Greater engagement and leadership from the State should seek to promote investments to create this type of infrastructure in the south and south-east of the country, even though this region has not so far managed to participate to any great extent in Mexico's trade with countries in the Americas, Europe, or Asia. This infrastructure provides the kind of supports these regions need to overcome their backwardness, attract production investment, and develop a competitive exportable supply, potentially putting them in better position to integrate into international trade flows and exploit the preferential opportunities of Mexico's network of trade agreements.

2. The legal framework

In 1993, Mexico substantially amended its *Ley de Autotransporte Federal*, allowing, among other things, the participation of national and foreign private capital in various activities in the sector. Despite the adjustments to the Act, there are still inconsistencies with local traffic legislation. On occasion, these have proved an obstacle to an efficient, competitive cargo service, as they work against the promotion of export capacity in the country. According to one study on logistics and the supply chain in Mexico by the firm, A. T. Kearney, traffic laws in Mexico adversely affect firms' competitiveness. As traffic regulations are the responsibility of local governments, there is no standardization of local traffic laws. For example, a trailer operating in one city is not necessarily authorized to operate in the next, thus complicating the operation and raising transaction costs for the exporter.

Mexico has incorporated provisions to liberalize land transport with its trading partners north and south.

Because of the economic and strategic importance of transport, NAFTA included the liberalization of cargo transport services in order to encourage investment in infrastructure to render the flow of goods in the region quick and efficient. The failure to implement these agreements for political reasons, however, has held up infrastructure investment in Mexico.

The same has happened to its southern neighbors, where the negotiation to liberalize transport services under FTAs has been suspended both for political and regulatory reasons, and due to the lack of infrastructure, creating a vicious circle by inhibiting infrastructure investment and, hence, the development of the sector, and holding up trade and any benefits it might produce. In addition, there are differences with Central American countries in regulations relating to weights and measures, and in the requirements for issuing drivers' licenses for articulated trucks. This does not allow authorization and mutual recognition in this service, leading to higher logistics costs for Mexican companies wishing to export to Central American markets. It would be desirable for the Central American countries and Mexico to work at least on the regulatory compatibilization of transport, as this will provide transport and logistics companies in the region with recognition of licenses, vehicles, road movement, as well as

customs clearance to facilitate transport and road infrastructure investment in Central America and southeast Mexico.

Openness in this sector would help to promote trade flows from more regions in Mexico to markets north and south, but this requires the political will and decisiveness of individual governments to tackle sectors in outright opposition to any competition from abroad. Providing more efficient transport services to the region's exporters would impact positively on Mexico's trade with these markets.

In practical terms, the liberalization of these services in NAFTA, and the FTAs with the Northern Triangle and Nicaragua have been meaningless, which has meant that logistics services cost more and exhibit serious inefficiencies. It is also necessary to continue working on the implementation of the liberalization of services in FTAs, as there are many services with direct impacts on transport and logistics, and especially on infrastructure development. These include telecommunications and financial services, which despite having been liberalized, are not being made use of in order to develop efficient infrastructure or, consequently, Mexico's connectivity and competitiveness with its different regions and its neighbors to the north and south.

3. Conclusions

Meeting the challenges for the development of logistics and transport infrastructure in Mexico is a pendent issue requiring specific solutions. It will provide more regions with a real chance to increase their share in foreign markets, attract more investment, and seize opportunities for preferential access provided by an extensive network of FTAs.

Mexico's competitiveness has clearly been affected by its failure to create an adequate infrastructure network. Having such will drive economic growth and development, and in particular, truly exploit the preferential opportunities offered by trade agreements to increase the exports of each and every region in Mexico.

Infrastructure development is a key ingredient in contributing to the goal of reducing poverty and inequality between regions and backward groups. In addition to increasing society's overall income levels, it more than proportionately increases the income of the poor, a fact that suggests infrastructure development should be a priority on the agenda to reduce poverty and inequality. ♦

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TRADE AND REGIONAL INTEGRATION: SELECTED INDICATORS

This section will regularly review data measuring trade and integration dimensions in the region. The purpose is to provide a brief regional overview every six months.

NEWLY RELEASED DATA

EXPORTS BY INTEGRATION GROUP, 2009 (Provisional Data, % change from 2008 to 2009)

Exporting Region	Destination								
	MERCOSUR	MERCOSUR + Chile + Bolivia	Andean Community	ALADI ¹	CACM	Latin America ²	NAFTA	Hemisphere	Total World
MERCOSUR	-21	-22	-23	-24	-33	-24	-39	-29	-22
Andean Community	-36	-39	-17	-30	-19	-25	-19	-22	-17
ALADI ¹	-23	-25	-26	-27	-32	-26	-25	-26	-24
CACM	-34	-23	-34	-21	-14	-14	-13	-13	-11
Latin America ²	-23	-25	-26	-27	-25	-26	-25	-25	-23
NAFTA	-22	-22	-15	-18	-23	-18	-24	-24	-21
Total Hemisphere	-23	-23	-20	-20	-23	-20	-25	-25	-22

