TRANSPORTATION GOVERNANCE IN LATIN AMERICA: BRT AS A TOOL FOR STRUCTURAL CHANGE OR AS A TWEAK OVER EXISTING CONDITIONS?

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INTRODUCTION

A We recall an ambitious 2010 report published by the WRI, titled “Modernizing Public Transportation.” It opened by noting that “All 13 cities reviewed in this report embraced Bus Rapid Transit (BRT) in response to dysfunctional and inefficient transportation conditions, public discontent and critical environmental and road safety conditions”. Indeed, organizations such as ITDP, WRI and GIZ have long highlighted how a chaotic bus-based system can be reorganized to deliver safer, faster, more reliable and more comfortable transit service, at a fraction of the cost of rail systems. Their definitions of BRT focus on the bundling of very specific physical elements: (a) large, sometimes articulated vehicles, (b) running on dedicated, often exclusive busways, (c) that stop at well-defined and sometimes enclosed stations, and (d) where passengers can pay before boarding. This bundle of physical infrastructure could be adopted by almost any city featuring relatively wide streets with minimal disruption, especially if the number of users of surface public transit remains significantly larger than of private cars. So far, and according to the Global BRT Database, 166 cities across the world have replicated the experiment. But is BRT enough or even necessary to truly modernize public transportation?

In this paper, we argue that not all BRT systems are created equal. BRT corridors across the world do share similar physical elements, but their governance system—those formal and informal institutions that allow involved actors to coordinate into action—varies widely. Drawing from our exploration of six Latin American cities, we identify two distinct types of BRT systems in this particular region, depending on the problem each city is trying to solve. A first type, in which a nascent, small but “modern” BRT system offers a conspicuous alternative to the chaotic, disorganized, broader surface transportation network. BRT brings professional operation, rational network planning, system legibility, financial sustainability, multimodal integration, etc. into a system lacking most of these important organizing principles. The aim is not simply to improve bus flow in a particular street, but to create the backbone of a future, citywide “modern” system. Successful implementation proves to stakeholders that an alternative status quo is possible, and even desirable. When BRT is implemented in pursuit of this aim, the focus gravitates naturally to good governance. The new planning and regulatory bodies, vehicle standards, contractual arrangements with private operators, financial structure and coordination mechanisms established for BRT, could one day become a citywide norm (Hidalgo and Carrigan, 2010; Flores, 2013).

Other cities do not have such grand aims, perhaps because they don’t need to. A second type of cities we identified also embraced BRT, but only after (and in some cases long after) an acceptable governance system of their transportation systems had been well established. In these cases, BRT functioned as an engineering tool to increase the speed of buses (to reduce waiting times, to increase the capacity of the system, etc.), but these buses run under the existing rules, are overseen by previously established planning and regulatory bodies, and are owned by the same bus companies that already offered transportation services. Previous to even attempting BRT, these cities had
already reorganized their transit network, established accountable contracts with professionally managed private companies, set operational standards, integrated the fare collection and revenue distribution systems, and optimized and modernized their vehicle fleets. In other words, BRT was a nice add on, but one that can’t be credited for modernizing transportation.

We believe this distinction is important. BRT has often been heralded as a silver bullet in the Global South, but perhaps we should nuance the claim. What matters most is not the adoption of articulated buses and dedicated lanes, but the establishment of a better governance system. BRT often triggers or speeds up modernization, but modernization of transportation sector can certainly take place without BRT.

**CASE SELECTION AND METHODOLOGY**

We focus on Latin America, the region of the world with the most BRT corridors in operation. According to the Global BRT Database, this region now accounts for 1,790 kilometers of BRT, serving 20.5 million daily passengers in 55 cities in 13 countries. We selected six cities to tease out commonalities and differences of BRT in the Latin American region. In our first category, we selected Quito, Bogota and Mexico City. They followed what may be called the “Curitiba Model”. These cities adopted BRT, initially in a single corridor, as a contrast to their broader, disorganized surface transportation system. Both systems continued to exist in parallel, each following its own rules of the game. The implementation aim was total, citywide system transformation in the long term, either by emulation or annexation. In our second category, we chose Santiago, Buenos Aires and São Paulo. Previous to adding BRT, these cities had already “modernized” their surface transportation system. They had already redesigned their transit grid, renegotiated private operator contracts, established a credible transportation authority, and in some cases integrated their fare collection and revenue distribution systems. In such a context, their aim for BRT was operational improvement.

When experts say that BRT is a “transformative technology,” they usually mean category 1 cases—the establishment of a new, scalable, governance system—not to category 2, where it is more reasonable to describe BRT as an important, but non “transformative” performance improvement.

All six cities are large, with a population over 2 million people, and except for São Paulo, they serve as capitals for their respective nations. We selected them because their national centrality both exacerbates transportation problems in need of solving, and increases the relative entrenchment and strength of actors involved (or affected by) BRT implementation.

We also selected these cases because information and credible sources on their BRT systems were readily available to the authors (in fact, we suspended research on Guatemala City due to the difficulty to obtain data). We reviewed academic and technical publications and local media websites, conducted telephone interviews with sources in every city, and conducted field visits to Bogota, Buenos Aires and São Paulo. Both authors have previously studied Santiago and Quito, and reside in Mexico City.

We crafted a brief monograph for each city, describing the structure and history of its transportation system. Each monograph describes how and why authorities implemented BRT, highlighting the resulting institutional framework, operational model, financial structure, contractual arrangements and coordination mechanisms. Aiming for brevity, we have not delved into the rich details of their unique, complicated stories. We have, however, attempted to offer a clear picture of who did what, of what were the stakes, and described some of the outcomes.

A good starting point for this study is to characterize, for this specific regional context, the pre-modern transit systems that implementers often aim to replace or improve (sometimes) through the adoption of BRT.

**TWO LATIN AMERICAN PATHWAYS**

While cities in Latin America diverge in their development paths, most grew in population and in territory very rapidly from the 1950s to the 1970s, urbanizing as their national economies industrialized. This period of rapid growth coincided with attempts to build or expand subway systems (Mexico City, São Paulo and Santiago launched their Metro systems in that period, while Buenos Aires already had a consolidated network by that time) and, to establish public bus companies (again, with the exception of Buenos Aires, which privatized its bus services in the 1960s). However, fiscal constraints, administrative failures and political crises in the 70s, 80s and 90s, deteriorated operational performance and slowed network expansion to a crawl. Many subway and public bus companies in the region, where they existed, required substantial capital and operational subsidies and were restricted to a relatively small urban core. In contrast, the supply of affordable housing demanded by the poor, transit-dependent population, was located in the periphery, creating untapped transportation demand. Cities in the region grew much faster than the ability of their governments to extend the coverage and frequency of their public transportation networks. Partly as a result, mobility options for many inhabitants of large cities in the subcontinent are scarce even today. Commuting distances are long and infrastructure quality too low for non-motorized...
transportation to be attractive. Fuel and vehicle costs put auto ownership out of reach. Yet these cities move. Across the subcontinent, it is private suppliers of surface collective transportation services, both authorized and unauthorized, that have filled the transportation supply gap (Vasconcellos, 2012; Pérez Fiaño, 2015).

What varies is perhaps the degree to which the State relinquished its authority over the market of surface transportation. In Bogota and Mexico City, the State retreated from public transportation as publicly-owned bus, trolleybus and tramway companies went bankrupt, and as their ability to build or expand their subway networks diminished. An implicit policy of laissez faire took over, and many small-scale transportation entrepreneurs entered the market to fill the gaps. The deep reliance on unsubsidized, weakly regulated, and often undercapitalized private transportation suppliers that followed largely explains the weak ability of governments in these cities to plan and govern transportation. To be sure, even in the worst conditions, private bus operators got people where they need to go, at a relatively affordable fare, without demanding much support from governments burdened with more urgent priorities (Vasconcellos, 2012). There were no riots in the streets protesting scarcity of transit services. In fact, the ubiquity of these services may explain why motorization rates in the region remain comparatively low, despite the limited usefulness of public bus and subway networks. Nonetheless, private operators do compete with subway and public bus companies, drive unsafely, unnecessarily congest centrally located streets, and use highly polluting vehicles. Constrained by limited funds to subsidize service, facing significant fiscal and political barriers to increase the cost of fares, and burdened with other more urgent priorities, planners and regulators in these cities were often unable to easily (a) impose and enforce costly standards, (b) allocate and police the right to operate and (c) settle conflicts between rival private suppliers.

Planners and regulators working in this sector are tasked with striking a delicate balance: managing conflict and brokering compliance, without driving these private suppliers out of the market. Opaque and informal street-level agreements between private actors, later upheld by government authorities, often took the place of formal, technical, government-led transportation planning functions. In such context, the introduction of BRT is an effort to profoundly challenge this status quo.

Buenos Aires and in some sense São Paulo are contrasting cases. In these cities, the demise of publicly owned bus companies in the 60s was not followed by an atomization of the industry. Large companies rapidly took over, often as a result of a favorable policy context that limited unnecessary competition. Small operators were bought off or driven off the streets. Barriers of entry to the market were high, and incumbent operators were not forced to compete curbside for passengers. The regulations and institutions that plan and manage the bus transit services at the local level under private provision by large companies were relatively stronger, perhaps as a result of military rule in Brazil and of dictatorship in Argentina. In Brazil, companies were awarded a monopoly of service over a particular region of the city. This allowed bus companies to leverage significant market power, optimizing their fleet size without fear of losing passengers (although invigorated informal services reappeared in the nineties in São Paulo to serve low-income peripheral areas). In both Buenos Aires and São Paulo, the government sustained an operational subsidy to these operators, allowing authorities to establish and enforce standards that increased quality of service. An unintended consequence was the creation of very big industry players, which over time grew entrenched (a problem solved in Curitiba through BRT). Another contrast is that São Paulo and Buenos Aires had a large network of legacy rail lines with metropolitan reach, which provided a structuring, organizing backbone to the new system that simply did not exist in Quito or Bogota, or in the vast periphery of Mexico City.

Santiago is a special case, where the government first retreated from its planning and regulatory functions in the 70s and 80s, and later reclaimed them, without using BRT as a trigger. The Chilean government established a formal policy of bus deregulation in that period, leading to significant problems. A few central streets became severely congested, and service became scarce and expensive in poorer neighborhoods. Small private operators soon organized as a cartel, coordinating to increase the price of fares and to limit the entry of new players (Flores 2013). The outcome seemed comparable to what we have described for Quito, Bogota and Mexico City. However, with the arrival of democracy in the 1990s, came an explicit effort to forcefully reassert State authority. Through various reform waves, private operators were forced to professionalize and to comply with standards, written into contracts. A highly trained cadre of professional planners envisioned a much more rational system, and argued that a higher level of service was attainable with a much smaller vehicle fleet. (Interestingly, Chilean planners explicitly described their approach as different from Transmilenio in Bogota, which by then had become a mandatory reference). This planning and regulatory effort eventually materialized with the establishment of Transantiago, a city-wide transportation reform in 2007, which included fare integration with the subway, new vehicle and service standards, a new transit grid, and the wholesale eviction of underperforming private operators. All of this was implemented before a single BRT corridor was built.
Each Latin American city has followed its own path, in response to local constraints and particularities. We knowingly risk error or simplification in this effort to categorize. Nonetheless, we did observe enough similarities to describe two distinct paths: State retreat and State action. Our argument is that in cities where the State has retreated from its planning and regulatory functions, BRT can serve as a trigger for structural reform of transportation systems, even if in a limited fashion. BRT in these cases can boost political support for reform, increase incentives for private suppliers to comply with regulations, and strengthen the ability of government authorities to plan and regulate provision of service. In contrast, in cities where the State did not retreat, and instead invested political and financial capital to create a well-structured transit network, operated by formally organized, professional companies, the addition of BRT merely functions as an infrastructural improvement of existing conditions.

WHY IMPLEMENT A BRT SYSTEM?
A GOVERNANCE-FOCUSED CATEGORIZATION

We observe that in all the six case studies, project champions deliberately structure implementation to ensure that incumbent, private operators of bus services had the option of being included in the operation of the BRT systems. This was achieved either by directly awarding contracts (Buenos Aires, Mexico City, Quito), or by creating favorable bid conditions to at least some of the incumbents (Bogota, Santiago, Sao Paulo). Only when the local private bus industry proved incapable of meeting the new system requirements, did local authorities turn to public companies to supply BRT services directly (as was the case of Quito and other cities not included in this study, like Medellin and Panama City).

Either way, the capital and operational requirements to participate in the new BRT system required professional and consolidated companies. In Buenos Aires, Sao Paulo and Santiago, this type of companies already existed. In Quito, Bogota and Mexico City they had to be created (small scale entrepreneurs would need to relinquish personal ownership of vehicles and permit titles, and become stockowners of a consolidated company). Over time, private BRT operators have become large enterprises, reliant on external financing, and on professional management. Sometimes the reach of these consortiums has extended well beyond BRT operations, taking with them their financing and management structure. These companies have also become “success models,” that industry peers seek to replicate in new BRT corridors (good examples of this are MetBus in Santiago and CISA in Mexico City, two companies founded by traditional bus operators to become BRT service suppliers). In some cases, the result has had unintended consequences, such as entrenching very large and powerful companies into a nascent system.

