

URBAN TRANSPORT IN THE ERA OF ECONOMIC LIBERALIZATION

The implementation of neoliberal economic models

In that decade, a different solution was required, because the Latin American economies, with only a few exceptions, were already regulated, protected and supervised by the State. One notable exception was the Chilean economy, which, at the onset of the 1970s, had been among the most controlled economies in the region after Cuba. Beginning in 1976/1977, Chile's economy underwent profound restructuring with the adoption of neoliberal policies, involving a reduction in customs tariffs, a decrease in State subsidies, the first steps towards the privatization of state-owned enterprises and a loosening of controls both over prices and production processes in general. The Chilean experience initially gave good results, but in 1982 Chile fell into a deep recession, caused to some extent by the continued fixing of one of the most important prices, that of the Chilean peso on the foreign exchange market, together with inadequate regulation of the banking sector.

The Chilean model was subsequently adjusted, though the basic guidelines remained intact, and by mid-decade, the Chilean economy was proving to be somewhat more resistant to recessionary trends than the majority of the countries in the region. Per capita gross domestic product (GDP) rose in just two of the States members of LAIA in 1981-1988, and one of those was Chile. As a result of the relative success of Chile's economy and the influence of reforms introduced in several distant developed countries, such as the United Kingdom under Prime-Minister Thatcher and the United States under President Reagan, many other countries decided to adopt measures of a similar nature; the results were generally favourable, for example in terms of per capita GDP growth (see table I).

In Bolivia, the process was initiated in 1985, at the very outset of the Government of President Paz Estenssoro, and in Peru, the process started in the early 1990s, when President Fujimori assumed office. In Argentina, President Menem began the process in 1989, while in Brazil, Presidents Collor and Cardoso moved in that direction in the early 1990s. In Ecuador, in 1994, "a number of regulations that had hindered external trade, domestic commerce and price formation were rescinded". Very few Latin American countries have remained outside this economic reform process, though the extent of the reforms varied from one country to the next.

In many countries, the process was accompanied by another policy, that of subregional or bilateral integration, whose most tangible result was undoubtedly the creation of the Southern Common Market (MERCOSUR), which provided for reciprocal tariff reductions among member States. That integration process has extended to encompass the market for transport equipment; for instance, motor vehicles made in Mexico now enter Chile tariff-free.

Economic reforms and car ownership

Relatively high rates of economic growth have had an impact on personal incomes, though the amounts in question are difficult to quantify due to lags in the publication and interpretation of the available statistical information. At the same time, economic reform has in many cases brought a reduction in taxes on cars, especially in the form of customs tariffs. In addition, the exchange rate has appreciated in many countries (see table II).

Consequently, we are now faced with a syndrome in which real incomes are rising and the prices of new cars are tending to drop. Quite often, that trend does not translate into lower prices because, at the same time, the quality of vehicles is improving. Nevertheless, a real reduction can be observed in the retail price of vehicles whose features remain relatively constant. By way of example, in 1996, the retail price of a Volkswagen Beetle in the Chilean market was US\$ 7,780; the cost in 1982 of the same model, expressed in 1986 prices, was US\$ 8,902.

The real drop in the selling price of used cars has quite possibly been even steeper, though it is very difficult to obtain reliable data on the subject. The rate of depreciation of vehicles in a country is directly related to car ownership rates. In countries where there are very few cars per person, a second-hand vehicle offered for sale is a relatively scarce good, and the price fetched reflects limited supply, and on occasions, heavy demand. The growth in car ownership rates in Latin America over recent years has served to reduce the relative scarcity of used cars, thus leading to an increase in supply, a fall in demand (since a greater proportion of the population already owns a car) and this in turn causes prices to drop, putting a car within the reach of lower-income families.

