The costs of inclusion: Incorporating existing bus operators into Mexico City's emerging bus rapid transit system

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Abstract
Implementing bus rapid transit (BRT) in systems characterized by a strong presence of weakly regulated private bus operators can be categorized along a "force-foster" continuum, representing the range in effort to replace incumbents. We examine the fostering end of the spectrum in terms of the consequences of incorporating, rather than replacing, existing operators. While the immediate effect enhances the political feasibility of implementation, what are the longer-term consequences on project sustainability? We hypothesize that the short-term political gain from involving existing bus operators may a) negatively affect performance, b) reduce leverage to regulate the emerging system, c) increase operating costs, and/or d) constrain the ability to expand or integrate the system in the future. We test our hypothesis by examining four BRT corridors implemented in Mexico City between 2005 and 2012. Our findings confirm BRT's potential to transition away from weakly regulated, privatized and atomized systems and empower the state as planner and regulator. We also find longer-term challenges, particularly in the form of non-explicit subsidies to the system and related expectations for subsequent negotiations. The cases suggest that, when managed without a healthy dose of conflict, compromises can be costly. Cities pursuing a "fostering" approach to public transport industry transition should take note.

Introduction

Implementing a Bus Rapid Transit (BRT) system over a weakly regulated, privatized, atomized bus-based public transport system faces the fundamental challenge of dealing with predictable opposition by existing operators. These operators will resist for a variety of reasons, "including mistrust of government, limited understanding of the economic benefits of such agreement and strong emotional ties to their existing business" (Lopez Dodero et al. 2011). Even when project advocates promise that incumbent operators can be better off financially after the implementation of BRT, incumbents may have second thoughts, as "the informal option may actually offer a measure of dignity and autonomy that the formal job does not" (Maloney 2004; 1173).

Attentive planners and politicians increasingly recognize that failing to address the concerns of incumbent operators can jeopardize BRT implementation. In many cases, their participation is mandatory, as "without them, risk is too high and expecting foreign investors is not realistic" (Ardila 2004:263). This realization has led to calls by experts and advocates for some form of compromise. The *BRT Planning Guide*, for example, perhaps the most comprehensive, practice-oriented manual in the field, encourages inclusiveness: "normally, for political purposes, it is advisable to involve at least some of the pre-existing bus and paratransit operators with routes in the corridor into the new system" (ITDP 2007:554).

Such advice is consistent with what Altshuler and Luberoff (2003) define as the "do no harm" paradigm, in which avoidance or full mitigation of disruptions can enhance project feasibility and sustainability. The intuition, increasingly discussed in the planning literature, is that public sector planners improve their chances of success by first anticipating "the types of resistance their policies are likely to evoke" and then strategizing "how such resistance can be minimized, bypassed, or best turned into supporting forces" (Sanyal 2005; 236).

However, a rationale of pragmatic compromise requires careful scrutiny; its application is not costless, and may imply important, but hidden, tradeoffs. Dario Hidalgo, Director of Research and Practice for one of the leading international organizations promoting BRT, extracts the following lesson from a review of 13 case studies of BRT implementation in Latin America and Asia (Hidalgo and Carrigan 2010): "The most important barrier to overcome is the inclusion of transportation operators. *Without their participation, there is no re-organization, but they increment the costs of the project and make the implementation process much more difficult, with negative consequences for the users"* (personal communication by email, emphasis added).

In this paper, we explore some of the consequences of incorporating existing bus operators (hereafter, incumbents) within a new BRT corridor. While this strategy enhances the political feasibility of implementation, and may even be consistent with socially desirable goals, we look at its longer-term effect on system sustainability. We hypothesize that compromises designed to gain the support of incumbent operators may a) constrain the ability to expand or integrate the system in the future, b) reduce leverage to regulate the emerging system, c) significantly increase operational costs and/or d) negatively affect performance. We test these hypotheses by examining the implementation experience of *Metrobus*, the BRT system currently operating in Mexico City, drawing from official documents (financial reports, operator charters, concession titles, etc) and interviews with key stakeholders (public officials, incumbent bus and BRT operators, consultants, etc).