Beyond this generalized commonality, we find that the cities we studied made very distinct governance choices, allowing us to talk about two broad categories:

(1) BRT as DISRUPTOR: Cities where BRT is conceived as the backbone of a future, citywide, integrated system that will (someday) replace existing services.

In some cities, BRT implementation includes deep and wide institutional, financial and operational redesign, intended to function as a beachhead for citywide reform. When this strategy is selected, BRT systems tend to follow a “closed corridor” arrangement, to clearly distinguish the new system from the “unreformed” elements of the larger transportation system. A special bus, with special characteristics is required to “fit into” the BRT network (for example, left-side doors and high-floors designed to fit boarding platforms, and distinct branding). Only a few operators are authorized to provide BRT services, and often with some degree of exclusivity. A new concession agreement needs to be signed, and a different way to manage fare revenues and of paying operators is established (often de-linking revenues from passenger counts). When necessary, a subsidy is earmarked to sustain operations, creating a revenue stream that is available to the BRT system, but not to the broader privately operated bus network.

In this kind of cases, a new government agency is often created specially to plan and oversee BRT services, very often at a healthy bureaucratic distance and with explicit autonomy from the pre-existing agencies that regulate “unreformed” bus services (for example, the Mexico City BRT was incubated in the local Department of the Environment, not in the Department of Transportation). A new institutionality is explicitly created to shield the emerging system from the old, aiming to break bureaucratic inertias, eliminate (or weaken) regulatory capture, facilitate financing, and foster risk taking and entrepreneurial creativity. While not always explicit, the aim is to gradually extend the new planning and control functions authorized to the BRT authority over to the rest of the surface transportation system (this has happened in Bogota with TransMilenio, but not yet in Mexico City with Metrobus and Quito with Metrobus-Q). In other words, BRT is established as a system within a system, with special rules, barriers of entry and a new set of actors and relationships.

Some cities that fall in this category are Bogota, Cali, Mexico City, Leon, Quito, Guayaquil, Lima, and Guatemala City. Only a small subset of these cities have completed the reform cycle, evolving into fully integrated transportation systems, such as in Curitiba.
and Leon, and to a lesser degree in Bogota. Others only gradually increase their reach, such as the cases of Mexico City and Quito, where BRT systems remain constrained to a few trunk lines, without achieving physical, operational and fare integration to traditional bus services.

Transformative cases tend to be implemented incrementally. They usually depend on the buy in of the incumbent industry, and this is easier to secure piecemeal than city-wide. To maximize good will, they need to be presented as a project that will improve the business of operators over the status quo. This is usually most viable in corridors that combine high passenger demand with a limited number of bus-operating companies. For example, it would not make sense to have a special entity to manage the Santa Rosa Insurgentes in Mexico City are good examples. Nevertheless, there is an implicit contradiction in the financial design of this kind of BRT: Quito, Bogota and Mexico City built their BRT as a first stage towards establishing an integrated system, but their financial model was based on ensuring that fare revenue would be enough to cover operating costs. As planners attempt to grow the system to more corridors after initial success, they find the next corridors have increasingly lower demand of service and more pre-existing suppliers of service. Eventually, revenues from each projected new corridor does not suffice to cover the capital and operational expenditures required, and growth of the BRT system stops until a strategy to cross subsidize unprofitable corridors with revenue from profitable corridors is found. This usually requires implementing an integrated transport system, which in turn requires a city wide negotiation with the minibus industry. This model, in which operation is exclusively financed by fare collection, has created a structural barrier that makes growth beyond initial corridors difficult, forcing BRT planners to focus their efforts in high demand, high profit areas, leaving poorer, lower demand areas without quality transit. The slow growth of these networks has also translated into very congested stations and vehicles, which in turn decreased political support for further expansion. That is why, for instance, Mexico City has not been able to incorporate feeder services into their BRT system. Bogota has, but the decision came accompanied with subsidy requirements, not considered in the original business model, which unfortunately only materialized once quality of service had decayed and some bus companies had filed for bankruptcy. One possible corollary to this story is that modernization of transportation in Latin America seems to imply an evolution from unsubsidized to subsidized service, and that BRT is a tool to channel these subsidies in a politically acceptable and administratively expedient way.

From the organizational perspective, and as it is mentioned above, this approach implies a deep revolution that changes the internal structure and business model of the operators. In the traditional minibus association model, the incentive is to have as many members as possible join. Not only do each of these new members pay membership dues, but also larger associations wield more power when negotiating with other associations or with regulators. Since the market does not respond to cost-related competitive pressure, there is little turnover, even when individual bus operators take home revenue tends to grow slimmer.

In contrast, a BRT company depends on efficiencies to maximize its profits. This means that they tend to optimize their operations, reducing the number of employees, and trying to cut partners that don’t add value to the operation. Despite the rhetoric that paints the introduction of BRT as “inclusive”, the reality is that many small scale bus operators are eventually displaced. Former “leaders” of minibus associations, initially emerge as CEOs and majority stockholders of BRT companies. When they demonstrate managerial skill, their new companies grow and thrive. Often, however, these new companies face financial difficulties, and gradually, other actors enter the industry via buying stock in the BRT companies. A good example of this is ADO, Mexico’s largest inter-urban transport company, that has broken into the previously impenetrable urban bus industry in many cities by “rescuing” troubled BRT operators.

(2) **BRT as a TWEAK: Cities where BRT is conceived as an operational improvement for an existing, previously reformed system**

In this case, BRT implementation is not accompanied by significant institutional, financial or operational reform. Such wider aim is not necessary, as these cities already have an organized transportation network and a rationalized transit fleet, operated by professional companies. These cities enjoy previously established stakeholder agreement on their fare collection and revenue sharing systems, and have widely accepted contracts, which include operator's accountability and recognize government authority, often as a result of earlier reform efforts. An operational subsidy may or may not sustain BRT operations, but when it does, this revenue stream is also available to the broader privately-operated bus network. Cities that fit this category implement BRT simply in pursuit of operational improvements, such as achieving faster boarding and faster bus circulation. In this case, BRT is really about implementing a bundle of infrastructure improvements. There is no need to acquire special buses, establish new companies, sign new contracts, earmark new operational subsidies, or create new planning or regulatory bodies. For example, it would not make sense to have a special entity to manage the Santa Rosa BRT corridor in Santiago or the 9 de Julio corridor in
Buenos Aires. The same agencies that oversee surface transportation in these cities take care of them.

Cities in this category tend to favor an "open corridor" arrangement. Their BRT networks are porous: Private companies already authorized to offer transportation services in the city run their regular buses in BRT lines for a portion of their routes. They do not need to obtain a special permit to take advantage of the opportunity, or purchase a special kind of vehicle, or agree to a new set of rules. Further, in the case of São Paulo, Buenos Aires and Santiago, BRT corridors were built long after operational subsidies were put in place, and, in the Argentinian and Brazilian case, with bus companies that were clearly profitable and economically strong. This makes it relatively easy to incorporate existing operators into new BRT corridors, since participation in no way threatens their revenue flows. Quite the contrary, they stand to gain, given the improvement to their operations and the reduction in fuel expense.

Another important point: When cities in this category implement BRT, the new infrastructure is carefully molded to fit into the existing system. For example, stations in the 9 de Julio corridor in Buenos Aires were designed to fit regular buses, with right side doors and low platforms. This is a 180 degree turn from the experience in Curitiba, Bogota or Mexico City, where buses were designed specifically to fit into the new stations.

There is no question that BRT delivers measurable benefits to transportation operators and passengers. However, its adoption in cities that already "modernized" their transportation system is not transformative, at least not in the same way. In fact, the BRT corridors in Santiago, Buenos Aires and São Paulo are generally perceived as unexceptional, to the point that few Argentinians, Chileans or Brazilians recognize (or label) their systems as BRT.

**STRUCTURAL CHANGE OR TWEAK?**

The choice between tweak and transformative cases reflect the pre-existing level of modernization of the privately operated transit industry. Cities that have an atomized industry structure (with many small vehicle owners organized around operator associations) tend to choose the transformative approach. In this case, BRT is a vehicle to entice small vehicle owners to consolidate into larger firms, hire professional managers, pay taxes, invest in newer vehicles, etc. In contrast, cities where the transit industry is already dominated by large consolidated conglomerates tend to use BRT introduction to “tweak”. This does not necessarily reflect the overall level of modernization of the country in question. For example, it would be hard to say that Santiago, which took the “tweak” approach, is more modern than Bogotá. But it would be reasonable to say that regulators and service providers that participate in the transit industry in Santiago achieved consolidation and professionalization before the implementation of the BRT corridors, whereas this is not the case for many industry players in the Colombian capital.

The incremental approach, represented by the BRT as a first step of structural reform, is usually associated as an appropriate formula for mid- and low-income countries. However, this approach does not necessarily guarantee the success and sustainability of the projects in contexts that are far to count with a formally well-structured urban transportation sector. In this sense, promoters like development banks and NGOs often underestimate the technical, institutional and financial complexities of implementation of BRT systems, which require the fulfillment of a minimum level of technical capacity within the government agencies, the existence of reliable financing mechanisms, and the presence of well-structured operators.

Although they were not covered in this study, there is a couple of good examples in Central America (Tegucigalpa and San Salvador) where BRT projects, conceived as triggers of a deep process of modernization of the urban transport sector, ended in total fiascos. In the latter, the BRT system, a 6 kilometer corridor called SITRAMMS, lost its operational advantages after a decision by the Supreme Court in 2015 allowed the use of the segregated lane by other modes, including private cars. This decision produced a significant decrease of operational speeds. In addition, it reduced the daily demand of the BRT operator, because some users shifted to the cheaper fares offered by traditional buses, which were allowed to use the corridor. In the case of Tegucigalpa, Honduras, the BRT system didn’t even start operations before the infrastructure already built – corridors and stations – was dismantled by the local government, which changed priorities and decided the construction of car-oriented infrastructure in the lanes to be occupied by the BRT system.

There are many reasons to explain both failures, but some common factors can be identified. Among them are the lack of consistent political support, the chronic absence of skilled technical teams within the government, and the existence of private operators that were not organizationally and financially prepared to face the investments required for providing high-level transport services. Both projects were conceived as prototypes to be followed in the future by the rest of the bus services. However, their very exceptional character (lack of physical, operational and fare integration with the rest of the transit network) and the absence of a strategic plan of expansion hampered the sustainability of the systems. In the case of San Salvador, the scale of the project –only 6 kilometers because that was what the available resources
could finance—was too small to ignite a process of structural change. In other words, in order to succeed a “closed” BRT project needs the fulfillment of a basic level of institutional, technical, financial, and organizational standards; when this level is not accomplished (and that is what usually happens in low income countries), there is a high risk that the BRT systems never overcome the stage of an isolated pilot project that cannot be replicated in the rest of the transit network.

**JURISDICTIONAL BATTLES**

To add a final layer of complication, authority over transportation in a metropolitan region tends to be contested and deeply fragmented. Not only are there many agencies with competing mandates over transportation, but there is a plethora of overlapping local, regional and national jurisdictions. Policymakers often have to act in an environment defined by political rivalries, weak technical capacity and feeble coordination mechanisms, and are often heavily dependent on party alliances or personal connections. In the case of Quito, Bogota and Mexico City, at least previous to BRT, the unofficial response to this complexity was to cope, and avoid rattling the beehive with disruptive reforms. Perhaps as a result of all the above, barriers of entry to the transit service market in Quito, Bogota and Mexico City city were low pre-BRT (if you knew the right people), yielding ubiquitous, affordable and demand-responsive service. Unfortunately, as a result, service tended to be uncomfortable, unsafe, and largely unaccountable. In Buenos Aires and São Paulo, transportation has often been the milieu to contest political power over the city. Thus, even if BRT implies solely infrastructure improvements, authorities have an incentive to build them and claim credit, as that investment in turn expands their power over transportation.

Indeed, we found no relationship between the level of government that champions BRT, and the category in which each system falls. In Buenos Aires, a “tweak” city, BRT was championed by the local municipality, but this was also the case in Mexico City and Bogota, “disruption” cities. In Asuncion, a “disruption” city, the BRT system is a creature of the national government, but this is also the case for Santiago, a “tweak” city. What matters here is that regardless the category, BRT can help a government (local, regional, national), to establish or reaffirm its authority over transportation, vis a vis other levels of government. Implementation puts pressure on other levels of government, with authority over other parts or other aspects of the transportation system, to also innovate and foster reform.

In Argentina, the national government fought against the Mayor of Buenos Aires over the implementation of Metrobus. The city’s only formal authority was over streets, while the national government held authority over bus permits. By building BRT infrastructure, the Mayor in fact claimed authority over transportation. Once the public appeal was clear, the same national government replicated the idea in a neighboring metropolitan municipality. This also happened in Mexico City, where neighboring entities implemented their own BRT network in the same metro area, or in São Paulo, where the adoption by the city of 130 kilometers of dedicated busways inspired the state government to integrate fares and adopt its own dedicated busway program.

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The Metropolitan Area of Bogota is an urban conglomeration, which is unrecognized as such from an administrative perspective. However, for practical purposes the delimitation established by the National Administrative Department of Statistics is generally used, which defines the metropolitan area as the conurbated surface conformed by the capital district of Bogota, which concentrates 87% of the population, and 18 smaller municipalities.

Bogota’s public transportation system is divided into two large physical, operational and fare-integrated subsystems: the BRT TransMilenio network and its feeder services, and the Integrated Public Transportation System (SITP), which aggregates local services.