 Table 1

EXPORTS BY INTEGRATION GROUP, 2009 (Provisional Data, US\$ millions)

Exporting Region	Destination								
	MERCOSUR	MERCOSUR + Chile + Bolivia	Andean Community	ALADI ¹	CACM	Latin America ²	NAFTA	Hemisphere	Total World
MERCOSUR	32,756	41,825	7,843	56,831	1,091	58,625	25,660	83,842	217,295
Andean Community	3,570	6,334	5,839	18,120	1,301	22,410	26,360	48,596	78,448
ALADI ¹	49,286	62,998	21,728	101,187	6,589	113,725	283,003	396,088	631,390
CACM	60	184	166	1,311	5,742	8,180	10,287	18,031	23,611
Latin America ²	49,349	63,189	21,915	102,535	12,424	122,055	293,665	414,644	655,823
NAFTA	39,081	50,549	23,557	217,990	17,854	246,895	767,326	890,780	1,600,377
Total Hemisphere	84,703	108,895	41,800	310,652	27,371	354,878	867,438	1,097,439	2,026,578

STRUCTURE OF EXPORTS BY INTEGRATION GROUP, 2009 (Provisional Data, % Distribution)

Exporting Region	Destination								
	MERCOSUR	MERCOSUR + Chile + Bolivia	Andean Community	ALADI ¹	CACM	Latin America ²	NAFTA	Hemisphere	Total World
MERCOSUR	15	19	4	26	1	27	12	39	100
Andean Community	5	8	7	23	2	29	34	62	100
ALADI ¹	8	10	3	16	1	18	45	63	100
CACM	0	1	1	6	24	35	44	76	100
Latin America ²	8	10	3	16	2	19	45	63	100
NAFTA	2	3	1	14	1	15	48	56	100
Total Hemisphere	4	5	2	15	1	18	43	54	100

Notes: Estimates of Venezuela's exports use partner country import data.

¹ Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Mexico, Paraguay, Peru, Uruguay, and Venezuela. Cuba is not included.

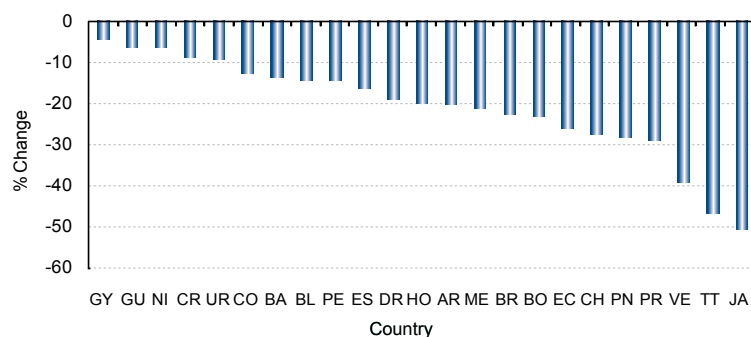
² Includes Panama and the countries of ALADI and the CACM.

Source: IDB, Integration and Trade Sector, based on INTradeBID, ALADI, SIECA, and official country data.

REGIONAL TRENDS

Figure 1

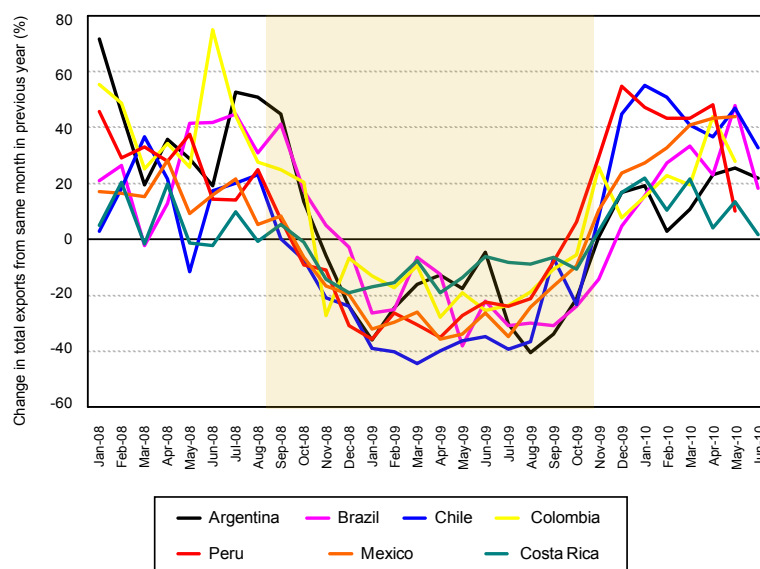
CHANGE IN EXPORTS 2008-2009 (Provisional Data)



Source: IDB, Integration and Trade Sector, based on INTradeBID, ALADI, SIECA, and official country data.