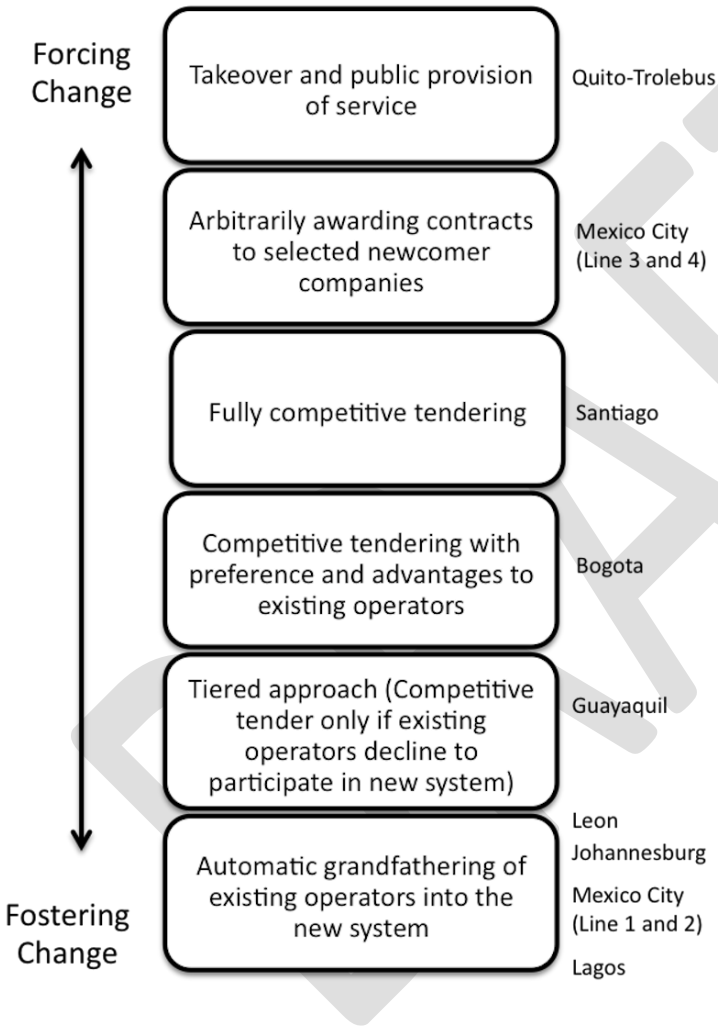
The following section introduces the concept of "force-foster" continuum and briefly reviews the case study literature on BRT implementation. The third section introduces the Mexico City context, leading up to its BRT implementation. The fourth section describes the implementation of the initial Mexico City BRT corridor, which the fifth section then analyzes, categorizing several "original sins" committed. The sixth section describes how these actions affected subsequent system expansions. A final section concludes.

The international experience

A review of the case study literature reveals a wide spectrum of strategies used to transition from a private, atomized and weakly regulated bus transport system to BRT. Drawing from concepts

from the labor negotiation literature (Walton et al, 1994), we categorize such options along a force-foster change continuum (Fig. 1). At the "forcing" extreme, BRT is conceived as a vehicle to replace existing operators with public or private newcomers. At the "fostering" end, BRT is conceived as a catalyst to transition existing operators into more formal, accountable and efficient organizations, working under new rules.

Fig. 1 Implementation strategies to transition a pre-existing bus industry into BRT (with international cases identified along the continuum)



The short-term rationale to employ a relatively more "forcing" or "fostering" strategy seems clear. More forceful interventions attempt to break clean from the status quo, which may seem necessary to meet the operational requirements of BRT at a reasonable price. Predictably, forcing strategies tend to trigger standoffs. For example, operators attempting to derail a BRT project paralysed Quito for several days in 1996, and did not back off until the military threatened to intervene (Chauvin 2007; Chrustie et al. 2010). Similarly, the incarceration of operators protesting bus reform efforts in Santiago, Chile in 2002 represented a turning point that

cleared the way for an international competitive tender of BRT trunk and feeder routes in 2005.[1] In both cities, BRT was framed explicitly as a way to reduce the power of the bus operator lobby, "possibly one of the main obstacles to further reform" (Estache and Gomez Lobo 2005; 142).

In contrast, fostering strategies are associated with lower initial conflict with incumbents. While the cases of Leon, Lagos, Johannesburg, Guayaquil, and Mexico City (as we shall see) involved protracted negotiations, discussions centered on how to share and distribute the gains and costs, rather than on whether or not to implement BRT, per se (Kete et al. 2005; Hook 2005; Hidalgo 2006; von Buchwald 2007; Ardila 2008; Schalekamp et al. 2009; McCaul and Ntuli 2012). In these cases, the transition of incumbent operators into the BRT is considered as a standalone measure of success (e.g. Gauthier and Weinstock 2010). Nonetheless, these case studies provide little information about the costs and longer-term consequences of relying on fostering strategies[2].