TransMilenio’s Phase I began operations in December 2000, which comprised 3 trunk corridors and 42 kilometers in length. As of May 2018, this system has 12 corridors in service and 114.4 kilometers of trunk...
routes. The buses, which transport an average of 2.45 million passengers on working days, are divided into articulated (49.9% of the fleet), bi-articulated (10.8%), feeders (30.3%) and dual service (9.1%).

The Integrated Passenger Transportation System, SITP, which is the Phase III component of local services of Bogota’s integrated system, began operations in 2012. The SITP operation divides the city into 13 zones and a neutral zone. Each zone is operated by a transportation service company that has a 24-year concession. Its services are divided into three types: trunks, feeders (bringing users closer to BRT system), and zonal. With the exception of the trunk services, whose fare must be paid before boarding in enclosed stations of the BRT network, payment for other services is done inside the bus with the system card.

INSTITUTIONAL FRAMEWORK

The District Department of Mobility is the institution responsible for formulating transit and transportation policies —public, private, cargo and non-motorized— in the District of Bogota. This includes planning, management and maintenance of the road network.

Specifically referring to public transportation, Empresa de Transporte del Tercer Milenio (TransMilenio S.A.) is the responsible manager of TransMilenio and SITP. This is a public company formed by a series of district institutions, in which the Mayor’s Office is the main partner. The other partners are the Education and Road Safety Fund of the Traffic Ministry of Santa Fe de Bogotá —FONDATT—, the Urban Development Institute —IDU—, the District Institute of Culture and Tourism —IDCT— and the Company of Urban Development and Urban Renewal of Bogota (formerly known as Metrovivienda). TransMilenio’s role is to plan, manage and control the network of public mass urban passenger transportation services in the city of Bogota. This includes coordination with different public and private stakeholders involved in building infrastructure, operation of transportation services, and provision of operational control services, collection and administration of resources originated by the collection of fares. Regarding infrastructure construction, TransMilenio S.A. designs engineering and architecture projects, while the civil construction is done by the Urban Development Institute (IDU), a local public entity that in turn hires specialized firms for its execution.

Regarding the collection system, this is in hands of two private concessionaires, whose role is to provide and install collection and authentication equipment for fare payment (recharge machines, turnstiles, computer and communication equipment), supply and sale of smart payment cards, and act in custo-

dy of collected money. In turn, the administration of revenues from ticket collection and their distribution among different system agents is also responsibility of a private trust company.

OPERATION

At present the system has 10 concessionaires for trunk services, 11 for feeder services, and 10 for zonal services. Although there are a total of 31 contracts, there are only 15 operating companies, since a company can have more than one concession. In the case of companies operating trunk services, concession contracts are subscribed to fulfill a fixed number of kilometers, which was originally established at 850,000 kilometers of the fleet. However, in 2013, 240,000 kilometers were added to the concession period, with which each operator of the trunk subsystem had a concession period of 1,090,000 average kilometers of fleet. In the case of local services, concession contracts are for a fixed term of 24 years (the fleet should be renewed after 12), regardless of kilometers traveled.

The whole operation of the trunk, feeder and local services is owned by private companies. Their responsibility is to purchase and give maintenance to the buses, providing parking lots, and offering public transportation services. Being governed by concession contracts assigned through a public tender, these companies leave behind the poorly regulated scheme of small entrepreneur associations, which had individual permits for the provision of public transportation service in Bogota.

In the case of the trunk system, and as a way to mitigate negative political and social impacts, from Phase II consortia were required to incorporate transportation owners (small entrepreneurs with up to two collective public transportation vehicles registered in Bogota) within the society. In the case of SITP’s local services, all concession companies are formed by small transportation entrepreneurs from the traditional system, which may or may not incorporate external partners within the ownership structure of the company.

FINANCING

Financing for BRT system infrastructure is shared between the National Government, which has contributed 60% of the total, and the local government, whose 40% mainly came from a surcharge on gasoline. This tax, consisting of 25% of the sale price of fuel, was set nationally in the 1989 Law 86, also called the Metro Law (Ley de Metros), and established a series of mechanisms for financing urban train systems. This Law was subsequently modified to allow financing for the construction of massive non-train transportation infrastructure, which facilitated the
development of BRT systems throughout Colombia. To calculate income and expenses, the system differentiates a technical fare and a user fare. The former reflects average operation and control cost per passenger payment. The latter is the effective collection paid by citizens for the use of the transportation service, and is what defines the operating income of the system. Tariff is set by the Mayor by decree. From its origins, the differential between both fares was negative, that is, the technical fare was higher than the user one, but at relatively low levels until 2011. To compensate for that difference and level both fares, in 2000 the Contingency Fund for the TransMilenio subsystem was created; this was financed with an initial contribution of 20 billion pesos (approximately USD 9.6 million). Financially, the BRT system worked without major impacts during its first 12 years; however, the start-up of the SITP in 2012 triggered a negative difference between fare revenue and system costs, a phenomenon triggered, among other reasons, by the fact that SITP services cover long distances to meet a dispersed demand without having exclusive circulations. Thus, the passenger per kilometer index (IPK) in the zonal services is lower than originally expected (1.4 in the zonal system vs. 4.4 in the trunk system). This situation was aggravated by competing traditional public transportation units that continued to operate in parallel along concession areas, and by the reduction in the fee for trunk services decreed in July 2012. To cover this deficit, the Contingency and the Fare Stabilization Fund (FET in Spanish) was created, which subsidizes the difference between technical and user fare. Currently, the FET covers around one third of the system’s operating costs.

Regarding expenses, about 85% of them go to paying different operators. 5% is to cover TransMilenio S.A.’s operating expenses as the entity managing the system, while 10% is to finance fare collection and the administration of resources. Of the total payments to operators, 53% goes to trunk operators, 5% to feeders, and 42% to operators of zonal services.

Factors that determine transportation service operators’ cost recovery are associated with the components of operation costs of each subsystem. In the case of trunk operators, the cost recovery calculation formula is exclusively linked to the offer, multiplying programmed and traveled kilometers by the rates per kilometer agreed and updated with each concessionaire. In the case of the SITP, remuneration is tied to both supply and demand, calculated according to the number of passengers transported, kilometers traveled, and number of operational buses. This remuneration is adjusted based on compliance with service levels related to punctuality and regularity established in the contracts. If these service levels are not met, companies are subject to discounts and fines, without limitation.

GEODENCE

Key Decisions
At a general level, the SITP-TransMilenio system was originally conceived around 4 key components:

- Infrastructure oriented to increase the speed and capacity of a BRT system.
- Sequential implementation in large stages, aimed at creating a physical, operational and fare-integrated system.
- Planning and management in the hands of the State, operation in hands of private companies.
- Self-financing of the operation.

The development and features of TransMilenio are largely due to the failed project to build a Metro system, defined in the mid-1990s as the axis for restructuring the public transportation system in Bogota. When the Metro idea was discarded, given its high costs and long execution times at a time of an acute financial crisis in Colombia, the city opted for the implementation of a BRT system, but with a design that would increase its capacity and operational speed. This resulted in a pioneer infrastructure of its kind, distinguished by construction of confined corridors with overpass lanes, which allows express services, and multiple platform stations, designed for simultaneous boarding on several buses. In this way, the system has reached capacities exceeding 40,000 passengers per hour per route, higher than that of several Metro systems in the world.

From the beginning, the BRT network was considered as the backbone of an integrated system whose coverage would reach 100% of the Capital District in the medium term. For this, an expansion program was planned to reach 388 kilometers of corridors in 8 major stages. On the third stage, integration of the trunk subsystem and the zonal subsystem was achieved. Stages 4 to 8 —yet to be executed— consider the BRT corridor network expansion.

The institutional-organizational framework of the system was clearly established in the 1998 planning document CONPES 2999, which created the bases of TransMilenio, establishing an obligation to create a Single Transportation Authority to access funds of the National Government established in the Metro Law. This Authority, TransMilenio S.A., would be in charge of planning, management and control of the system, while operation would be responsibility of "specialized and strengthened private companies to comply with demanding conditions of the system". In the configuration of these companies, whose conces-
sion would be assigned through open bidding, participation of former operators of the traditional system would be privileged. This would be mandatory for all companies starting with TransMilenio’s Phase II.

Finally, the financial framework of the system would be established in the CONPES 3093 planning document, which points out the co-responsibility of the National Government and the District Government in financing the infrastructure, while operation would have to be self-sustaining, without considering direct subsidies for it. This self-financing scheme was maintained during the first two phases. However, when local, economically less profitable services were incorporated in Phase III, it became necessary to create a direct subsidy through the Tariff Stabilization Fund (FET).

The Metropolitan Scale

The TransMilenio-SITP system only operates in the area of the Capital District of Bogota and in the municipality of Soacha, which is the second largest in the metropolitan area (522 thousand inhabitants), which has BRT network services. More than 90% of the metropolitan population live in both districts combined. Beyond the existing agreement between the Capital District and Soacha, there are no mechanisms for metropolitan coordination with the rest of the surrounding municipalities. In them, the public transportation service is offered by inter-municipality buses that have authorization granted by the national government through the Ministry of Transportation. These services connect with TransMilenio’s main terminals, which are physically, but not fare-integrated with the Capital District network.

The Rules of Interaction between Actors

Interinstitutional relations: political leadership of the mayor: While it is true that the idea of modernizing public transportation system in Bogota had been incubated since the early 1990s, its prime mover was mayor Enrique Peñalosa, who made TransMilenio the main political legacy of his first mandate (1998—2000). Having a clearly defined “champion”, willing to make all kinds of efforts to get the project moving forward, helped to accelerate bureaucratic processes, to align the local government’s different institutions behind a single goal, to attract private initiative to establish operating companies, and to reach agreements to incorporate former drivers in the new system. This is how in just three years the city was able to plan, build and implement the first phase of the trunk system. However, the high identification of the project with a political figure also played against its later development, since when different party leaders took over the mayor’s office, TransMilenio ceased to be a priority in the public agenda, slowing its expansion. Thus, since 2012 the trunk system has not added new kilometers to the network. This deacceleration is partly due to the problems experienced in the implementation of the zonal system, which has forced a reorientation of technical efforts and financial resources.

Government - transportation entrepreneurs relationship. As a way to diminish negative social and political impacts, and as in other Latin American cities, the TransMilenio-SITP system privileged granting concessions to companies formed totally or partially by small operators from the traditional system. However, something differentiating TransMilenio-SITP from other Latin American cases (Mexico City, Quito, Buenos Aires) is that the allocation of concessions is decided through an open tender, in which participation in the system is not guaranteed, but priority is given to those companies that incorporate the largest number of small entrepreneurs. Although this has meant continuity for thousands of transporters, it has also generated various problems due to the allocation of concessions to operators with weak organizational structures, lacking trained personnel, and without sufficient capital or credit capacity to face the high initial investments that the new business model demands. This was the reason for the long delay in the full implementation of the SITP zonal system.

Regarding relationship with concessionaires, this is governed in accordance with the provisions of respective operating contracts. However, there have been extraordinary negotiation rounds to resolve major contingencies. One of the most important was the one with entrepreneurs of the trunk network to extend operation contracts once the fleet reached the established useful life of 850 thousand average kilometers per vehicle. In the absence of a bidding process underway, an extension of 240 thousand kilometers was agreed with operators, with which the average life of the fleet was extended up to 1,090,000 kilometers. In return, the value of the technical fare was reduced, in the understanding that the investment of the buses had already been amply amortized.

A second important negotiation process was carried out with the two most important concessionaires of the zonal system, whose inability to comply with established requirements in the contracts led to continuous prorogation of their entry into the system and their subsequent financial intervention. The way to resolve this situation was the creation in May 2015 of the Provisional SITP, in which temporary special permits were granted authorizing incorporation of old vehicles into the formally structured system of services, as long as they operated in accordance with the new rules and incorporated the integrated fare collection system.
Changes and Adaptations

The process of implementing an integrated transportation system in Bogota has undergone major changes from what was originally planned. These adaptations have been essentially of technical and financial nature. Firstly, agreed implementation deadlines had to be adjusted, since in practice they proved to be too ambitious by establishing 388 kilometers of exclusive lanes for the BRT system in 2016 as a goal (as of May 2018 there are only 114 kilometers). Changes in political priorities, delays in the implementation of zonal system considered in Phase III, and lack of financing have resulted in postponing investments, which today have the BRT system operating with less than a third of originally planned corridors. The lack of expansion of the trunk system has meant corridors serving a much higher demand than originally planned, which in turn translates into overcrowded buses and stations at peak hours, and operational speeds well below those contemplated when the system began operations.

Difficulties faced in daily operations have forced to give more flexibility to the original network of services. Thus, the need to expand coverage and reduce service connections has meant modification of the route of some services and incorporation of innovations not considered at the start of the project, such as operation of dual service buses, that is, with doors on both sides, which allows them to run in a confined lane on the left or a shared lane on the right. In turn, difficulties experienced by some operators to initiate activities led to the creation of the Provisional SITP, in which transitory permits were granted to 136 routes that will be gradually dismantled until integration of the zonal system is 100% complete. It is expected that these transitory services, whose permits have been constantly extended over three years, will finally be replaced by definitive SITP services by the end of 2018.