Figure 2

EXPORT PERFORMANCE DETERIORATED STARTING IN 4TH QUARTER 2008 AND IS NOW RECOVERING

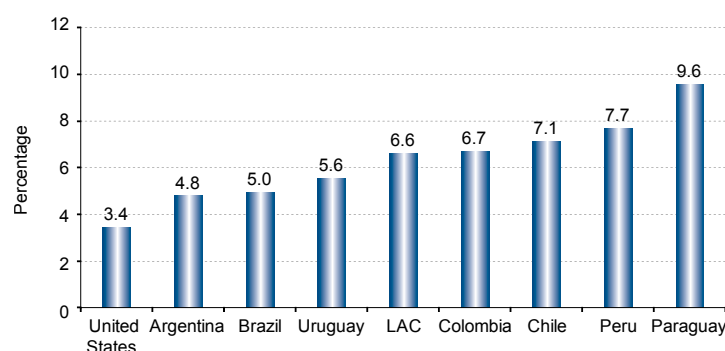


Source: IDB, Integration and Trade Sector, based on INTradeBID, ALADI, SIECA, and official country data.



ANNEX ON TRANSPORT

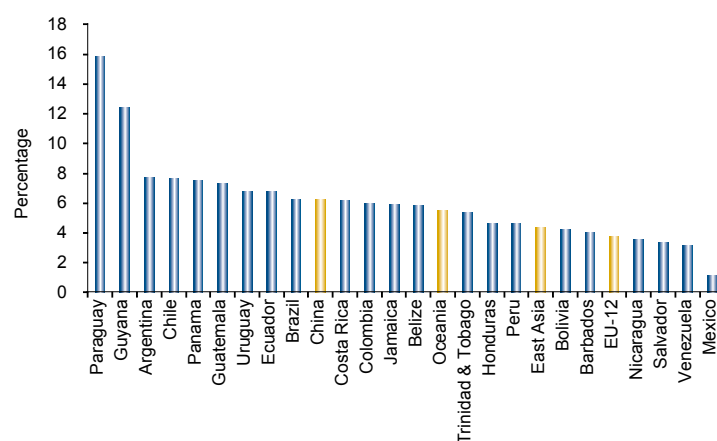
Figure 1

TOTAL IMPORT FREIGHT EXPENDITURES AS A SHARE OF IMPORTS,
U.S. AND SELECTED LAC COUNTRIES, 2006

Note: Latin America (LAC) is the simple average of Argentina, Brazil, Chile, Colombia, Paraguay, Peru and Uruguay.

Source: Author's calculations based on ALADI dataset and U.S. Census Bureau.

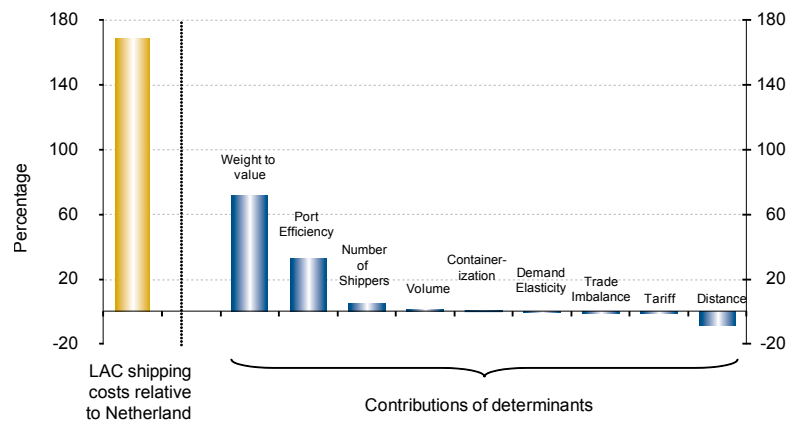
Figure 2

FREIGHT EXPENDITURES AS A SHARE OF EXPORTS TO THE U.S.,
LAC AND SELECTED REGIONS, 2006

Source: Blyde and Moreira (2010) based on U.S. Census Bureau.