What, exactly, do implementers cede to operators in the name of compromise? How much do these compromises cost and who pays the bill? To begin to answer these questions, we now turn to Mexico City.

Mexico City: The Pre-BRT Era[3]

In 1981, the Mayor of Mexico City revoked all existing concessions previously granted to private operators of bus services, and replaced them with a publicly owned company named *Autotransportes Urbanos de Pasajeros "Ruta 100."* Designed to weaken the politically powerful lobby of private operators (the *Alianza de Camioneros*) and to reorganize and rationalize bus service supply, this led to what some call the "golden age" of public transport in Mexico City (Legorreta, 2004). Briefly, the Mexico City government controlled all public transport in the city: subway, electric trams, and a fleet of 7,000 buses. For the first time, it could organize the system so that each mode would complement, rather than compete against, the others.

Despite its promise, government operation of *Ruta 100* became problematic. The level of public subsidy needed to maintain adequate levels of service stressed city coffers, while the relationship between the government and the company's 12,000-member union became conflictive. Service deteriorated and informal operators owning and operating smaller vehicles without permits filled the gaps. City authorities had political and financial reasons to welcome the emergence of these small-scale informal entrepreneurs, who often owned only one or two minibuses each. First, these operators reduced the threat posed by the militant union of *Ruta 100* workers, which

[1] Hensher observed that this competitive tender appeared to be designed "to remove such operators and replace them by a few large operators, preferably from offshore." (Hensher 2007; 468)

[2] While mostly anecdotal, evidence about the negative consequences of compromise is beginning to accumulate. In the "Transforming Transportation" conference, held January 27, 2011 at the World Bank Headquarters in Washington, DC, several presenters discussed the issue. Walter Hook, describing the implementation of Rea Vaya, Johannesburg's BRT, asserted that the locally powerful mini-taxi association initially blockaded the project, resulting in a political choice to abandon a competitive tender "for a negotiated settlement with affected operators." According to Hook, the "nonobjective competitive tender drove up operating costs by at least 30-40% and undermined the transition timetable by years." Similarly, Colin Brader reviewed BRT implementation strategies for the cities of Lagos, Jakarta and Johannesburg, warning that, while compromise with existing operators was required to achieve implementation, it was not costless, and "should only be accepted if its impact is known and not prejudicial."

[3] For a longer history of Mexico City's public transport development refer to Davis (1994) and Islas (2000).

became particularly apparent after a strike held in 1989. Second, small-scale operators provided a much-needed public transport alternative, without demanding funds from the city budget. As *Ruta 100* continued to face significant problems, city authorities began "tolerating" informal operators, awarding them with individual concessions. Soon, the low capacity minibuses favored by these operators replaced the larger *Ruta 100* buses as the dominant transportation mode in the city (increasing their share of total motorized trips from an estimated 6% in 1986 to 59% in 1998; SETRAVI, 1999). While politically and financially convenient, the outcome increased congestion, pollution and accident rates, and significantly weakened the government's capacity to plan and regulate the city's public transportation service.

In 1995, the troubled *Ruta 100* was formally liquidated, and reformers in the Mexico City government drafted a master plan to reorganize all bus services in the city.[4] *Ruta 100* would be replaced by 10 companies, which would hold the only bus operating permits in the City. The City would own one, *Red de Transporte de Pasajeros* (RTP), serving unprofitable routes and lower income communities. The remaining nine slots were to be awarded to private operators through competitive tendering. These companies, presumedly highly capitalized, professional, and efficient, were expected to out-compete the ubiquitous small-scale operators.

This plan failed to entice private companies into Mexico City's public transport market. According to participating government officials, the strongest bidders withdrew after the government refused to guarantee protection from informal competitors. The new public company (RTP) was launched, and two of the service slots considered in the plan were awarded, without tender, to companies owned by former *Ruta 100* workers (as part of the liquidation negotiations). The rest of the plan was abandoned. In the wake of this experience, and perhaps as a result of the 1997 election that brought a left-leaning party into City government, less forceful strategies became preferred. As one example, in 2001 authorities initiated a vehicle substitution program, consisting of a subsidy of Mex$100,000 pesos (roughly US$10,000 at the then prevailing exchange rate) to small scale operators willing to purchase a new bus and scrap their old units.