From the financial point of view, the most important adaptation has been implementation of operation subsidies through the Tariff Stabilization Fund (created in 2012), and the creation of a subsidy targeted to specific population groups (2014). These subsidies, which add up to approximately USD 300 million per year, became necessary after the beginning of the SITP zonal system operations.
When talking about Mexico City, this study will refer to the political and administrative capital of Mexico, comprised by 16 delegaciones (municipalities) that add up to 8.8 million inhabitants, which correspond to 40.3% of the total population of the Metropolitan Area of the Valley of Mexico (ZMVM). The ZMVM (21.8 million inhabitants) also incorporates 59 conurbated municipalities of the State of Mexico and one of the State of Hidalgo.

The public transportation system of Mexico City is composed of a series of relatively independent systems, planned and managed by different government agencies, and operated by both public and private companies. About 60% of collective trips are carried out in lines of poorly regulated minibuses. This ser-
vice is mostly provided by low capacity units that are over 15 years old on average, uncomfortable, unsafe and highly polluting, owned by small entrepreneurs grouped in different associations. Each entrepreneur has an individual permit for an indefinite time to offer collective transportation services.

As a way to modernize collective ground transportation, in 2004 Mexico City launched the Strategy for Public Transportation Corridors of the Federal District, which consisted in the implementation of BRT corridors that would be operated by formally structured and highly professionalized companies, subject to service provision standards established in fixed-term concession contracts.

The first stage of the Metrobús Line 1, which was to a great extent posed as a pilot project that would grow sequentially, corridor after corridor, started operations in June 2005, covering a distance of 19.6 kilometers with 37 stations along Insurgentes Avenue. As of March 2018, the Metrobús network has a 140-kilometer length and 7 lines, used by 1.23 million passengers every day. This number is equivalent to 7% of the total public transportation journeys that originate in Mexico City.

In most of the Metrobús system buses circulate in confined lanes of exclusive use, and except for lines 4 and 7, which circulate through protected patrimonial areas of the Historic Center and Paseo de la Reforma, all the lines have enclosed stations with an elevated platform, and require payment before boarding. In lines 4 and 7 buses circulate to the right, while line 7 uses double-decker units, a choice that responds more to creating a city image than to a technical requirement.

A smart card is required to pay for the Metrobús service. This card can also be used for the Metro and light rail systems and public bicycles (EcoBici), although fare integration only applies to the BRT network, that is, users must pay the full cost of the fare each time they change modes.

INSTITUTIONAL FRAMEWORK

Originally, Metrobús was conceived as a pilot project that would be developed parallel to the local Department of Transportation and Roads (SETRAVI in Spanish), which was seen as a highly corrupted institution, hardly modernized and with little technical capacity, captured by the transportation industry and incapable of leading a project that meant a profound reform in the structure, management and operation of public transportation in Mexico City. That is why the planning and execution of the first line of the system was the responsibility of the local Department of Environment (SEDEMA in Spanish), which, in the absence of a technically trained apparatus within the government, sought the advice of non-governmental organizations and private consultants. Shortly before the opening of line 1, the Metrobús institution was created, a decentralized public body that until today is in charge of planning, management and control of the BRT system. Although formulation of mobility policies in Mexico City is currently responsibility of the Department of Mobility (SEMOVI, which replaced SETRAVI), in practice Metrobús has a high degree of autonomy, which allows it to function independently of bureaucracy that regulates the rest of the city’s concessionary ground transportation.

Although management of the Metrobús network is in the hands of a public institution, revenues collected from fares are responsibility of private companies that are in charge of installation, operation and maintenance of fare collection systems (card vending machines, turnstiles, authenticators, surveillance cameras, etc.). Revenues are concentrated in a master trust fund divided into sub-accounts for each line of the system. The administration of these resources and payment to the system’s different service providers is also responsibility of private companies, one for each of the seven Metrobús lines. Remuneration to the different operators is calculated per kilometer traveled, and the amount paid per kilometer varies from line to line, not only reflecting operating costs (which are similar throughout the system), but also previous income of the operators that were present in the corridor before implementation of the system.

OPERATION

The operation of the Metrobús network depends on 13 concessionaires. 12 of them are private operators organized as formal companies, whose responsibility is the purchase, operation and maintenance of the buses, parking lots and repair shops.

From the beginning, the BRT project in Mexico City was proposed as a strategy to modify the organizational structure of private companies that operate the public transportation service, and to increase impact of government planners and regulators on features of the service offered to the public. In this way, the company that owns and operates the new articulated buses in the first corridor was created especially for this project, and its shareholders were former transportation entrepreneurs who used to operate hundreds of minibuses in that corridor. This implementation model, which minimizes political and social costs of the business transformation process, has been repeated, with some variations, in the subsequent lines. With no prior bid, these new companies were directly granted concession for operation of corridors for a 10-year period, with the exception of operators of lines 4 and 7, whose concession is for 20 years to compen-
sate higher cost of clean technologies. In order for a line to come into operation, all buses that operated along the corridor under the traditional scheme must stop circulating; this is intended to guarantee unfair competition in different concessional corridors. So far, none of the companies with contracts to operate a BRT corridor have been replaced.

In addition to these 12 private concessionaires, the public company Mobility System 1 (M1) also takes part in the Metrobús operation, being responsible for operating 70 buses on lines 1, 2 and 5. This involvement occurs because buses from the former Passenger Transportation Network (RTP), predecessor of M1 and last vestige of the public company that operated a large part of the ground transportation network until the beginning of the 1990s, circulated in the routes in which these BRT corridors were implemented. The participation of M1 in the corridors has given some governance to the system, since it has revealed real information about actual costs of operation to authorities. In turn, it has served as a financial escape valve for the system, since it is legally possible to subsidize operation of M1. Finally, it has been a counterweight to private operators, giving authorities the possibility of continuing to operate even in case of conflict between the latter. However, involvement of M1 has been decreasing over time.

FINANCING

Planning, management and control of Metrobús are financed with city government’s resources, which also cover associated infrastructure costs (corridors, stations, signage, etc.). Only in the cases of line 7—opened on February 2018—and the future extension of line 5, credits from the national government through the Public Transportation Federal Support Program (PROTRAM in Spanish) have been considered, which are complemented with city resources and credits from development banks. Collection and administration costs are covered by fares.

The government of Mexico City considers subsidies for operating collective transportation (approximately USD 600 million in 2017); nevertheless, most of these resources (79%) are used to finance the operation of the Metro network. Although it is true that Metrobús was conceived as a system whose operation would be financed with resources coming exclusively from fare collection (USD 0.32 to June 2018), since 2017 the system has a small subsidy from the city government (approximately USD 2.7 million monthly) to compensate the sharp increase in the fuel cost in the last year. To this we must add a hidden subsidy given by the operation in the system of 70 buses belonging to the public company M1, which is entitled to operate at a loss and therefore to receive lower remuneration than other operators. This allows an increase in the income of private companies that provide the same service.

For the financing of the fleet, whose acquisition is in hands of concessionary companies of the operation, until 2012 each owner of the old minibuses received a bonus of 100,000 pesos (approximately USD 8,000 in 2012) for substitution and scrapping. This support, which no longer exists, has been the only direct subsidy received by operating companies.

GOVERNANCE

Key Decisions

From a technical point of view, but also a political one, development of the Metrobús system meant a clear and highly visible break in the planning, operation and management of collective transportation in Mexico City. In practice, this differentiation was translated into a series of key decisions: creation of a system independent to the rest of ground transportation, with its own institutional framework, infrastructure for exclusive use, operation by formally incorporated companies, and a collection system and income distribution separated from the operators.

From the beginning, implementation of Metrobús was conceived as an incremental process, based on sequential development of partially or totally confined corridors, with predetermined stops and specific infrastructure for passenger boarding. This incremental model (also adopted in Quito and Bogota) means that until today there is no long-term planning of the corridor system: their implementation is decided in a case-by-case analysis in which compliance of physical conditions for the segregated circulation of buses is evaluated. Financial returns by a high demand must be and operational conditions that facilitate negotiation with the drivers that will operate the system must be guaranteed as well. Thus, in the first corridors the balance of decisions leaned towards those options that presented less technical difficulty and greater possibilities of success. Choosing low-hanging fruits first has been a key aspect in a system that was largely proposed as a pilot project in its beginnings.

Institutionally, Metrobus proposes a clear division of functions between planning, management and control, which remain in the hands of the city government, and the operation, which for the most part is responsibility of formally constituted private companies. Although it was not established in any planning instrument, one of the essential components of the operation model of the BRT system is the incorporation of traditional drivers in the new companies. This meant taking advantage of knowledge acquired during decades in the streets, while diminishing possible negative political and social impacts of the moderni-
zation process of the transportation sector. However, this policy has made it impossible for external operators to enter and offer better service conditions. In turn, in practice small entrepreneurs have gradually disappeared from the new companies, being absorbed by those partners with greater financial capital.

From the point of view of the business model, the system is based on two components: self-financing of the operation, and concentration of collection and distribution of income in companies that manage resources coming from fare collection, which implies ending the vicious circle of competition for passengers on the streets. The lack of direct subsidies, at least during the first years, led to the development of corridors of high demand concentration, with no integration with local services, less commercially attractive, since they serve a dispersed demand and do not have exclusive circulations. In addition, the strategy of contracts per corridor has made it difficult to establish crossed subsidies (that the most profitable corridors subsidize corridors with the lowest demand), making it increasingly difficult to guarantee participating entrepreneurs enough profitability to accept a transition to the BRT model.

The Metropolitan Scale

The Metropolitan Area of the Valley of Mexico has two completely independent public transportation systems, one belonging to Mexico City and the other to the State of Mexico, without any operational or fare integration between modes, and with very limited physical integration in Metro terminals (in the so-called Modal Transfer Centers, CETRAMs). Thus, and despite having physical continuity in the urban territory, different sub-systems of Mexico City (Metro, BRT, buses, trolleybuses and light rail) are operationally limited by administrative borders separating both states. In practice, each entity has its own institutional structure, its own system of plans and programs, and its own financing mechanisms. There are also no formal coordination agencies that allow resource optimization and systematic planning for creating route networks and construction of transportation infrastructure.

The BRT system in Mexico City is a good example of this: the 140-kilometer network and 7 Metrobús lines at no point connect with the BRT network of the State of Mexico, called Mexibús, which in its 3 corridors and 57 kilometers of extension serves a daily demand of 265,000 passengers.34 Despite operating in the same urban territory, both networks are planned, managed and financed separately. This means a greater number of connections, longer commuting times, and higher economic expenses for users, who are forced to change modes every time they cross the administrative border that divides both states. This situation mainly harms low-income users who live in the periphery of conurbated municipalities of the State of Mexico and who must travel every day to Mexico City. It is these users who make up the majority of the 4.4 million trips that are completed every day between the State of Mexico and Mexico City.

The Rules of Interaction between Actors

Interinstitutional relations within the government: Metrobús as an institutional umbrella. Although Metrobús depends administratively on the local Department of Mobility (SEMOVI), in practice it has proven to be a highly empowered and independent institution. In this way, Metrobús can nimbly manage and coordinate participation of different government agencies involved in the process of implementing a BRT corridor. However, this high degree of institutional coordination does not have a correlation within the transportation sector, where different entities that are in charge of managing specific subsystems (Metro, Metrobús, Electric Transport Service) tend to plan their services without a comprehensive vision of transportation in the city or with a strategy of mutual cooperation.

Relations between government and private operators: recognition of rights and individual negotiation. As stated above, one of the pillars on which Metrobús is based is incorporation of traditional drivers to highly professionalized new companies in charge of operating the BRT system. Under this scheme, each operator’s rights, acquired for the provision of collective transportation service for years, are acknowledged. To the extent that a series of organizational and financial requirements are met, these former operators, now associated within a company, are directly assigned the concession of all or part of a line, without prior bidding. In the case of having two or more associations in the concession area, contracts respect percentage of participation of each association prior to the implementation of a BRT line.

The inexistence of a trade union organization that brings together all operators, plus internal disputes between them, has in some way facilitated negotiating separately with each of the operators of the Metrobús corridors. Thus, at first, when the Metrobús project aroused uncertainty amongst drivers, talks were held only with those entrepreneurs willing to embark on a new business model. In exchange for the risk assumed, these drivers managed to negotiate highly advantageous contracts with the city government, which to a large extent assured them high revenues that allowed them to acquire a privileged position in the future expansion of the system.

As for the Mexico City government, having acquired experience in the management of a model consoli-
dated today, it has gained a more favorable position when negotiating with new concessionaires. Although financial terms of the contracts are different for each line, conditions in which these are negotiated are no longer as favorable for drivers as they were in the beginning.

**Changes and Adaptations**

By manifesting itself as an incremental system with operating contracts tailored to the needs of each line, Metrobús has proven a certain flexibility to adapt to conditions not contemplated in the original model. Such is the case of lines 4 (28 km.) and 7 (15 km.), which circulate in patrimonial areas. In these cases, infrastructure of roads and stops had to adapt to minimize negative impacts in a protected environment. Thus, in both lines, low-floor buses circulate on the right in lanes that allow circulation of other vehicles in certain sections. Fare payment is done inside the buses, and stations are usually a lightweight, minimally invasive structure.