Figure 3

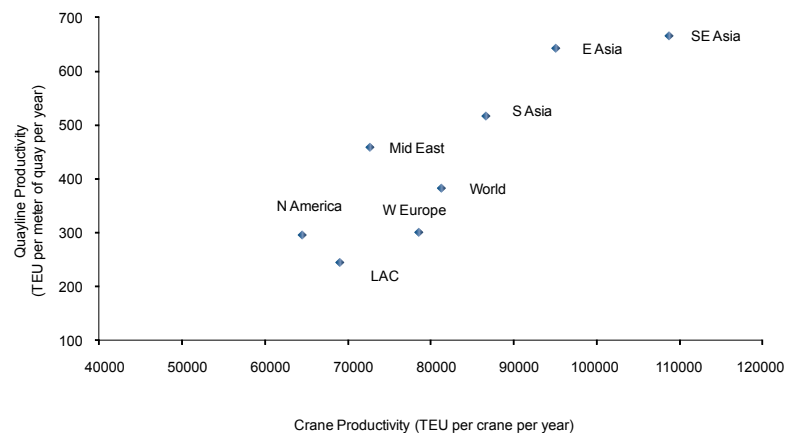
DECOMPOSING DIFFERENCES IN OCEAN FREIGHTS BETWEEN LAC AND THE NETHERLANDS (Exports to U.S., 2000-2005)



Source: Blyde and Moreira (2010) based on U.S. Census Bureau.

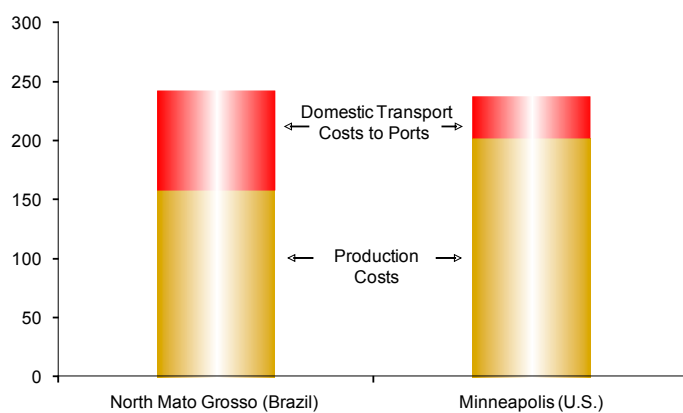
Figure 4

PORT PRODUCTIVITY MEASURES (Regional Averages, 2001)



Note: The figure reports average productivity measures for ports with container terminals. TEU, or twenty-foot equivalent unit, refers to the size of containers used in maritime transportation.

Source: Blyde and Moreira (2010) based on U.S. Census Bureau.

Figure 5**PRODUCTION COSTS AND INTERNAL TRANSPORT COSTS OF SOYBEANS
(Brazil and United States, US\$ per Ton).**

Source: Batista, Jorge Chami (2008).

FEATURED PUBLICATION

The Inter-American Development Bank (IDB) Integration and Trade Sector (INT) launched the Special Report on Integration & Trade: *India: Latin America's Next Big Thing?*

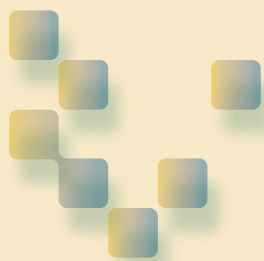
INDIA: LATIN AMERICA'S NEXT BIG THING?



In the last decade, the economic performance of Latin America and the Caribbean (LAC) were radically transformed by the emergence of China -a fast growing, immensely populous and resource-scarce economy- which has brought both opportunities and challenges for all countries in the region. While the full impact of China it is still unfolding, the region is already coming to terms with a new “shock” brought about by another fast growing, one-billion-plus-people economy: India. What is behind India's emergence? What challenges and opportunities does it bring to LAC? Can India replicate the explosive trade LAC has with China? This report deals with these questions. It shows *first*, that India's growth story defies any easy characterization. *Second*, that, yes, there seems to be a large potential for LAC to trade with India and largely for the same reasons that its trade with China has taken off: complementarity of their factor endowments. There are, though, major obstacles, mainly in the form of tariffs and transports costs. And *third*, that even though the competitive challenges brought by India abroad has so far being limited to the Information Technology (IT) services, the country has the potential to be a major competitor in manufacturing goods.

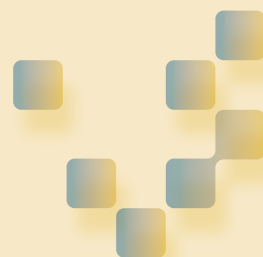
Contents Highlights:

- India's Growth Story: A Latin American Perspective;
- The Bilateral Relationship: Trade, Investment and Cooperation;
- The Competitive Challenges.



Books and Essays

Reviews



La vida y la época de Raúl Prebisch, 1901-1986

Publication only in Spanish

DANIEL SOTELSEK

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DOSMAN, EDGARD. 2010. *La vida y la época de Raúl Prebisch, 1901-1986*. Madrid: Ed. Marcial Pons.

The Spanish edition of Edgar J. Dosman's book on the life of Raúl Prebisch contains all the ingredients for readers to familiarize themselves with and, above all, gain a grasp of many of the events surrounding the renowned Argentine economist's life.