In countries where economic reform was introduced rapidly, automobile imports grew at an equally rapid pace. Take the case of Peru, as shown in table III. Between 1990 and 1991, the value of automobile imports increased fourteen times over. Peru is one of the countries which liberalized imports not just of new but also used motor vehicles (with the exception of a brief period from February to November 1996). As a consequence, the average price per unit fell, meaning that the percentage increase in the number of imported units must have exceeded the corresponding increase in costs of imports.

In countries where cars are manufactured, economic reforms led to an expansion of motor vehicle imports while also providing a boost to local production. This is what happened in Brazil, where for decades car imports had been subject to high levies, in line with a policy aimed at promoting domestic car production. Between 1990 and 1994, starting from a very low base, imports sky-rocketed by over 10,000%. Domestic production also rose, however, by some 70%. The export drive slowed because car manufacturers preferred to sell their cars in the growing domestic market. Another contributing factor was the appreciation of the local currency, starting in mid-1994 (see table IV).

The growing popularity of car ownership

It is a well-known fact that income distribution in the cities of Latin America is highly uneven. However, trends in such incomes and in car prices, particularly used ones, mean that car ownership is no longer an unattainable dream but a real possibility for many families in the region's cities.

Using data for 34 administrative districts in Greater Santiago, it is possible to perform the following equation ($r = 0.9586$) in order to calculate car ownership per family:

$$0.2850 - (134.5746/x)$$

$$Y = e$$

where:

Y = cars per family X = monthly income per family in 1990 pesos

This equation would quite likely not stand up to a critical analysis using econometrics, on a variety of technical grounds (the equation takes into account neither the fact that the number of residents varied from one district to the next, nor the income distribution in each district, but it does take the expected form). Using this equation, it is possible to estimate the income elasticity of the rate of car ownership. For the district with the highest family incomes (Vitacura), elasticity was 0.23; for the middle-income district of Santiago (centre), the figure was 1.06, while the district with the lowest income (La Pintana) recorded a figure of 3.39. What this means is that elasticity is inversely related to the level of income.

Obviously 1% of zero is zero. Thus, even though the figure for the elasticity in low-income districts such as La Pintana or Cerro Navía is very high, a 1% increase in incomes translates into a very small increase in the total number of cars per family. On the other hand, a 1% increase in incomes in a middle-income district results in a very similar increase in the total number of cars per family as in a district whose residents enjoy very high incomes (see table V).

The most important conclusion we wish to highlight from this analysis, illustrated with data on Santiago, Chile, is that an increase in incomes results in a significant increase in car ownership not only in the higher-income areas but also in middle-income neighbourhoods. As a result, the number of cars in Santiago is growing at an annual rate of 8%.

It is important to note that the above-mentioned equation was adjusted using data compiled in a cross sectional transport survey conducted in 1991. Accordingly, the equation calculates changes in car ownership rates as a result of changes in family incomes. It does not take into account the impact on ownership rates of changes in prices or the quality of automobiles, since these factors do not vary in a cross sectional analysis. Thus, in actual fact, real prices are tending to drop and/or vehicle quality is tending to improve, and ownership rates over time have increased faster than forecast the equation.

Table I		
Annual growth rates in per capita GDP in LAIA member States, 1981-88 and 1991-94		
Country	1981-88	1991-94
ARGENTINA	-2.4	+6.3
BOLIVIA	-3.7	+1.2
BRAZIL	-0.2	-0.5
CHILE	+0.3	+5.1
COLOMBIA	+1.4	+2.3
ECUADOR	-0.5	+1.4
MEXICO	-1.3	+0.8

PARAGUAY	-0.3	0.0
PERU	-1.9	+2.7
URUGUAY	-1.0	+4.0
VENEZUELA	-2.1	+0.6
Source: ECLAC, <i>Economic Survey of Latin America and the Caribbean, 1988; 1994-1995.</i>		