Nonetheless, conciliation towards the small-scale bus operators appeared to be authorities' preferred approach; each attempt to improve service became a protracted negotiation with the leaders of bus operator organizations. By the early 2000s, authorities in Mexico City had to deal with 106 independent organizations representing individual owners of 22,850 minibuses, 2,271 buses and 3,094 vans. In contrast, the government-run RTP operated 1,400 buses (Transconsult, 2003). Because of the private operators' growing political power and the lack of feasible alternatives, the government lost much of its regulatory control over the system.

The city transportation authority in charge of overseeing the system (SETRAVI) became more occupied by mediating constant conflicts between bus operator organizations (*"rutas")* rather than system planning. According to a current government official, the role of SETRAVI "became 90% political and 10% technical," as ad hoc negotiations with *ruta* leaders emerged as the means for determining and enforcing service standards. The bus fare was regulated and kept

[4] This section is based on conversations with Angel Molinero (transportation consultant and former Planning Director in the Secretary of Transport, Mexico City [SETRAVI]) and with Luis Ruiz (former Secretary of Transportation of Mexico City).

low, but frequencies, stops, and route alignments typically resulted from agreements among the *rutas* and SETRAVI officials.[5]

Reformers within Mexico City's bureaucracy increasingly recognized the insufficiency of policies such as the vehicle substitution program to amelerioate deregulation's negative consequences (see SETRAVI, 2004c; 31). Some concluded that "fostering" reform strategies needed to go further, enticing operators to fundamentally change their business model.

Shaping an inclusionary BRT

In 2002, Claudia Sheimbaum, the Minister of Environmental Affairs of Mexico City, secured seed funding from the World Bank and the Shell Foundation to evaluate air quality improvement interventions. BRT was an interesting possibility, given Bogota's recent success with *Transmilenio* (e.g., Ardila, 2004). Such a project would improve bus operations and reduce the number of small, older vehicles, substituting them with newer, cleaner, higher capacity units. Implementation, however, would require transforming the existing bus service structure.

Mayor Andrés Manuel López Obrador (elected 2000) was skeptical of BRT's political feasibility and did not consider it a priority. Still, as the project did not initially require much public funding, he agreed to form an exploratory committee chaired by Sheimbaum. During most of 2003, before engaging incumbent operators with the idea, the committee studied legal and institutional options for the new service, prepared a financial model and business case, and evaluated possible pilot corridors.

The committee settled on the creation of a new public agency, *Metrobus*, to be charged with planning and regulating BRT service, without owning or operating buses directly. SETRAVI would grant the necessary permits, with *Metrobus* responsible for day-to-day governance, in a model drawing heavily from *Transmilenio*. Bus operators, contracted by *Metrobus*, would be paid a fixed amount per serviced kilometer, with fares collected by a third party and deposited into a trust fund, which would distribute revenues according to a fixed pecking order: (1) trust manager, (2) fare collection services, (3) bus loan payments, (4) station maintenance and services, (5) operator companies serving the BRT corridor, (6) the regulatory agency (*Metrobus*), (7) feeder bus routes and (8) contingency and reserve funds. The BRT operating system was expected to be self-sustaining, not requiring government subsidies.

Consultants hired by the exploratory committee insisted BRT operators be selected through a competitive tendering process, preferably international. As explained in their reports, "since the new concessions should be awarded through a competitive tendering process… we can't guarantee that every incumbent operator will continue to do so after implementation" (Transconsult, 2003:130). According to Claudia Sheimbaum, however, a competitive tendering process "was never a possibility, because it implied significant social, legal, and political problems."[6] Adriana Lobo, a key player then working as a consultant for the project, later

[5] Typical *ruta* leaders act as useful intermediaries. On the one hand, they help authorities govern the system, serving as a point of contact and an enforcement arm. On the other hand, they "fix" problems on behalf of their members. While instrumental for both sides, these *ruta* leaders have clear incentives to create problems that later need to be solved – by them, naturally.

[6] This position was likely influenced by the fact that public transportation reforms attempted previously in other Mexican cities without the participation of pre-existing operators had failed. The most notable example was Puebla, where BRT corridor infrastructure (stations and a transfer station) was built by the government but never used as designed. In contrast, companies

justified this position: “Government officials knew that if they attempted a tendering process, we would probably end up with nothing.”

A forceful transition strategy would have posed social problems. Since the demise of *Ruta 100*, minibuses provided ubiquitous services, at reasonable prices, with no public subsidy,[7] while providing livelihood for thousands. How could a government of the political left justify imposing a system that would concentrate rather than redistribute wealth? How would it deal with the thousands of people likely to be affected, particularly after “tolerating” them for so long?