To some he was the Keynes of Latin America; to others, the promoter of the region's malady: protectionism. Whatever our stance, Prebisch's ideas had -and still have today- one virtue: they left no one sitting on the fence. The meaningful realism and transparent biographical research of Dosman's book highlights all sides of Prebisch, bringing us closer to an understanding of the thought of this true Latin American, who, as well as being the creator of an original economic theory of center and periphery, combined his work as a thinker with the practicalities of heading leading institutions in various different geographical regions (e.g. Central Bank of Argentina - BCRA, Economic Commission for Latin America and the Caribbean - ECLAC, Conference of the United Nations on Trade and Development - UNCTAD, Latin American Institute for Economic and Social Planning - ILPES).

Dosman's book has many virtues and there are few criticisms to be made of it. The account of Prebisch's life brings to light several previously unknown facets, not found in traditional texts (even in the one of Meier & Seers (1986) breaking Prebisch's life and times down into five distinct stages. This book goes far beyond the purely academic and theoretical to explore highly interesting questions about Prebisch's personality over the years.

One of the book's prime virtues is that it provides a window on the life of a truly complex character. The titles and organization of the chapters provide a fluent, full-on guide to understanding the life of "Don Raúl" and what was going on in his mind year-on-year. His was a life truly intense along the twentieth century.

The author's view of the early years of Prebisch's pre-ECLAC -or rather pre-Havana- thinking are truly one of the most enjoyable parts of the book. Many details emerge to justify the man's often controversial performance in many fields -professional, political, social, and personal alike.

As related by Dosman, Prebisch's childhood was highly diverse and clearly shows the influence of the northern Argentine environment and its traditional families (Salta, Jujuy, and Tucumán). This stands as a justification of how far Prebisch was cast from a dye -inherited from his grandfather- that would, at various stages in his life, identify him as a collaborator of the establishment, first in Argentina's Infamous Decade and later with the coup led by the General Lonardi that spearheaded the Liberating Revolution.¹

Dosman's book plainly shows how, from the 1920s (focusing on his argument with Bunge) almost until his death, Prebisch constantly deliberated between *protection* and *free trade* on various different levels of analysis -an ever-present dichotomy in his life at every turn.

In Prebisch's favor it may be said that the creation and especially the operation of the BCRA was recognized not only at home, but abroad. But it is also true that the background of his childhood and adolescence in Tucumán would leave an indelible impression whenever Prebisch came to consider inequality and poverty. Until the age of 17, Prebisch was shaped by the ongoing debate over oligarchy and extreme poverty in his homeland, a side of his background that this book explores in great detail.

His first stage in Argentina as a public official and at the head of major public policies exemplifies his dynamism. The first six chapters highlight the vigor and strength of someone who regarded himself as capable of great things, the Central Bank among them. But what also sticks in the collective memory is the pact over Argentine meat with the British (it is strongly recommended to read the careful explanation of the circumstances and restrictions that led, at that precise moment, to the signing of the Roca-Runciman Pact, for which Prebisch, in certain circles, is still held solely responsible today).

¹ The term, *década infame* (infamous decade), is identified with a markedly authoritarian period characterized by systematic electoral fraud, political repression, and corruption. The period began in 1930 with the administration of General Uriburu, who overthrew the then President Yrigoyen, and lasted until the end of Castillo's administration in 1943. The Liberating Revolution began with the military coup instigated by Lonardi in 1955 and signaled the end of the first stage of Perón's markedly populist government.

The ECLAC phase, as it is commonly known, began in 1943, when Prebisch was forced to relinquish his public responsibilities and spent several years reflecting on his previous experience. The result -described in detail in this book- is a *manifesto* lasting just a few pages (the result of 6 years' reflection) that would ultimately usher Prebisch into the global elite of pioneering Development Economists.

Dosman's book brings to light something little known in those days, namely, Prebisch's concern to learn about Latin America up-close and to inquire into the work of Keynes (with some pessimism). In those years, Prebisch was to experience his first major variance (with Juan Domingo Perón) over the manner of industrialization, not only for Argentina's but for what henceforth (1945) he termed *the periphery*.

Prebisch's questions in those days could be whittled down to three basic ones: Why deviate from his earlier beliefs? Why did the State have to intervene? Why was it impossible for the policies of the centers to be followed in the periphery? The answers went way beyond these questions, as Prebisch eventually developed a complex, empirically tried and tested theory of economic development with sound foundations in economics.

After failing in his bid to join the International Monetary Fund (IMF), his triumphant arrival at ECLAC followed the Havana Conference where he presented his *Manifesto*, a document that would come to occupy a permanent place in the annals of alternative economic theory, which, alongside works by economists like Ragnar Nurkse, Arthur Lewis, or Gunnar Myrdal himself (a colleague of Prebisch's at the United Nations - UN), would coin what we know today as economic development theory (Seers, 1979).

Dosman's accounts in Chapters 11, 12, and 13 are strikingly enriching, incorporating familiar experiences, environments, and circumstances that were undoubtedly determining factors in his second creation: ECLAC.