Table II

Real exchange rate indexes in LAIA member States

Country	1985	1990	1994
ARGENTINA	96.7	100.0	58.1
BOLIVIA	21.8	100.0	111.2
BRAZIL	148.2	100.0	101.8
CHILE	73.0	100.0	89.2
COLOMBIA	54.6	100.0	75.3
ECUADOR	49.5	100.0	77.7
MEXICO	83.4	100.0	85.7
PARAGUAY	62.5	100.0	91.3
PERU	252.5	100.0	80.8
URUGUAY	85.8	100.0	66.3
VENEZUELA	51.1	100.0	90.3

Source: Inter-American Development Bank, *Economic and Social Progress in Latin America: 1995 Report.*

Note: Local currencies, though dearer than in 1990, were generally cheaper in 1994 than in 1985; however, in many countries, the exchange rate prevailing in the mid-1980s was just one of a number of factors determining the retail price of imported goods, as a result not only of customs tariffs but also other import restrictions, which in extreme cases included total bans. In addition, multiple exchange arrangements generally prevailed and motor vehicle imports were subject to the most favourable exchange rate, from the purchaser's standpoint.

Table III

Peruvian and Ecuadoran automobile imports in thousands of US\$, 1989-1994

Year	Ecuadoran imports	Peruvian imports
1989	53 485	6 482

1990	37 240	11 880
1991	74 414	170 668
1992	209 882	213 018
1993	266 117	165 647
1994	24 913	252 421

Source: ECLAC, on the basis of official data.

Note: The table refers to non-bus passenger motor vehicle; hence, trucks and vans designed for the transport of passengers are included.

Table IV

Apparent motor vehicle consumption in BRAZIL, 1990-1995

Year	Imported units	Domestically produced units	Apparent motor vehicle consumption(*)
1990	1 310	602 545	483 084
1991	11 146	615 097	499 090
1992	30 714	667 229	454 817
1993	70 438	929 582	750 413
1994	138 679	1 026 827	890 691
1995	320 261	1 147 897	1 278 437

Source: Calculations based on data published in GEIPOT, *Anuários Estatísticos dos Transportes, 1995 y 1996*.

Note: (*) domestic producción + imports - exports.

Table V

An estimate of the increase in car ownership per family as a result of a 1% increase in average family incomes in three districts of Santiago, Chile (1991).

District	Monthly family income \$	Cars per family	Elasticity of car ownership per family with respect to family income	Increase in cars per family if family income rises by 1%
Vitacura	589 700	1.71	10.23	0.0039
Santiago (centre)	126 700	0.311	1.06	0.0033
La Pintana	39 730	0.051	3.39	0.00178

Source: ECLAC, on the basis of J. Kain and Z. Liu, *Efficiency and Locational Consequences of Government Transport*

Policies and Spending in Chile, Harvard University. The authors do not cite the source of their data, this was certainly obtained from a survey entitled "*Encuesta origen-destino de viajes del Gran Santiago 1991*", carried out by the Executive Secretary of the Planning Committee for Infrastructure and Transport Investment (SECTRA).

Again with respect to Santiago, which is the most interesting example since it is the capital of the first Latin American country to embark on the economic liberalization process, the heaviest traffic congestion can be found not only in the wealthiest districts but also in some of the middle-income areas such as La Florida (see figure 1). The wealthiest neighbourhoods are located in the north-western part of the city, especially in the districts of Providencia, Las Condes, Vitacura and Lo Barnechea. Congestion occurs in these areas, but the traffic also builds up along roads between these "upper-class" neighbourhoods and the city centre. However, some of the most congested areas include streets in other parts of the city where family incomes are very low, and which wealthier people do not even use.