More for a matter of city image than environmental issues, both lines use cleaner bus technologies than the rest of the network. As the system business model is based on self-financing operation, concessionaires of these lines have 20-year contracts, instead of 10 as is the case in other corridors in the system. In some cases, changes occur within the same projects, which increasingly must incorporate adaptations arising from negotiations with different actors not necessarily related to the transportation sector, such as merchants and neighbors. In those more complex cases, political negotiations are led by the City’s Department of Government. Such is the case of line 7, opened in February 2018, whose layout and stations had to be modified to meet demands of dissatisfied residents. On that occasion, authors of the present study served as technical mediators requested by civil society organizations to resolve the geometry of the corridor in a specific area.
Until the mid-1990s, Quito’s public transportation system consisted of a series of poorly regulated services provided by small business cooperatives. This situation changed in 1995 with the launch of the Trolebús corridor, the second BRT-type system in Latin America after Curitiba, developed in Brazil in the 1970s. As its name points out, the service in a 22.5-kilometer corridor, is provided by trolleybuses with a network of feeder services.

This service was later complemented with two additional corridors in which diesel and hybrid buses were used. At present, the Metrobús-Q system consists of 71.4 kilometers of segregated lanes. Additionally, it has feeder services, provided by buses that circulate in streets shared with other motorized vehicles.
Although the Metrobús-Q system implementation has resulted in an increase of travel speed, more than 60% of public transportation trips in the city take place in the old, shabby traditional minibuses. These distribution percentages should change drastically throughout 2019, when the city's first Metro line is scheduled to begin service, with an extension of 22 kilometers, and an expected transportation rate of 377,000 passengers a day.**

There is physical integration between the three BRT corridors; however, fare integration is partial, and depends on the operating company. Thus, there is fare integration between Trolebús, Oriental Ecovía and Corredor Sur Occidental, which is part of Troncal Occidental corridor. These three corridors are operated by the Metropolitan Public Transportation Company of Quito (EPMTPQ in Spanish), which belongs to the municipality. In the case of the Central Norte corridor, which is the other half of the Troncal Occidental and operated by private companies, there is no fare integration with the rest of the system. This means that users must pay a fee when they transfer with the other components of the BRT network.

Boarding of passengers depends on conditions specific to each corridor. Thus, in Trolebús, which runs through narrower streets and connects the historic center with the rest of the city, boarding is on the right side. In other corridors, running on wider routes, boarding is done on the left. Being closed type corridors, buses do not share lanes with other vehicles at any time.

Fare payment throughout the whole system is done pre-boarding and in cash. This payment system is expected change in the second semester of 2018, when payment with smart cards is scheduled to come into effect.**

**INSTITUTIONAL FRAMEWORK**

The agency in charge of mobility policy definition and project implementation in the Metropolitan District of Quito (DMQ) is the Department of Mobility, which in turn has 5 dependent bodies. One of them is the Metropolitan Public Transportation Company of Quito (EPMTPQ), which is in charge of planning, management and operation of most of the BRT system. It also supervises the collection system and resource administration, both in the trunk system as well as in the feeder. However, there is an exception in the case of Central Norte corridor, which is part of Troncal Occidental, operated by private companies. Although this corridor is physically integrated to the Metrobús-Q network, and therefore its planning and technical supervision depends on the EPMTPQ, its administrative decisions are resolved in a Board of Directors composed of 5 concessionaire representatives and a municipality representative, who has the right to speak, but not to vote.

Responsibility for corridor infrastructure construction lies within the Public Metropolitan Mobility and Public Works Company (EPMMOP in Spanish), also dependent on the Ministry of Mobility.

**OPERATION**

Each of the BRT-system corridors has followed different paths to define and assign their operation. Regarding the first one, Trolebús, the city government stated from the beginning that operation would be in the hands of a municipal company created for this purpose: The Trolleybus System Operative Unit (UOST in Spanish), which would later be transformed into the current EPMTPQ. This decision was made because the government considered that traditional operators did not have the organizational structure or the adequate technical and financial capacity to successfully face a project that meant a structural reform in the way public transportation service in the city was offered.

Strong protests took place by the traditional transportation sector that opposed the public operation model used in the Trolebús corridor. Therefore, while planning the second line —Troncal Ecovía— the seven traditional transportation companies that operated in the corridor had to form a consortium in order to be incorporated. This consortium became known as Transasoc. Given the limited financial capacity of the new company, buses for this corridor were purchased by the municipality and offered in lease to private companies. However, after two years the consortium's concession was canceled and operation was taken over by the UOST as a result of continuous delays in bus rental payments and non-compliance with operating conditions established in the concession contract. This private operator never overcame its weak organizational structure and limited financial capacity.

In the case of the third line, Troncal Occidental, operation was divided into two sections: Corredor Occidental Sur would be operated by the EPMTPQ, while Corredor Central Norte's operation would be directly assigned to a consortium of 5 cooperatives formed by entrepreneurs from the traditional system, who would be granted a 12-year concession. This consortium, besides providing the transportation service, is in charge of administration and maintenance of the stops, stations and terminals, as well as fare collection in the corridor. This contract ended in 2017, and since then the consortium has been operating under a one-year extension. In the new business model for this corridor, currently in negotiation stage, the private sector must establish a new company with a 60-bus
fleet. As a way to alleviate the financial burden and improve the strongly questioned quality of service, the EPMTPQ will contribute with 25% of the fleet.46

In the case of the operation of feeder services, in all corridors this role is in the hands of private companies, which establish service delivery contracts directly with the EPMTPQ.

Having said that, although most of the BRT system operation is in the hands of a public company, it has outsourced a large number of its activities to private companies. Thus, drivers, maintenance personnel and station security are outsourced.47

FINANCING

Infrastructure costs have been covered with resources from the Municipal and the National Government. It is important to highlight financial support provided by the Spanish Government, which, through credits contracted by the National Government, provided resources to purchase vehicles for the first corridors.

The municipality of Quito, through the EPMTPQ, covers planning and management costs of the entire system, and the operation of the three trunk lines operated by this public company. Since 2014, revenues are managed under a common system where operators of each company are paid according to kilometers traveled and passengers transported. The government of the municipality of Quito operates this system, which integrates most modes of the city’s public transportation system.

Regarding operation financing, since its origin the BRT network was planned to be financially self-sustainable, and did not consider subsidies to private operators, both of trunk and feeder services. However, since the user fare is far below the technical fare (the cost of the ticket has remained at USD 0.25 for almost two decades), in 2015 the municipal government created a Plan to Strengthen the Quality of Terrestrial Transportation Service, which establishes payment of a monthly compensation of between USD 450 and USD 1,000 per bus, which is canceled quarterly according to service quality indicators.46 This local subsidy replaced one that until 2014 was granted by the national government, which reached USD 600 per month per unit.

GOVERNANCE

Key Decisions

In the case of Quito, as it happens in Bogota or Mexico City, the BRT system is considered from an incremental approach, in which the successive implementation of corridors is seen as the first step in a process of structural reform oriented to develop a 100% integrated system in the long term. Under this scheme, consolidation of trunk and feeder services in a corridor provides the basis for a process of continuous improvement, building on lessons learnt from one project to the next. In Quito, this approach was structured around a series of key institutional, operational and financial decisions:

- Public-private operation scheme, in which the State is largely involved in the first phases of the project, to then transfer responsibilities to the private sector. Given the organizational and financial weakness of traditional operators, the local government decided that the first corridor —Trolebús— would be operated by a company created specifically for that purpose within the municipal administration. With the experience obtained, and taking Trolebús as an example, the following corridors would promote participation of private operators formalized as professionalized companies providing public transportation services. However, the deficient service offered by the concessionaire consortium of the second corridor caused the change from the public-private transfer scheme to the empowerment of the EPMTPQ company, something not considered in the original BRT system business model. In practice, EPMTPQ has been the exhaust valve that is activated to replace the private companies that, due to weak organizational structure and lack of financial capacity, cannot provide the service up to par with terms established in the concession contracts. This situation, where public companies assume roles originally assigned to private companies, has been repeated in other Latin American cities not covered in this study, such as Panama City, Medellin and Monterrey.

- Institutional strengthening, first the UOST and then the EPMTPQ, specialized in planning, management and operation of BRT systems, separated from the rest of the traditional transportation system, whose (weak) regulation is left in the hands of the Department of Mobility.

- Financially self-sustainable operation. The BRT system is launched in a context of decreased financial resources, both in the public sector and in the private transportation sector, so Metrobus-Q’s business model establishes that operation must be self-financed through tariff collection. This forced corridor layout prioritizes streets with a high passenger demand in order to compensate for the low fares (which have been frozen for almost two decades). This measure, however, ended up working against private operators (Central Norte corridor case), which neglected maintenance work and decreased frequency and hours of service operation to absorb the growing differences between the techni-
The Metropolitan Scale

The approval of the Law for the Metropolitan District of Quito in 1993 granted the Municipality of the Metropolitan District the competence to plan mobility policies and manage transportation systems in the metropolitan territory, which were previously responsibility of the National Government. These policies are embodied in a Mobility Master Plan (PMM in Spanish) for the Metropolitan District of Quito that replaces the old Master Plan for Transportation and Roads (PMT in Spanish), which was the planning document that laid the foundations of the BRT system.

Although the PMM has a metropolitan vision of mobility, and the Municipality has the tools to manage all services that operate in the metropolitan territory, in practice the coverage of the BRT system and its feeder services is limited to what is known as the macro-centrality of Quito, which is the area that concentrates the largest amount of population and journeys. In this sense, the public transportation service in peripheral areas continues to be offered by a scarcely regulated system of traditional operators, which is not fare-integrated to the Metrobús-Q network. This means that users—generally low-income population—must pay the entire fare each time there is a transfer between both subsystems.

The Rules of Interaction between Actors

The relationship that has marked the development of Metrobús-Q, and that has largely defined its operation and business model, is the one established between the City Government and transportation companies, typified by a marked antagonism for over two decades. In retrospect, it is possible to identify three periods in the relationship between both actors:

- Distrust and exclusion
- Negotiation and incorporation
- Crisis and intervention

These periods do not necessarily occur sequentially; rather they are part of a cycle that has been repeated more than once throughout the history of the BRT system.

- Distrust and exclusion. As mentioned above, for the first corridor—Trolebús—operation was assigned to a municipal company, since, according to the authority, traditional entrepreneurs did not have the technical and financial capacity to manage a highly complex project and associated large investments. This resulted in violent protests by transporters, which included blocking the city center for a week. This crisis was solved to a large extent with the promise of the municipal government to incorporate private operators in the following stages of the BRT system.

- Negotiation and incorporation. As a way to mitigate negative political and social impacts produced by the modernization of public transportation, in the following two corridors, traditional operators were incorporated to the routes that were to be replaced. These small entrepreneurs, grouped around formally established consortia, were granted direct concession operating contracts. This fulfilled the originally established model of transfer of responsibilities from the public sector to private entrepreneurs.

- Crisis and intervention. Both BRT corridor operation experiences by private companies have suffered severe crises, marked by concessionaires’ inability to face financial and technical challenges demanded by the system. This has been triggered by internal causes of the companies, such as high fragmentation of consortium ownership, the lack of solid corporate governance structures, and the scarce capital available, and also by factors inherent to the system, such as the freezing of the fare for years without implementing financial mechanisms to cover the growing difference between the technical fare and the user fare. These problems seriously affected quality of service, which resulted in low vehicle maintenance and non-compliance with operating standards established in concession contracts. Faced with this situation, the municipal government had to intervene by removing concessions from the operators of the Ecovía corridor, transferring them to the EPMTQP, or establishing various support mechanisms to guarantee continuity of operation in the case of the Central Norte corridor. In the latter, the EPMTQP has provided part of the fleet due to the consortium’s inability to comply with the concession contract renewal requirements.

When reviewing the relationship mechanisms between government and transporters, we can point out that, beyond the intention of incorporating the private sector in the operation of the BRT system, the municipal government has not provided adequate financial and technical support to consolidate the companies made up of former operators. In this sense, concessionaires have been unduly burdened by excessive responsibilities without having the financial mechanisms that guarantee they can cover the real costs of the technical tariff. When the aid has arrived, it has been late, just as companies are on the verge of bankruptcy and the quality of service has deteriorated to an extreme.
Changes and Adaptations

Throughout its history, the Metrobús-Q system has undergone a series of adaptations with respect to its original concept. These adaptations have basically been of a financial and institutional nature.

In the first place, and as mentioned above, the municipal company created to operate the first corridor has greatly expanded its scope of responsibility. Thus, from being the simple operator of a corridor, it has become planner and manager of the network, progressively encompassing roles that were poorly taken on by concessionaires from the traditional public transportation system. Over 23 years, first the UOST and then the EPMTPQ have been the great lifesavers that have allowed to overcome the constant crises experienced by private operators and keep the network running. However, this concentration of roles in a public company originally created to operate one single corridor, coupled with the distrust of private operators, has slowed down the system's expansion, which has not added new lines or expanded existing ones in the last six years.

The organizational and financial weakness of private operators, combined with bad experiences in the operation of the Ecovía and Central Norte corridors, has led to the creation of public-private partnership mechanisms not considered in the original business model, pioneering in Latin America, such as the State-purchased buses to be operated by private companies under a leasing scheme. With this, transportation companies, which do not have sufficient capital or access to credit, are freed from the heavy investments required to purchase a new fleet. Under this system, vehicles can be purchased at a more convenient price, given the Government's ability to access loans from development banks with rates lower than those that could be obtained by small entrepreneurs who do not have sufficient capital or credit history, nor satisfactory guarantees for the banks.