Whatever the case may be, it is my feeling that, when it came to an analysis of his contribution to economic development theory, it would have been interesting to explicitly bring in certain aspects not always apparent:

- Prebisch was far from being original when he posited the uneven development of center and periphery. This was something widely known and accepted, and found its explanations in the relations between countries. Where Prebisch was original was in positing that development was not only uneven but concentrating, and this was the important thing: analysis of technical progress and how the periphery could absorb it.
- The second issue I would like to stress is his position in relation to *income elasticity*, which was, like most pioneers of development economics, pessimistic. He shared the vision of Ragnar Nurkse (1953) and Paul Rosenstein-Rodan (1943) in this respect.² The Feldman-Mahalanobis model too, linked to such distinct realities as Russia and India, was pessimistic about income elasticity and regarded planning as necessary, but in a different way (Azqueta, 1983). This laid the ground for *alternative import substitution strategies*. Substitution strategy in Prebisch was an essential part of the analysis in his center-periphery theory when it came to stating that industrialization needed planning and market.
- The third relevant issue in my view, mentioned in the book in relation to Celso Furtado, is Prebisch's belief in *the mutual benefits* of the relationship between countries, in Hirschman's sense (1980) when defining development economics. Joan Robinson wrote: "the misery of being exploited by capitalists is nothing compared to the misery of not being exploited at all" (Meier & Seers, 1986). Few economists, I think, were as clear about the mutual benefits in development economics as Prebisch.

This was certainly his most refined stage of thinking from a theoretical viewpoint. It was interrupted by his return to Argentina to support Lonardi's Liberating Revolution as an adviser. With hindsight, everyone knows this was a mistake and Prebisch was the first to admit it. Chapter 14, entitled *Paradise Lost*, is highly didactic and categorical when it says that Prebisch was capable of disappointing both left and right, Washington and the UN, and even his colleagues in ECLAC, where he would end his second term.

The last chapters of Prof. Dosman's book show a different stage in Prebisch's emotional and personal development. He already felt that, one way or another, he was entering retirement age and to some extent believed his destiny in ILPES or in pure thought was his future. But, from 1964, as Secretary-General of UNCTAD, Prebisch was certainly embarking on a new stage: its sphere was international and more politically complex than what he had to deal with in the past. But now Prebisch was carrying theoretical baggage, which he would deploy to start the third institutional creation of his life: the Conference between Countries of the North and South. By around 1968, with two conferences behind him, Prebisch consolidated five years spent trying to coordinate support from the countries of the North in exchange for structural reforms in the countries of the South. In terms of theoretical analysis, along with his old ideas, which he had not abandoned (only in his way of operating in economic policy), the problem of income inequality was added.

The chapters on his last years picture a Prebisch who still had belief and hope in his work: his time was for ILPES. Enrique Iglesias would inspire him with the ECLAC Journal and President Raúl Alfonsín would call on him as an adviser to the new democracy in Argentina. His work *Transformación y desarrollo: la gran tarea de América Latina* (1970), in Dosman's view, marks Prebisch's last phase of creativity.

His late ideas revolved around what was termed "*peripheral capitalism*." Prebisch was entering the wider sphere of political economy, but his thesis did not have the soundness we had become accustomed to. His notes and articles no longer became issues of debate in either development economics or economic policy. His conclusion about the transformation of the system aroused little interest.

² Ragnar Nurkse was a devotee of the theses of Paul Rosenstein-Rodan (the originator of development economics, who proposed that, alongside active intervention from the State, the existence of economies of scale in production makes industrialization possible). His emphasis on the role of savings and capital formation has led him to be regarded as a forerunner of the ideas of Nobel Prizewinner, Arthur Lewis. He has been responsible for *balanced growth theory* and his most important analyses stress the model of the *vicious circle of poverty*. This would, in turn, form the basis of Gunnar Myrdal's ideas of how to understand underdevelopment.

Prof. Dosman's book serves a dual purpose, as a *memoir* and a *critique*: some, already familiar with Prebisch, will get to know the man a lot better; others, who have never heard of him, will not only get to know Prebisch, but also understand him.

The book relates in exhaustive detail how protectionism and the way we understand technical progress are the *leitmotif* of a set of ideas whose essence has changed little in the region. It is also

important to note that a lesson can be drawn from the book for those concerned about the reality of Latin America: I am referring to the way action is complemented (through the creation of sound institutions) by thought and economic policy.

Last, against the background of today's financial crisis, Dosman's book can help us understand Latin America's difficulties in terms of a rationale: development and underdevelopment in a globalized world. ♦

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Una región en construcción. UNASUR y la integración en América Latina

Publication only in Spanish

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Una *región en construcción* is the first set of papers in Spanish on South American integration processes with an emphasis on the Union of South American Nations (UNASUR). The outcome of a seminar organized in Barcelona, Spain, by the CIDOB Foundation and the *Instituto Complutense de Estudios Internacionales* (ICEI), this work, coordinated by Manuel Cienfuegos of Pompeu Fabra University (UPF), Barcelona, and José Antonio Sanahuja of the Complutense University of Madrid brings us closer to the complex mapping of integration we now find in the region, while identifying some of the debates deriving from these processes, including those of an environmental nature.