The fewer cars there are, the more difficult it appears to be to travel around

Furthermore, car ownership rates in Latin American cities continue on the whole to be substantially below rates in developed countries. In 1980, in North American cities such as Houston, Los Angeles, Phoenix, San Francisco, Detroit, Dallas, Denver, Toronto and Washington, the number of automobiles per person ranged between 0.55 and 0.85, while in European cities like Brussels, Amsterdam, Copenhagen, Frankfurt, Hamburg, London, Stuttgart and Paris, the figure varied from 0.225 to 0.425. Ten to fifteen years later, some Latin American cities still did not have more than 0.02 cars per inhabitant (for example, Chiclayo or Huancayo in Peru). In Lima, in spite of the recent boom in Peruvian vehicle imports, the number of cars per person did not even exceed the 0.045 mark. The corresponding figure for Greater Santiago was 0.09. Nevertheless, in a small number of Latin American cities, car ownership rates were already approaching the lower limit for Western European cities. In Curitiba, for instance, in 1995, there were already 0.285 cars per person.

However, it is clearly much easier to get around in the large cities of the developed world than in similar-sized cities of Latin America. In Quito, whose population in 1990 was about 1 million, the average travel time between home and workplace was 56 minutes; in Munich, with a population of 1.3 million, the journey took 25 minutes. In Bogotá (5 million), commuting took on average 90 minutes, compared to 30 minutes in London (6.8 million). There are many other examples which support this contention. It is clear that the cities of the developed world have learnt to live with the automobile, whereas such a state of coexistence has yet to be achieved in Latin America.

In addition, it appears to be easier to get around in Latin American cities with higher car ownership rates than in many of those featuring lower rates. For instance, Curitiba has more cars per person than Guayaquil, which is a city of a similar size, but travelling around Curitiba in a car or a bus is a considerably more comfortable experience than it is in Guayaquil.

This apparent contradiction is due to the fact that in cities such as Curitiba, a distinction is made between the ownership of a motor vehicle and its use in inappropriate situations. Having a car to take trips out of the city or visit relatives of friends in distant neighbourhoods is one of the benefits of economic development, and the costs entailed are as a general rule borne mainly by the car owner. Using a car every day to commute to the city centre generates externalities in the form of congestion and pollution and runs counter to the interests of the community.

Traffic conditions continue to deteriorate

It is apparent that the recent expansion in the stock of private motor vehicles has severely tested the ability of the

transport authorities to cope and adapt urban transport systems to the new environment, particularly as regards car use in areas or at times characterized by congestion. The situation is getting progressively worse, as is reflected in the statistical form of equations relating the speed a actual volume of traffic. Up to a certain intensity, vehicles are able to move about relatively unrestricted, at velocities determined by speed limits, frequency of intersections, and other factors. Beyond that point, each additional vehicle restricts the movement of the rest, marking the start of the phenomenon known as congestion, in such a way that an increase in volumes reduces traffic flows at an exponential rate.

In the case of Santiago, which is at the forefront of mass car ownership in the non-producer countries, it is estimated that the time required to make a 10 km journey in a car at a peak period will have risen from 22 to 32 minutes between 1991-1997. The congestion generated by private modes of transport worsens the already exacerbated situation facing public transport, and translates into delays in travel times for users, not through their own fault, but rather due to motorists (as well as the inertia of politicians and transport planners).

Growing demand for a relatively unchanging supply of roads inevitably result in a worsening of traffic flows. Attempts at minimizing that situation necessarily entail the application of measures aimed at reducing use of private motor vehicles in areas and hours of greatest movement. Nevertheless, in virtually all of the region's cities, the situation has deteriorated significantly more than it could or should have, due to a variety of reasons, some of which are mentioned below.

First, the authorities have come up with only a piecemeal response, attributable to the fact that, in the entire Latin American region, responsibility for urban transport planning and administration is divided among a wide range of national ministries, regional governments, municipalities, suburban train or metro companies, and other bodies. Each institution implements what it considers appropriate steps, without due consideration of the repercussions for the rest. For instance, a municipality, concerned with the possible relocation of economic activity to another part of the city, may approve the construction of multi-storey carparks, or authorize street parking, without giving consideration to the impact of congestion on road users who merely pass through the area instead of starting or finishing their journey there.