Finally, a necessary modification was the implementation of subsidies for the operation, first from the national level and then from the municipal level, to cover the difference between the technical rate and the fare charged to the user. The currently existing subsidy has allowed the subsistence of the feeder services and the operators of the Central Norte corridor.
In this study, references to Buenos Aires include the Autonomous City of Buenos Aires (CABA), which is the country’s capital with a population of 2.9 million inhabitants. The CABA is a city of autonomous government, endowed with legislative and jurisdictional powers, which in turn is part of the Metropolitan Area of Buenos Aires (AMBA), which includes 34 partidos (municipalities) of the Province of Buenos Aires, totaling a population of 12.8 million inhabitants. AMBA’s public transportation network is comprised of three major subsystems: Metro (known as Subte), trains, and buses (also called colectivos). The Metro network is composed of 6 underground lines covering 53.4 kilometers. Additionally, there is a 7.4-kilometer tram service and two extensions called Premetro, which are also part of the network. The system works

<table>
<thead>
<tr>
<th>Population, city</th>
<th>2,890,151*</th>
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<tbody>
<tr>
<td>Population, metro area</td>
<td>12,801,365*</td>
</tr>
<tr>
<td>Motorized journeys (millions)</td>
<td>19.77 (2010)**</td>
</tr>
<tr>
<td>Modal split % public transportation</td>
<td>43%**</td>
</tr>
</tbody>
</table>

**Modal split public transportation**

- Bus: 71%
- Metro: 13%
- Train: 16%

<table>
<thead>
<tr>
<th>System name</th>
<th>Metrobus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily demand (BRT)</td>
<td>869,000 (2016)**</td>
</tr>
<tr>
<td>Operation bus system</td>
<td>Private operators</td>
</tr>
<tr>
<td>Fleet</td>
<td>9,633 buses</td>
</tr>
<tr>
<td>Term of concession for operation</td>
<td>N/A</td>
</tr>
<tr>
<td>Length of segregated lanes (kilometers)</td>
<td>62.5*</td>
</tr>
<tr>
<td>Fare (USD)</td>
<td>Min: 0.37 (9 Argentine pesos) Max: 0.44 (10.75 Argentine pesos)**</td>
</tr>
</tbody>
</table>
exclusively in the CABA, without entering the conurbated municipalities of the Province of Buenos Aires. It transports 303 million passengers annually. The network of suburban trains operates at the metropolitan level and is composed of 7 lines and 27 branches. In its 817 kilometers of roads, 358 million passengers move every year.

The busiest mode of transportation used in the AMBA is buses, which provide services of a metropolitan nature (that is, they cover the CABA and conurbated municipalities) in a network composed of 138 lines and with a fleet of approximately 10,000 vehicles. They cover 1,603 million trips a year.

Within this context, in 2011 was launched Metrobus, which is a BRT-type system of segregated lanes. This system, developed by the City Government, consists of 7 corridors and 59.7 kilometers of extension, according to the latest data compiled in May 2018. Unlike other closed BRT systems analyzed in this study (Bogota, Mexico City and Quito), Metrobus operates as a system of exclusive circulations that is open to several routes (59 in total). These lines can circulate in the whole extension of the corridors or in specific sections. Stations are open, usually equipped with multiple semi-low (40 centimeters) platforms that allow simultaneous boarding of two or more buses, which is always done on the right side. This open and flexible system enables 869,000 passengers to travel in the corridors every day, reducing travel time up to 30% compared to the prior situation.

Fare is collected inside the vehicles, and payment is made through a smart card (SUBE card) that is used in all components of the AMBA public transportation system, both whose responsibility is under the City Government (Metro network), as well as of the National Government (buses and trains). In June 2018 there will be tariff integration between all modes of the metropolitan network, and users who make one or more transfers in a two-hour period will receive a discount for each combination.

INSTITUTIONAL FRAMEWORK

Management of different modes of collective transportation in the AMBA depends on coverage of services. Thus, in the case of Metro, whose lines only cover CABA territory, planning, management and operation tasks are done by the local government. In the case of metropolitan buses and suburban trains, crossing all CABA territory and conurbated municipalities, responsibility of management rests with the National Government, which acts through the National Commission of Transportation Regulation (CNRT in Spanish). In the case of the bus system, the CNRT is the institution that grants concessions to operate different lines, sets operating standards, and controls the correct provision of services. The CNRT is also the body that channels subsidies granted to operate the system.

Although management and control of the operation are in the hands of the National Government, planning of line routes that circulate in CABA territory falls within the scope of the City Government, which is the holder of the right of way. This duplication of responsibilities allowed that bus lines routes could be redirected by the City Government to the Metro-bus corridor system without National Government participation in the planning of this system. Within the City Government, the entity in charge of implementing BRT infrastructure is the Special Projects Unit Massive Transportation Rapid Buses (UPETM-BR in Spanish). They are in charge of coordinating and implementing BRT corridors considered in the Massive Transportation Rapid Buses Plan for the City of Buenos Aires.

Collection and distribution of resources among different components of the system is undertaken by Nación Servicios, a dependent entity of state-owned Banco Nación. They also manage the SUBE card.

OPERATION

91 private companies which hold 12-year concession contracts operate the bus system. A company can operate two or more lines. Unlike other cities analyzed in this study (Mexico City, Bogota, Quito and Santiago), the modernization process of public transportation in Buenos Aires did not consider creating new concessionaires, since existing operators had an adequate organizational structure and a relatively modern fleet, offering a good quality service in a network of routes that covers the entire metropolitan territory. This network is practically the same established in the first half of last century, when service was offered by public companies that operated buses, trams and trolleys.

Most of these concessionary companies emerged in the 1950s and 1960s, when the National Government, which controlled most of the public transportation services in the capital, began to privatize different modes of the land transportation network. This process started in the 1950s with the transfer of the bus lines to the private sector, a reform that was further carried out in 1963 with the closure of the tram system, and in 1966 with the disappearance of the trolleybuses network. A large number of new entrepreneurs were former employees of the dismantled public services, who received concessions to operate buses as compensation for the closure of the former state operating companies. Over the years, operators with greater economic (and also political) power absorbed smaller ones, resulting in a sector formed by
large companies with their own capital that allows for large fleets of buses, providing they do not exceed 12 years old.

**FINANCING**

Infrastructure costs of the Metrobus network have been covered with the city's resources and through loans with development banks. In the case of La Matanza corridor, built outside the area of the CABA, financing came from the National Government as well as development banks.

Metrobus has a substantial subsidy for its operation granted by the National Government. It is calculated based on verified kilometers in each line, through information provided by GPS devices installed in the units. As of June 2018, the technical rate established as remuneration to operators amounts to 68.4 Argentine pesos (USD 3.75) for each kilometer traveled. The National Government contributes about 63% of the total; and the remaining 37% is covered with fee collection revenues. The Metro system receives a relatively similar subsidy percentage, with 61.3% of operating costs covered by the City Government.

**GOVERNANCE**

**Key Decisions**

There are two factors that determined the physical and operational model of the Metrobus system:

- The previous existence of a consolidated bus network, with metropolitan coverage, operated by large companies that have concession contracts. Additionally, these companies have fleets offering quality service far superior to that of traditional public transportation present in most Latin American cities.

- Second is the separation of institutional roles in the field of urban transportation, which limits the responsibilities of the City Government to road administration. This prevents interference in the design, management and control of the operation of the different bus services, a role that falls within the national scope.

Since Metrobus was launched at a time when the relations between City and National Government, of different parties, were very tense and lacking institutional coordination mechanisms, its implementation model was limited to those aspects that were of exclusive attribution of the local area. Hence, the system was structured based on three major concepts:

1. Corridors would be limited to infrastructure in order to increase circulation speeds of existing routes.

Metrobus does not consider creation of new operating companies, or change of fleet. Neither does it consider the creation of a new structure to manage the system, whose institutional and financial framework remained the same as before the implementation of the corridors. Under this highly pragmatic approach, the BRT system is considered as an improvement to the existing system, not a structural reform, as it happens in other cities analyzed in this study (Bogota, Mexico City and Quito).

2. The system would be flexible and open, allowing circulation of several lines along all or part of the corridors. Since the model does not require a change of fleet, it is the corridors that adapt to the existing buses, and not the other way around. This entails building of stations where passengers board on the right side, allowing buses to operate indistinctly in confined lanes and streets shared with other vehicles. It also allows for segregated roads permitting easy entry and exit of buses in intermediate sections.

3. The growth of the system would be incremental, corridor-by-corridor, without considerably altering the network of existing routes. To inaugurate the system, the corridor along Juan B. Justo Avenue was chosen, between the neighborhoods of Liniers and Palermo, considered low risk, since only two lines operate within it. Lessons learned in this project were applied to implementation of larger and more complex corridors, such as the 9 de Julio Avenue, in which 11 lines run along its 3 kilometers.

**The Metropolitan Scale**

The fact that planning, management and control of the land transportation systems are responsibility of the National Government, in addition to the fact that bus lines run practically the same routes as the old tram, trolleybus and bus services, which had a metropolitan character, has produced a system that covers the entire territory of the AMBA. However, the historical lack of coordination channels between Nation, Province and City has made it difficult to align investments, define priorities, and adopt policies and comprehensive mobility programs that consider all modes, whether public or private, that operate in the metropolitan territory. In fact, and as explained earlier, political disputes between the City and the National Governments, which until a few years ago were headed by different political groups, is largely responsible for the technical and operational scheme behind Metrobus corridors, originally carried out by the City Government without being inserted in a larger scale of metropolitan level.

The Metropolitan Transportation Agency was created in 2012 as a way to improve inter-institutional coordination of the transportation sector in the AMBA.
This Agency is a consultative organization with a representative of each of the administrative levels (Nation, Province and CABA) that intervene in the planning and implementation of transportation systems. Its objective is to align efforts to plan transportation policies and infrastructure improvements for roads, railways and subways. The Agency is in charge of monitoring correct compliance of the Metropolitan Transportation Plan, a five-year plan defining strategic guidelines and an action plan for the Metropolitan Area. All infrastructure projects in the urban transportation sector must be aligned with this plan. Although created in 2012, the Agency was recently institutionalized and executed in 2016, taking advantage of the fact that the three governments involved were from the same political group.

**Rules of Interaction between Actors**

The Metrobus system is largely a technical solution to the existing dispute between local and national government over control of the public transportation system in the CABA. At the beginning, the project promoted by the City Government did not have the backing of the National Government, which even came to forbid operators to circulate along the first BRT-type corridor. In response, the City Government, which controls the right to use roads, threatened to prohibit circulation of buses in the rest of the city. Faced with this situation, the National Government had to back down on its decision and allow circulation of different lines in the corridors built by the City Government.

This lack of communication and coordination changed drastically in 2015, when Mauricio Macri, who as Governor of the CABA (2007 - 2015) was the great promoter of Metrobus, took office as President of the Republic. This, added to the fact that the city and the province administrators were also from the same political group as the President, had three immediate effects:

- The National Government adopted construction of BRT systems as a policy to be applied in the rest of the country, and a specific unit was created within the Ministry of Transportation. The technical and operational model that the BRT would follow, promoted at central level, would be the same implemented in Metrobus. Adoption of this scheme is largely due to the fact that Macri appointed officials to the National Government who were in charge of the implementation of the first corridors in the CABA.

- BRT projects were promoted in the AMBA beyond the limits of the CABA. The first corridor located in the conurbated municipalities was La Matanza (16 km.), which opened in 2017. Although this was a project promoted and financed by the previous National Government, with the support of the World Bank, the arrival of Macri’s team meant the introduction of drastic changes in its layout and design, which were modified taking Metrobus as a model.

Regarding the relationship with the operators, sources interviewed, both within government and business, point out that it has been “free-flowing” throughout the existence of the Metrobus system. This is because the project did not affect their business model or their percentage share in the system. Nor did it force them to make new investments on fleet or equipment. In fact, in practice Metrobus benefited them, since it has significantly reduced travel times, which results in better control of fleet operation and savings in fuel consumption.

**Changes and Adaptations**

Being a rather “light” project, which does not include reformulation of the business model, nor creation of new institutions or new operating companies, the Metrobus system has undergone few changes or adaptations throughout its existence, beyond those related to routes and corridor designs. In this sense, the greatest changes occurred in La Matanza Metrobus project, the first one built outside the CABA radius and promoted by the National Government. In this case, the original project considered unification of operating companies that would circulate in the corridor, renewal of the fleet with articulated buses, and construction of closed stations with payment before boarding, in a scheme very similar to that of closed systems such as TransMilenio in Bogotá, Mexico City's Metrobús, and Metrobus-Q in Quito. When Mauricio Macri took office as President, the Ministry of Transportation made changes in the project, which was assimilated to the CABA corridors: the route was shortened, stations were open, and operation was left in hands of existing operators, who did not have to change their organizational structure or acquire new fleet.
COMPONENTS

Transantiago is the public transportation system that integrates both physically and fare-wise all the urban bus routes that operate in the capital of Chile, the Metro network, and a suburban rail service. This system, inaugurated in February 2007, serves a population of around 6.48 million inhabitants in a 680-km² area. Currently, an average of 5.2 million journeys are made in all modes of the system on working days, which represent 45.8% of motorized journeys in the city.