With the decline of the “open” regionalism predominant in the 1990s, developed through the Southern Common Market (MERCOSUR, Argentina, Brazil, Paraguay, and Uruguay) and the Andean Community of Nations (CAN, Bolivia, Colombia, Ecuador, and Peru), another form of regionalism has been taking shape since 2004, described by some as “postliberal”. Unlike “open regionalism”, this new form takes into account more dimensions than the economic, prioritizing matters relating to political integration, security, or the response to regional social and environmental problems. Thus, both the Bolivarian Alliance for the Peoples of Our America-Peoples’ Trade Agreement (ALBA-TCP) and UNASUR broaden the

agenda and seek to coordinate the region politically so that it gains in autonomy and can meet global challenges with a single voice.

Throughout, the work points to many of the challenges facing these new processes, some of the important factors when it comes to understanding the collapse of the previous model, such as democratic deficit or the obligatory resistance to attributing sovereign powers to supranational bodies in line with the principle of subsidiarity. One important factor no doubt lies in Latin American political culture, characterized as it is by certain intergovernmental frameworks dominated by presidentialism and a renewed nationalist discourse, governed at international level by the principle of sovereignty.

In the first part, on regionalism and economic development, Felix Peña of the Tres de Febrero National University, Argentina, applies the concept of “systemic stability” to the South American context and examines proposals to achieve this goal. Silvia Simonit of Pompeu Fabra University, Barcelona, identifies strategic areas of change and analyzes three aspects of South American economic reality: regional integration, production structure, and international competitiveness. In the last chapter of the section, Jose Antonio Sanahuja tackles the proposals of “postliberal” regionalism, and relations with MERCOSUR and CAN from an eminently political

perspective. These general analyses cast light on the second part of the book, which devotes a chapter to each of the new dimensions on the agenda of South American integration. Klaus Bodemer of the German Institute of Global and Area Studies (GIGA), Hamburg, and Wilson Fernández of the University of the Republic, Uruguay, analyze the limited progress to date on physical integration and energy respectively. Anna Ayuso of the Barcelona Centre for International Affairs (CIDOB) focuses on the treatment of asymmetries, an issue with very few studies focusing on the region, and Jordi Stuart of the Autonomous University of Barcelona examines financial cooperation and the groundbreaking initiative of the Bank of the South.

The last section examines European-South American relations. The paper by Manuel Cienfuegos considers the three pillars of these relationships (economic, cooperation, and political dialogue), while Noemí Mellado of the National University of La Plata, Argentina, looks specifically at one of these: the biregional political space. The book closes with chapters by Susanne Grätius of Foundation for International Relations and Foreign Dialogue (FRIDE), Madrid, and Lourdes Castro of the South Group, Brussels: while Grätius reviews EU-LAC summits from the perspective of government agendas, Castro provides the civil society viewpoint.

While there are no chapters dealing specifically with the environmental dimension of integration, several of them reflect environmentalist stances in fundamental aspects of integration like energy or infrastructure. Specifically in connection with energy integration, the book presents the debate over ethanol, with stances for and against, and, in terms of infrastructure, it sets out the conflicting stances over the Initiative for the Integration of Regional Infrastructure in South America (IIRSA). In these issues, as in South American integration in general, Brazil draws much of the attention because the direction and speed of the construction process largely depends on this country. Considering the internal difficulties being experienced by Venezuela and Argentina, Brazil is the only country today that has the political and economic capacity to be the driving force behind such an important challenge for the region. Its response will, therefore, be a test of its leadership, and an acid test for Brazilian diplomacy in presenting itself as a global power in the new emerging governance.

The global crisis has coincided in Latin America with a transition period, where old schemes coexist with new

initiatives, the word “heterogeneity” now being used as a matter of course by analysts as a characteristic feature of the region. Compared with other more stagnant spaces like the European Union, the volatility of initiatives and the return of politics have become a two-edged sword: if, on the one hand, this represents a high degree of buoyancy, on the other, its abuse allows no initiatives to be consolidated.

Since the publication of *Una región en construcción*, there have been two significant events connected to the processes of integration and the environment, both as it happens connected in one way or another with Cancún. The first is the 2nd Summit of Latin America and the Caribbean on Integration and Development, held in this city last February and laying the foundations for a new multilateral forum, namely, the Community of Latin American and Caribbean States (CEALC). In line with the emerging “post-liberal regionalism”, one of the priorities of this policy coordination forum is to “promote regional integration with a view to the promotion of our sustainable development” and one of its principles is “respect for the environment, keeping in mind the environmental, economic, and social pillars of sustainable development”.