A second reason is related to the tenets of the neoliberal economic models themselves, one of whose characteristics is deregulation. In the urban transport field, the deregulation of passenger transport typically results in a marked expansion of bus and taxi fleets and a decline in the discipline with which they operate. That trend was an important factor behind the worsening congestion facing Santiago in the 1980s and Lima in the 1990s. The problem is particularly acute in Lima's case, owing to the simultaneous effects of liberalized used car imports and deregulation of public transport. In Santiago, the only used vehicles imported were destined for use in public transport (all categories of buses, plus shared taxis) and did not exceed 16,000 in number. Moreover, by the mid-1990s, the public transport fleet in Lima had reached at least 38,611 vehicles, with some sources putting the real figure at around 50,000. In other words, midway through the 1990s, the number of units per person in Lima exceeded somewhere between 67% and 116% the corresponding figure for Santiago, some seven years earlier, when deregulation in Chile was producing its most dramatic results.

Third, the speed with which the situation changed in several countries overwhelmed the authorities' ability to respond. In a very short time, new necessities arose, such as: (i) the designation of reserved bus lanes; (ii) the requirement that new building concessions take into account the traffic volumes subsequently generated, and; (iii) the need for traffic management by area, rather than separately at the level of each intersection. Generally speaking, there was a shortage of traffic control specialists on the staff of either municipalities or ministries, and

an identical situation faced universities and local consulting firms.

Contributing subjective factors

Another major dimension of the problem in Latin America is that the automobile is still regarded not only as a means of transport but also as a status symbol. A person who owns a BMW is seen as superior to someone who owns a Suzuki, even though logic suggests that the Suzuki owner is more intelligent, because he is able to do exactly the same things as the person driving the BMW, but at a fraction of the cost. A person should be at the controls of a car, but it appears that it is car manufacturers who are controlling people. And, more importantly from the traffic control standpoint, a person who takes a bus to the office instead of driving is automatically viewed as being at the bottom of the social ladder.

A banker residing in the suburbs of New York or London would never think about commuting to Wall Street or the City by car, since in either case, a good-quality public transport system is available. His counterpart in São Paulo or Santiago, on the other hand, would never imagine getting to the workplace by any other means than a car.

Under these circumstances, even when the urban transport authorities in Latin America have clear ideas about how to control urban traffic (and sometimes they do not), it is difficult to implement them, because legislators or councillors, who are concerned about losing the votes of the ever increasing number of car owners, would not view such proposals favourably.

Results obtained using incentives: the carrot

Latin America's urban roadways do not have sufficient capacity to support the indiscriminate use by the private automobile, nor would they even if all possible financial, environmental and politically feasible measures were taken to extend this capacity. There is just one Latin American city, Brasilia, which was planned with the unrestricted use of cars in mind; even in that exceptional case, it has proven necessary to implement a number of traffic control measures not originally envisaged. In their efforts to prevent traffic congestion from choking off the development sparked by economic liberalization, transport planners have two methods at their disposal, the carrot and the stick. A carrot is more palatable than the stick, but is often not very effective. The carrot method can be used to offer the motorist public transport services of sufficiently high quality, that he opts to use them to commute to the office in the morning, choosing to leave his car at home.

The suburban train in which the New York or London banker travels has a vastly different image (and fare schedule) from its counterpart in those few Latin American cities where such a service operates. With the possible exception of Buenos Aires, it would not be feasible to change the image of Latin America's suburban trains over the short term, for a host of reasons, including the fact that, at least in the case of Brazil, cities do not cater to the relatively well-off neighbourhoods. It will simply not be feasible to build new suburban train networks due to the costs involved. Thus, except in the case of Buenos Aires, suburban trains will not provide any major solution to the problem of traffic congestion.