A potential legal problem also existed. Most individual incumbent operators had concession titles, and their organizations held government authorizations to operate their current routes. Tendering implied (a) voiding the current permits and authorizations, (b) creating a new legal framework for issuing new concessions, (c) conducting the actual tendering process and (d) defending the winner. This provided too many opportunities for the project to become engulfed in protracted legal battles against incumbent operators holding both formal and informal property rights over their current routes.[8]

Finally, a forceful strategy posed a political problem. As Mexico became more democratic with more contested elections, bus operator organizations grew more independent and powerful relative to city governments. Their support, quite important for electioneering, led to political alliances hard to reconcile with forceful reforms. Beyond electoral calculation, city governance was at stake. As a key official at *Metrobus* confided to us: “If at any time, we chose a non-negotiated non-concerted intervention, the city would be immediately paralyzed. Bus operators form quite a powerful guild, able to inflict severe economic and political damage to the City.”

Several experts advising on the project reflected that these social, legal and political constraints “forced a trade-off between political expediency/feasibility and economic efficiency of the new system” (Kete et al. 2005). In fact, planners crafted the project explicitly to minimize conflict with incumbent operators: project technical specifications and financial models were continuously adjusted to ensure that participation in the BRT would not entail financial losses for individual operators.

A Transition Plan

To participate in the BRT system, incumbent operators in the selected corridor would agree to the cancellation of their individual concession titles and route authorizations. With support of government advisors, these operators would join to create a new firm, receiving stock distributed according to their number of buses. The new firm would acquire a loan to purchase new buses suited for BRT operations, providing a 20% downpayment of the cost. The government would

created by pre-existing operators successfully managed the only BRT system operating in Mexico at the time, in Leon Guanajuato.

[7] This does not mean that service quality was good, or that operators were popular. Martín Mejía, the SETRAVI officer in charge of negotiating with bus operators put it quite clearly: “Citizens in general applaud attempts to eradicate the minibus. There are polls showing that the most feared people in Mexico City are policemen, politicians and minibus operators.”

[8] One transport operator recalled discussing his options with officials implementing the BRT: “Look, if you want to displace us you will face an *amparo* (lawsuit), and after that *amparo* you will face a second *amparo*, and we will go all the way legally. What’s going to happen? The guild will put the break on your proyect for three years, exactly the time your boss, the Mayor, has left to show off how great he is.”

non-competitively grant the new firm a single concession title to operate BRT services in that corridor.

This was essentially a swap, with incumbents trading their existing individual concessions for a single new concession awarded to a firm owned by the same set of individuals. An official who worked on the design explained the premise: "Anyone with a bus concession in the corridor should have the right to be a part of the emerging system." For unconvinced operators, SETRAVI would offer relocation to a similar route elsewhere in the city, and/or other types of compensation, such as taxi medallions.

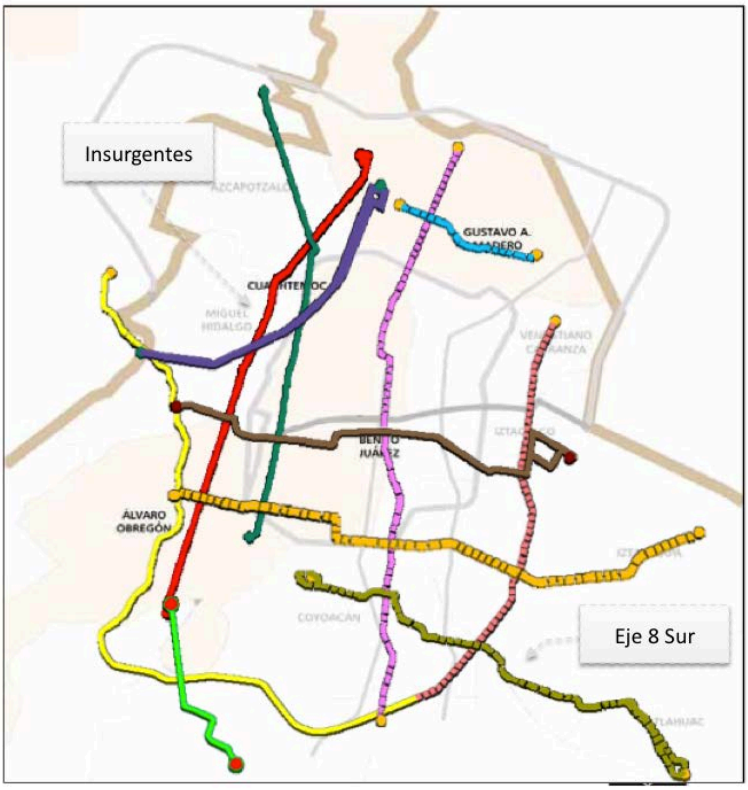
To finance this transition, incumbent operators would participate in the vehicle substitution program (with the old vehicles scrapped, reducing the city's total vehicle fleet), pooling the Mex$100,000 subsidy per scrapped vehicle toward the 20% down payment to the bus manufacturer. Each stockholder would contribute the difference between the pooled scrappage funding and the 20% vehicle downpayment. The remaining 80% of the new bus investment would be guaranteed by, and paid with, future fare revenues. The rest of the required infrastructure, such as stations and terminals, would be built and formally owned by the government.