Another dimension to highlight, stemming from the failure of the Copenhagen Climate Change Summit (COP15), is the environmental turn taken by the countries of the Bolivian-led Bolivarian Alternative for Latin America and the Caribbean (ALBA), which is seeking to articulate an alternative proposal ahead of the upcoming Climate Change Summit in Cancun.

Both new turns confirm a trend expressed throughout this book: the existence of different views in terms of the scope, political orientation, and viability of integration in Latin America. Are any of these models capable of really taking hold and consolidating the relationship with Asia, Europe, or the United States? In the years to come we will find the answer to this question. Meanwhile, this work, with contributions from Latin American and European experts, gives us a broad view of the new integration processes in the region and has a conclusion common to them all: any form of coordination and cooperation that wishes to look beyond the rhetoric for the defense of the environment (or any other transnational issue) will have to rethink the prevalent concept of national sovereignty today if steps are to be taken toward institutionalization that will drive effective regional preservation and defense policy-making for regional public goods. ♦

La Unión Europea como modelo de integración: análisis comparativo del Sistema de la Integración Centroamericana

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MEJÍA HERRERA, ORLANDO JOSÉ. 2008. *La Unión Europea como modelo de integración: análisis comparativo del Sistema de la Integración Centroamericana*. León: Editorial UNAN-León.

It is essential to highlight in this introduction that the work of Professor Mejía Herrera has been very neatly printed by the Publishing House of the *Universidad Nacional Autónoma de Nicaragua* (UNAN-León), and is framed within that deep relationship of academic and scientific collaboration which has been in place between the *Universidad de Alcalá* and UNAN-León and other Central American universities for the last ten years, to promote high-level training, research, debate and scientific reflection in such an important and decisive environment for the political, economic and social future of the peoples of Latin America and the Caribbean, in general and, more particularly, of Central America. The idea is to foster multidisciplinary studies on regional integration, prioritizing legal matters. It has been noticed that the region needs assistance in academic and professional development and consolidation, since it lags behind in economic and political science doctrines.

Our main argument is that the book has a two-fold target. On the one hand, it should be of interest to

Central American and Caribbean readers since it offers an updated, very simple and descriptive picture of the overall constitutional principles of European Union Law (historically, European Community Law) rightly used for teaching purposes as a paradigm of supranational integration processes (see particularly Chapter II). On the other hand, it should no doubt be of interest to European and of course, to Central American readers, given the deep analysis it makes of the strengths and weaknesses of the Central American Integration System (*Sistema de la Integración Centroamericana - SICA*), compared to the European integration system (see, above all, Chapters III and IV, in my opinion the best part of the book). This is done in the belief that the comparison between the European and Central American system is carried out with the methodological purpose of establishing similarities and differences between both systems, in order to grasp the true political and legal nature of SICA, which is a very young intergovernmental system. On the one hand, such comparison uses the European Union as the model of the most advanced regional integration system in the international arena and, on the other hand, it takes

into account the political, economic and social reality of Central America so as to make more appropriate recommendations to strengthen Central American integration from an imminently legal standpoint.

The future of SICA depends on the will of its member governments and on consensus generated therein on the path to be followed. Anyhow, it is good that no demagoguery is played and that no improper notions and categories are used to define it, that in no way meet the reality of SICA law and practice. In this regard, the book illustrates the current status of the Central American integration process. Therefore, the possibility and hope for it to contribute to triggering a rigorous debate of ideas on what SICA is and the options that lay ahead.

This book is also most relevant if we bear in mind the latest events which could probably have a decisive influence on deepening the Central American integration process and on perfecting SICA: we mainly refer to the current Association Agreement between the European Union and its member States, on the one hand, and the Central American republics (Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica and, at the last minute, Panama), on the other hand, which was signed in Madrid, Spain, in May 2010, within the framework of the European Union - Latin American

and Caribbean Summit. Anyhow, its approval and ratification is still pending by both parties.

We believe that given the contents and scope of the Agreement (the first to be signed by the European Union and its member states with another bloc of Latin American nations), it can become a great opportunity to revitalize and reinforce Central American integration as a means to achieve the economic and social development of the region. That is to say, that the agreement can mean an exogenous factor to decisively help to strengthen Central American integration, which is precisely what the European Union has always requested from Central American states so as to negotiate and complete such an important agreement.

In brief, in this book, Professor Mejía Herrera is proving his scientific candidness and research capacity by consistently presenting theory and practice, a description and analysis as well as a micro and macro legal approach to the purpose of the study. All this supported by a determined but rational intellectual bet in favor of supranational integration as the best possible way for the peoples of the Central American Isthmus and the Caribbean to make progress. Should this integration not exist, it would have to be invented because without it, I believe there is no decent future for these peoples. ♦



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