The backbone of Transantiago is the Metro network, which as of February 2018 has 6 lines, 118 kilometers in length and 118 stations (in the second half of 2018 a new line will be inaugurated, which will add 21.7 kilometers to the system). The urban rail network

<table>
<thead>
<tr>
<th>Population, city</th>
<th>5,428,000³⁵</th>
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<tbody>
<tr>
<td>Population, metro area</td>
<td>7,247,115⁴⁴</td>
</tr>
<tr>
<td>Motorized journeys (millions)</td>
<td>11.35 (2012)⁴⁷</td>
</tr>
<tr>
<td>Modal split % public transportation</td>
<td>45.8% (2012)⁴⁸</td>
</tr>
</tbody>
</table>
| Modal split public transportation | Bus: 52.4%  
Metro: 22.2%  
Bus-Metro: 25.4%⁴⁹ |
| System name                | Transantiago |
| Daily demand               | 5,200,000⁵⁰ |
| Operation bus system       | 7 private operators, both Chilean and foreign |
| Fleet                      | 6,646 buses⁵¹ |
| Term of concession for operation | 12 years |
| Length of segregated lanes (kilometers) | 219,4²⁷ |
| Fare (USD)                 | 1.11⁵³ |
also has 23 kilometers of the MetroTren suburban rail, which since 2017 is part of the integrated system. Regarding the bus subsystem, it is structured into seven zonal business units in which truck and feeder services operate. According to data from the Metropolitan Public Transportation Board (DTPM in Spanish), the total fleet of the system adds up to 6,646 buses, which operate in 378 services, covering 2,821 kilometers of roads.

The system has 72 km of segregated roads or corridors, 31 km of exclusive roads (streets where only public transport buses and taxis circulate in all its tracks at certain times), and 119 km of Only Bus lanes (located on the right side of the road, without physical separation of the others, intended for the exclusive use of buses 24 hours a day). As in São Paulo and Buenos Aires, segregated lanes function as open BRT corridors, in which many services circulate throughout the entire corridors or in specific parts of them.

The fare payment in all modes of the system is made with a contactless smart card (Bip! card). Fare integration allows up to two transfers in a two-hour period without an additional payment, or canceling a small difference if the connection is made with a higher fare system.

INSTITUTIONAL FRAMEWORK

In a highly centralized country such as Chile, planning and management of the system is responsibility of the national government through the Metropolitan Public Transportation Board (DTPM), under the Ministry of Transportation and Telecommunications (MTT). The DTPM has an Executive Secretariat headed by the Metropolitan Transportation Director, appointed by the President of the Republic; a Technical Secretariat in charge of the overall planning of the system; and an Advisory Board made up of civil society representatives that advise both Secretariats. The main roles of the Board are to propose the strategic guidelines that direct the implementation of the Urban Transportation Plan of the city of Santiago (PTUS in Spanish), and to coordinate the efforts of both public and private actors involved in the work of infrastructure provisioning, operation of the different modes, financing, and supplying of complementary services. In practice, most of its work is focused on the bus system, since both Metro S.A. as the State Railway Company, which operates the MetroTren Nos suburban rail, enjoy high degrees of autonomy.

Although the management of the system lies on the central government, the management of financial resources is decentralized on the Transantiago Financial Administrator (AFT in Spanish), whose functions are the administration, accounting and custody of system resources, and the distribution of remunerations to the different companies: the bus network, the Metro system and the suburban rail. The AFT is a private consortium composed by four banks plus an I.T. consultant and a credit administrator. In turn, Metro S.A. is the company responsible for the issuing of the payment card and the provision of the marketing network. Finally, the provision of validation and positioning systems and other technological services related to the control of the operation has been left in the hands of private companies, one for the bus system and another for the Metro network.

OPERATION

The operation of the Metro network is in hands of the state capital company Metro S.A., while the MetroTren suburban rail's responsibility lies on Tren Central, which is a subsidiary of the State Railway Company.

Regarding the bus subsystem, as of February 2018, it is operated by 7 private concessionaires—4 Chilean 2 Colombian and 1 French—that have 12-year concession contracts. Initially, there were 10 concessionaries, which were in charge of the operation of 5 trunk services and 10 zonal services. These companies, formally structured and capitalized, replaced the highly fragmented property scheme that was characteristic of the system prior to 2007, whose service was provided by small entrepreneurs (usually owners of a single vehicle) grouped in associations that had permits for the commercial exploitation of established routes based on intuitive demand analysis. Although Transantiago meant the arrival of new companies, alien to the old model, much of the operation remained in the hands of entrepreneurs from the traditional system, either grouped in new concessionaires, or in partnership with external capital. Those that managed to modernize and professionalize their operation, such as Buses Metropolitana or Buses Vule, have grown together with Transantiago. Those that did not make it left the market. This suggests that the introduction of the new system has served to transform the local industry.

This first concession scheme for the Transantiago operation was maintained until 2012, the year in which the structure of the trunk-fed system was changed by one based on 7 business units, each with a different operator. This scheme will be renewed during 2018, the year in which 4 business units whose concession contract expires will be called for tenders.

FINANCING

Transantiago was originally planned by the Ministry of Transport as a system whose operation would be financially self-sustaining, that is to say, its costs would be covered mainly with the income from the
collection of fares (other minor revenues would come from the fines executed and paid by the operators and the balance of expired payment cards). However, after a short time it was clear that this business model did not cover the real costs of the service provision, and that it was necessary to have subsidies from the national government to finance the increase in the required fleet (the system was calculated with an approximate fleet of 4,500 buses, much lower than what was actually needed), the costs of standardizing the discounted fare for students, and the decrease in income resulting from migration to other modes of transportation and the increase in the levels of evasion of the system, which in 2016 reached a historical record of 34%. In this way, at present the fares cover the 55% of total incomes of the system. The remaining 45% is provided by different subsidies, which reached USD$715 million in 2017. These income finances operational costs. Investments in infrastructure are financed by grants by the National Government.

Of the total system operational costs, around two thirds is used to pay bus operators, whose income is calculated according to two main concepts:

- Payment per transported and validated passenger (PPT), which is a value established in each contract, which constitutes 70% of the operator’s income.

- Payment per kilometer traveled (PK), which is averaged with 30% of the operator’s total remuneration. This is a transversal value for the 7 concessionaires.

The final amount of remuneration also depends on compliance with performance indicators; accumulated fines for non-compliance with these indicators can reach a maximum of 5% of income.

As for the payment to Metro S.A. as a transportation operator, it is calculated per transported and validated passenger according to the value established as a technical fare (real cost of transporting a passenger). Also, this company receives a payment as responsible for the supply of payments cards, for which it charges a commission for each validation of the cards. The total amounts received for this concept adds up to around 3% of total system expenses.

GOVERNANCE

Key Decisions

Transantiago has its origin in the 2000 Urban Transportation Plan of Santiago (PTUS), launched at the beginning of the government of Ricardo Lagos (2000 - 2006), the first leftist President after the end of Augusto Pinochet’s dictatorship in 1990. The PTUS promoted a large-scale global intervention as the only way to put an end to the high environmental, social and economic costs of the traditionally poorly regulated public transportation system, better known as the “yellow buses” (“Micros amarillas” in Spanish). Consistent with the policy of “growth with equity” promoted by the democratic center-left governments that exercised power in Chile between 1990 and 2010, the PTUS promotes an active role of the State in the implementation of urban transportation policies to correct the failures of the neoliberal model developed during the dictatorship of Augusto Pinochet (1973-1990), simultaneously seeking for a balance between market regulation and competition. In this way, regarding public urban transportation, the PTUS clearly establishes a series of key structural decisions:

- The public transportation system would integrate the bus and Metro network physically, operationally and fare-wise.

- The State, at national level, would be in charge of the planning and management of the system.

- The operation of the bus system would be in hands of formally structured and highly professionalized transportation companies, subject to concession contracts.

Although the PTUS did not explicitly establish it, the high priority given by President Lagos to the project meant that it largely ceased to be a transportation project to become a structural reform that would change the face of a city that aspired to position itself on the scene of the great capitals of the world. The idea of a “world-class transportation” led to the dismissal of the gradual change approach, followed by the other Latin American cities, and the election of radical implementation on a large scale that would leave no trace of the previous system. In practice, this would mean that the implementation of the entire system would be done in a single day, something unprecedented in the world in a city of this size.

From the business model point of view, the Transantiago project was outlined with two obligatory bases:

- Operation of the system should be self-financing, that is, the State was not going to provide subsidies, limiting its financial contribution to the provision of infrastructure.

- Implementation of the system should not result in a fare increase.

Since operating costs exceeded the projected revenues, it was decided to reduce the size of the fleet to the minimum necessary. Thus, Santiago went from having 8,500 circulating buses to less than 4,500. The
chaotic start-up, characterized by long waiting times in overcrowded bus stops and jam-packed buses, showed that the calculation was deeply wrong. This situation forced the rapid increase of the fleet and the creation of new routes, something not considered in the financial calculations of the operating companies. Finally, this led to the application of politically controversial subsidies that allowed the system to be sustainable. To get the National Congress to approve this subsidy to a local service, the Government had to propose a “mirrored subsidy”, available to all regions of the country. Thus, the other 14 Chilean regions combined would get the same amount of money approved to finance public transportation in Santiago. The amount of money that each region receives is calculated taking into account the size of its urban population.

The Metropolitan Scale

Transantiago covers the whole of the area known as Greater Santiago, which corresponds to the metropolitan area of the city, made up of the 37 communes (municipalities) of the province of Santiago plus the communes of Puente Alto and San Bernardo, which are located in the neighboring provinces of Cordillera and Maipo respectively. Both present physical continuity with the rest of the urban territory of the capital. Public transportation services of semi-rural communes that have a functional but not physical relationship with Greater Santiago continued to be served by intercity buses regulated by the MTT.

Being a highly centralized project, promoted directly by the President of the Republic and developed at central level by the MTT, participation of municipal governments and the regional government has been scarce, or rather non-existent.

The Rules of Interaction Between Actors

Interinstitutional relations within the government: the presidential leadership as an articulator of wills. In a highly centralized country like Chile, where municipal and State have limited attributions, territorial and mobility planning at the metropolitan level are reduced to intersectoral coordination among the different ministerial secretariats dependent on the central government. This work was taken on by the Urban Transportation Board (now DPTM), an entity dependent on the MTT, and the now extinct Committee of Ministers of Urban Transportation of the City of Santiago. In spite of being an emblematic project of the Ricardo Lagos’ administration, discrepancies were not absent within the government, mainly from ministries that did not share the initiative’s priority nature or did not have the time and resources to execute the whole of the works considered in the project (Transantiago started without most of the physical infrastructure works —confined lanes, modal transfer stations— considered in the project). These discrepancies often had to be resolved by President Lagos himself, who saw Transantiago as the great legacy of his government. However, this presidential leadership tended to disappear during the first government of Michelle Bachelet (2006-2010), who adopted a more horizontal decision-making scheme, which to a large extent resulted in a high degree of interinstitutional incoordination during the later stages of implementation of the project that triggered the chaotic inauguration of the system in February 2007.

Government — public transportation entrepreneurs’ relationship: from confrontation to negotiation. The transformation of the public transportation project aroused the immediate rejection of traditional public transportation operators, grouped in the Metropolitan Association of Passenger Transportation (AGMTP in Spanish), which considered Transantiago a direct threat to the source of income of its members. They had reasons to be fearful: the PTUS clearly spoke of the arrival of a new class of operators, highly professionalized and subject to operating rules established in operating contracts. As for both the government and the citizens, they did not disapprove the disappearance of the union of traditional public transportation drivers, which had a very bad image in public opinion. Faced with this situation, the strategy used by the businessmen gathered at the AGMTP was to boycott a first bidding of routes (the Metrobús system, a kind of previous stage of Transantiago), and to resort to public political actions. For its part, the government resorted to two lines of action: first, to attract dissenting AGMTP members who were willing to become formally structured companies and participate in the biddings of the system (a “divide and rule” approach that has been developed in places like Mexico City and Quito), and second, harshly punish (always within the framework of the rule of law) the actions exerted by traditional public transportation drivers. This last line of action reached its climax on the night of August 12, 2002, when the union leaders who were behind the massive blockade of streets that day were imprisoned. The broad public approval of this measure gave President Lagos the necessary political support to continue the process of structural transformation of the transportation sector.

While it is true that Transantiago could have made traditional public transportation operators disappear (something that a majority of the people would have welcomed), in an act of political pragmatism the government decided to incorporate them into the bidding of business units. For this, two packages of contracts were offered: the trunk services, whose requirements benefited highly capitalized companies, and the feeder services, whose requirements benefited those suppliers that already had rolling vehicles
in the streets of Santiago. Behind this decision there were social (thousands of people could not be left unemployed overnight), as well as technical reasons (the large scale of the project made it impossible to fully renew the operators in a very limited period of time). In this way, having the leaders in prison, more flexible conditions were negotiated to present themselves to the bidding for the operation (used buses could be presented, the rigorousness for clean technologies was lowered, and the initial capital required was reduced). Thus, traditional public transportation drivers were able to participate in the first bidding, in which they were awarded with about 40% of the concession.