Rapid rail systems, in the few Latin American cities which have them, enjoy a superior image to public streetborne modes of transport and offer an acceptable alternative to the private motor vehicle. However, with the sole exception of Mexico City, the length of metro networks does not exceed 40 or 50 kilometres and it will not be viable to expand them significantly over the short term, again for reasons of cost.

Particularly in developed countries, railborne public transport systems have a better image than systems based on buses. Nevertheless, in both the developed and the developing world, it is possible to upgrade public streetborne transport to a standard perceived as sufficiently high as to be able to attract people who normally use private motor vehicles. In a number of cities, of which Curitiba is the most noteworthy, the public transport system is generally of a sufficiently high standard that it attracts private vehicle users.

In other cities, regular buses do not offer an acceptable alternative to motorists who would otherwise be prepared to use luxury buses. A total of 48% of regular luxury bus users in Bogotá are from families that own one or more cars. Some 11% of all users of these buses had switched from the car to the bus. Also in cities such as Buenos Aires and Rio de Janeiro, a significant portion of luxury urban bus users have the option of travelling by car but choose not to do so. Using representative data, it is possible to ascertain that this category of bus tends to mitigate traffic congestion.

However, it is easy to exaggerate the effect that improvements to the public transport system may have on solving congestion problems. A recent study looking at Holon of substantial resources to public transport would result in only a small reduction in the use of cars and does not constitute a cost-effective policy for reducing demand for modes of transport based on the car". If European analysts reach that conclusion, then any study undertaken in Latin America would surely arrive at the same result much more rapidly.

Results obtained using coercion: the stick

Probably the main reason that motorists choose to travel in luxury buses has to do with the difficulty or cost incurred in undertaking a journey by car. Accordingly, one mechanism available to transport planners for reducing the excessive use of cars would be to restrict the number of parking spaces or raise their cost in centrally located or other heavily transited areas; such measures would find greater acceptance if high-quality bus services were available. However, any use of parking restrictions as part of traffic control is either inefficient or unjust, for reasons which include the following:

- any policy of restricting only the supply of parking spaces does not distinguish between vehicles that take congested roads to reach their destination and those that use uncongested routes;
- the road space freed up by the parking restriction might well attract cars making journeys through the area, rather than those with their destination there; and
- it would be difficult to take steps that restrict private parking spaces or those reserved for cars of government officials.

The stick can also be applied in other ways. One of the least efficient -though on occasions effective- methods is a rotating ban on cars determined by the final digit of the number plate. This option has been implemented in Caracas, Mexico and Santiago, initially with great success, but with diminishing effectiveness over time. Another more drastic and inefficient option would be a ban on private cars circulating in main areas and streets during peak periods; this method has not been implemented anywhere (save for the pedestrianization of parts of the downtown in several cities). There are also other possibilities.

Economic liberalization and urban transport

There is also another set of tools, which falls somewhere between the carrot and the stick. This involves using the price mechanism to set an appropriate price for road space, i.e. a charge for the cost of congestion. In theory, each motorist purchases the right to occupy the congested road space when he pays a charge whose value

reflects the cost of his presence in terms of greater delays and additional vehicle operation costs incurred by other road users due to his presence. There are different ways to implement road pricing, which vary according to the sophistication of the technology adopted and the extent to which the price charged reflects the costs of the congestion generated by each motorist.

The use of road pricing gets to the heart of the matter, which is the fact that motorists do not pay the costs incurred by their presence in congested thoroughfares. Road pricing discourages neither car ownership nor their use in hours and areas in which the presence of an automobile in the traffic flow does not interfere with others. It is also a potential source of substantial revenue, which the ministry or municipality in question could spend on expanding the capacity of the road network or improving the quality of public transport.

One of the central features of economic liberalization is the refinement of the price mechanism, which puts an end to the distortions generated by multiple exchange rates, subsidies and the setting of prices at rather arbitrary figures, which came to complicate Latin America's economic development for forty years after the second world war. In order for the liberalization to be more successful, the same principles of efficient pricing should be extended to the urban transport sphere.