Changes and Adaptations

Given the chaotic beginning of operations in 2007 and the critical financial situation in which Transantiago was involved, the national government was forced to make rapid changes in both the technical and the financial model of the system. This resulted in an arduous process of negotiation with all the participating actors, public and private, guided by an approach that the former Minister of Transportation and Telecommunications, René Cortázar, defined as “shock in the implementation, gradual solutions.”

In the first place, it was necessary to negotiate with the concessionaries, who at the time of the start-up of Transantiago did not comply with the minimum fleet required. Although the government could cancel the concessions, the negotiation path was chosen. This approach allowed changes in contract conditions, which were originally highly favorable for the private ones by assuring them 90% of the income, a way to attract operators who were dubious to participate in the new system. From then on, the relationship with businessmen was framed in a policy that Cortázar defined as carrot and stick, which punished those companies that showed major flaws in the operation by taking away the concession of their business unit, which was transferred to the operators with the best performance indexes. This policy has also allowed the continuous renegotiation of the terms of the contracts (17 since the start-up of the system) to balance government requirements with operators’ financial needs. In turn, an external mechanism for the resolution of disputes was created, the Committee of Experts, made up of representatives of different universities, whose duties include making recommendations to the government on the setting of fares and subsidies. This Committee and its role of a third party has proved to be a successful mechanism that provides technically independent points of view and guarantees impartiality to the private operators and government.

A similar negotiation policy has guided the relationship with the financial administrator of the system and complementary technology providers, whose services were not ready on the opening day of the system in February 2007. Instead of applying large fines or canceling contracts, which would have resulted in long and costly law suits and the impossibility of filling gaps in the medium term, the government opted for negotiation, setting realistic deadlines for the implementation of the various financial administration and control services, and, in the case of the provision of payment cards, assigning this task to the state company Metro S.A.

Regarding the financing of Transantiago, and faced with the refusal of the then right-wing opposition to approve a subsidy in Congress, during the first years the government had to resort to loans with the national and development banks to cover the financial deficit of the system. Only in 2009, and with its imminent arrival to the National Government, the right-wing opposition agreed the creation of a long-term subsidy with the government, to which other approvals have been added in later years to cover the increasing costs of the system due to route extensions, fleet increase, extension of the reduced student fare benefit, decrease of validations and increase of the evasion phenomenon.
The Metropolitan Region of São Paulo (RMSP) is an urban agglomeration of 39 municipalities that make up the State of São Paulo, which has a population of 21.4 million inhabitants. The Prefeitura (municipality) of São Paulo is the most important in the metropolitan area, concentrating 56.6% of the RMSP’s population.

The RMSP’s public transportation system is composed of a complex network of metropolitan and local services, through which over 16 million journeys are completed every day. Of these, 70% are carried out in buses, while the remaining 30% are made using Metro services and suburban trains. The Metro system is made up of a network of 89.8 kilometers and 6 lines, transporting 4.5 million passengers every day. In turn, the train service has a 7-line network that runs

| Population, city | 12,106,920 (2017) |
| Population, metro area | 21,391,624 (2017) |
| Motorized journeys (millions) | 29.7 |
| Modal split % public transportation | 54.3% |
| Modal split public transportation | Bus: 70.1%  
Metro: 18.0%  
Train: 11.9% |
| System name | Sistema de Transporte Coletivo |
| Daily demand (buses) | 12.5 million (Metro area)  
9.7 million (Municipality) |
| Operation bus system | Private operators |
| Fleet | 14,703 |
| Term of concession for operation | 10 years |
| Length of segregated lanes (kilometers) | 130 (Municipality of São Paulo)  
92 (State of São Paulo) |
| Fare (USD) | 1.07 (4 Brazilian Reais) |
273 kilometers, moving 2.7 million passengers daily.4

Regarding the bus system, it is divided into two types of services: those of an inter-municipal nature, which are managed by the State, and the services that each municipality operates within its administrative territory. In the inter-municipal case, operation is divided into 5 large service areas that include several municipalities. The municipality of São Paulo, due to its demographic importance and because it attracts many journeys, is considered a common area where buses of the 5 areas operate. The daily demand for inter-municipal services is 1.9 million passengers.5

Besides the metropolitan network, São Paulo municipality has its own transportation system that operates within its territory. It includes 8 concession areas and a neutral area. In each concession area there are two types of services: trunk (or structural) and local. The trunk subsystem is oriented to meet large passenger demands through lines that circulate in the city’s main avenues. It uses high capacity buses: bi-articulated, articulated and 12-meter vehicles. It also considers a fleet of 290 trolley buses. On the other hand, local services cover journeys to different city areas, where minibuses of smaller capacity are used.

The municipal system of São Paulo considers 12 BRT lines, which together total 130 kilometers of confined lanes. Of these corridors, 11 are open-type (like the ones of Buenos Aires and Santiago), that is, they allow circulation of different services that can run through each corridor or enter and exit in specific sections. Payment is completed inside buses, and passenger boarding is done both on the right and on the left. For this, the fleet that travels the trunk routes has buses with doors on both sides. The system also considers a closed type corridor, the Expresso Tiradentes, which runs along 12 kilometers of elevated viaduct. Only one operator uses this route, payment is before boarding, and boarding and descent is on the left side of the buses.

As for the RMSP there are also four BRT corridors, which add up to 92 kilometers of segregated roads. The model they mainly use is the same as in the municipality of São Paulo, that is, it is an open system in which different routes circulate, both on confined roads and on streets shared with other motorized modes. The exception is the ABD corridor, which has an extension of 33 kilometers and crosses 6 municipalities, including the capital of the RMSP. Trolleybuses circulate in it and its operation is responsibility of a sole concessionaire.

Payment in the municipal and inter-municipal services is done through a smart card, although there is also a cash collector inside the buses. Municipal services use the *Bilhete Único* card, which can also be used in the Metro and train network; however, fare integration is valid only when traveling in the municipal bus system. There is fare integration between the different inter-municipal services (buses, Metro and trains); in this case the BOM (*Bilhete Ônibus Metropolitano*) card is issued by the State Government through a private company, and works as a means of payment.

**INSTITUTIONAL FRAMEWORK**

At the metropolitan level, the Department of Transportation of the State of São Paulo is the agency in charge of planning, execution of infrastructure, management and control of the inter-municipal public transportation network. To do this, it acts through three public companies responsible for each of the systems that operate in the RMSP. Thus, planning, infrastructure construction, management and operation of the Metro network is in hands of the *Companhia do Metropolitano de São Paulo*, better known as Metrô, while for the train network these functions are appointed to the *Companhia Paulista de Trens Metropolitanos* (CPTM). In the case of the bus network, the agency responsible for this is the *Empresa Metropolitana de Transportaciones Urbanos de São Paulo* (EMTU), which plans, manages and controls land transportation services operated by private companies.

In the case of the municipality of São Paulo, planning, infrastructure construction, management, fare collection and control of the bus system is the responsibility of SPTrans, a public limited company in which the Municipality of São Paulo is the majority shareholder.

**OPERATION**

Of the five areas in which the bus operation in the RMSP is divided, four oversee formally structured private consortiums, which have 10-year concession contracts. The fifth area is assigned to 17 transportation companies of the traditional sector that operate through service permits. Apart from these five areas, there is a separate contract for the operation of the *Corredor Metropolitano ABD*, a BRT line that is in the hands of the private company Metra, which has a 20-year concession contract for service provision with trolleybuses.

In the case of the municipality of São Paulo, the city is divided into 8 concession areas plus a neutral area where services from all areas converge. In each of the areas there is a concessionaire for the structural system and one or two permit companies for the local system. Each of the operators has a 10-year concession contract that can be extended by another 5 years. Concessionaires of trunk services are large consortiums that originate in the traditional system, but unlike other documented cases (Bogota, Mexico...
City, Quito, for example), they were already formally structured as companies, had great financial capacity, and had a long experience operating large fleets. In the case of local services, companies are smaller, also from the traditional system. In many cases, they were operators of informal services that were institutionalized through cooperatives, which were granted a permit to operate local services in the same areas established for the structural system.

FINANCING

Infrastructure financing for public transportation (corridors, terminals, stations, modal transfer centers) in the RMSP and the municipality of São Paulo has been obtained basically through five mechanisms: State and City Governments resources, development banking credits, commercial bank credits, credits from the National Bank for Economic and Social Development (BNDES in Portuguese), which is a federal development bank linked to the Ministry of Development, Industry and Foreign Trade, and finally, resources from the Ministry of Cities. These last resources are channeled through the Transportation Infrastructure and Urban Mobility Program –Pró-Transporte. To access these funds, cities must have an Urban Mobility Plan (mandatory for cities with a population of over 20,000 inhabitants), whose strategies and projects must be aligned with the guidelines established in the National Urban Mobility Policy.

Regarding the operation of the municipal system, the SPTrans bus network has 3 sources of income: users, who through fare payment cover 48% of the operating costs; companies, which pay 10% by providing transportation cards to their employees; and other lower sources of income, such as advertising, fines and rents, which account for 2% of income. The remaining 40% of operating costs is covered by a subsidy granted by the municipal government. In the case of inter-municipal services managed by EMTU, revenues are the same as those of the municipal system, but without considering subsidies. This is possible because they are trunk services that are highly profitable due to high demand. However, in practice, user fares do not cover actual cost of operation, which has resulted in higher fares, poor fleet maintenance, and difficulties in meeting operating standards established in concession contracts.

GOVERNANCE

Key Decisions

Having a previous highly structured system, operated by large companies that provide a service of acceptable quality and regulated by concession contracts, the BRT corridor system of the municipality of São Paulo was proposed as an improvement to pre-existing conditions, but not as a structural reform of public transportation in the city. This led to three technical decisions that shaped its structure:

- Operators in the BRT corridors would be those that already had concession contracts for provision of trunk services. There would be no independent business model or exclusive corridor operators, as is the case of, for example, Bogota and Mexico City.

- It would consist of open corridors, such as those developed in Buenos Aires and Santiago, in which different lines operate, covering all or certain sections of the confined road, giving greater flexibility to the system. The only exception to this rule is Expresso Tiradentes, which circulates on an elevated viaduct of exclusive use.

- Joint work with the industry designing and manufacturing buses to facilitate their use in both confined corridors and shared routes. Thus, models with doors on both sides were incorporated into the fleet, allowing the boarding and descent on the left side in the BRT corridors, and on the right in the rest of the streets. In turn, the 23-meter "super-articulated" model was developed, with a 220-passenger capacity. This bus is slightly smaller than existing bi-articulated models, but having a single joint increases maneuverability, allowing use outside BRT-type corridors.

In the inter-municipal services managed by the EMTU, open corridors, such as those of the municipality of São Paulo, would be combined with closed systems, whose service is in hands of a single operator whose units only circulate along that corridor. Such is the case of the ADB corridor, which is operated with trolley buses by private company Metra.

The Metropolitan Scale

There are no formally established metropolitan coordination agencies in the RSMP; nevertheless, the existence of inter-municipal networks (Metro, trains and buses managed by EMTU) allows, on the one hand, to have a great territorial coverage in systems with integrated tariff, and on the other hand, align projects and investments of different municipalities. Although each municipality with a population of more than 20,000 inhabitants has its own mobility plan, which must be aligned with the National Urban Mobility Plan guidelines, the existence of an inter-municipal network greatly impacts transportation systems and infrastructure projects developed by each municipality. Thus, for example, the network of bus system routes managed at the municipal level by SPTrans is largely structured to have a more efficient integration with EMTU’s inter-municipal services.
The Rules of Interaction between Actors

Interaction between the three levels of government is largely regulated by the Urban Mobility Law, approved in 2012, which sets the general terms of the National Urban Mobility Policy. It establishes that it is the Federal Government’s responsibility to provide technical and financial assistance to the states and municipalities, and to promote implementation of public transportation projects of large and medium capacity. In turn, it is the states’ role to provide, directly or by district or joint administration, inter-municipal public transportation services of an urban nature. This attribution allows planning of metropolitan trunk services, which in turn must be aligned with the sustainable mobility plans that each municipality with a population greater than 20 thousand inhabitants must elaborate in order to receive technical and economic support from the Brazilian Federation. In this sense, financial control exercised by the Federal Government makes it possible to align policies and projects and direct resources.

Although there are no formal coordination mechanisms or agencies between states and municipalities, the scheme of responsibilities established in the Law has resulted in a network that, in practice, adequately satisfies travel needs both within the São Paulo municipality and between different municipalities of the RMSP.

As for the relationship with operators, both the State and municipality of São Paulo have developed a policy aimed at including traditional transportation entrepreneurs, either through public tenders in which large consortiums of former operators receive priority treatment for the allocation of structural systems (as in Bogota), or through regularization mechanisms for informal services through cooperatives, to which operation of local services is assigned. In the case of the latter, it was small entrepreneurs who requested their formal incorporation into the SPTrans system, when realizing that the profits from their services were threatened by the continued expansion of structural services. These small entrepreneurs, by offering more reliable and higher quality services, were increasing the market share of users. This process of business transformation driven from the bottom up is unique among cases analyzed in this study.

Changes and Adaptations

The process of structuring the integrated system and construction of BRT corridors in the municipality of São Paulo and RMSP has not undergone major changes and adaptations, beyond the typical modifications in design and layout of infrastructure projects. This has been largely due to the mandatory nature of the sustainable mobility plans required by the National Sustainable Urban Mobility Program, which are a comprehensive part of urban planning instruments.
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