Once operating, the new firm would be paid a price per kilometer sufficient to cover operating costs plus a monthly stipend to each partner, equaling their previous earnings in that particular corridor. Essentially, all stockholders would receive a payment, informally treated as a "fixed cost," independent of the firm's profitability.

The Mayor agreed to this framework and an incremental implementation strategy, building one corridor at a time, and leaving the rest of the system untouched. City finances dictated this strategy, as did the need to limit implementation complexities and conflict. SETRAVI had previously identified 33 "strategic corridors"[9] and the planning team narrowed the list to 10 technically suited for BRT (Fig. 3). But where should *Metrobus* begin?

[9] In the *Programa Integral de Transporte y Vialidad* (PITV) 2001-2006, published by SETRAVI.

Fig. 2 Corridors suited for BRT intervention



(Source: Metrobus, Informe Anual de Actividades, 2006. Mexico)

Selecting the first BRT corridor

The exploratory committee arrived at two options for the inaugural line: (a) *Eje 8 Sur*, running east-west on the southeastern fringe of the City, or (b) *Avenida de los Insurgentes*, the City's main north-south axis (see Fig. 3). *Eje 8 Sur* promised much higher passenger demand than *Insurgentes* (576,586 vs 250,900 daily passengers), and reached an area grossly underserved by the subway system. However, choosing a high-visibility corridor was politically important for the Mayor – on that criterion *Avenida de los Insurgentes* was unbeatable. A financial and a political consideration swayed the Mayor towards *Insurgentes*.

Financially, many more public transport vehicles operated on *Eje 8 Sur* than on *Insurgentes* (2,500 vs 352). Since implementation entailed integrating as many incumbent operators as possible into the new system, *Eje 8 Sur* would have required more money and/or lower reimbursement per operator than *Insurgentes.* A member of the planning team confided that *Insurgentes* was seen as "the goose with the golden eggs," with characteristics allowing "the City to practically buy [existing operators'] collaboration."

Politically, negotiations for *Eje 8* would be complex, with eight feuding *ruta* organizations operating bus services on this corridor. In contrast, only two organizations serviced *Insurgentes*, one of which was the publicly owned RTP, meaning only one private group of operators needed to be convinced to move forward.

The Mayor decided to prioritize *Insurgentes*, as it promised higher revenues for affected operators, less complicated negotiations, and fewer buses substituted by BRT.

Recruiting operators for Metrobus Line 1

As mentioned, the publicly owned RTP operated on *Avenida de los Insurgentes* together with *Ruta 2*, one of the largest bus operator organizations in Mexico City.[10] For several months in 2003, government officials held closed talks with the leaders of the latter group. *Ruta 2* leaders responded with skepticism, as they were accustomed to government plans failing to materialize. As rumors of the BRT grew rampant, however, a dissident group of *Ruta 2* engaged the government directly. Planners offered information about the project, assuaging fears of displacement, and eventually convincing them to push for the project. This group, led by Jesus Padilla, ousted the existing leadership and was critical in clarifying concerns about and galvanizing support for BRT within his organization.[11]

According to public officials from SETRAVI who engaged *Ruta 2* members during this critical time, operators had two major concerns. First, they were worried about losing their individual concessions, an asset worth much more in the informal market than their 9-15 year old buses.[12] Second, operators worried about losing cash liquidity, forcing them to rely on someone else to put money in their pockets.

SETRAVI focused on mitigating these concerns. The basic premise of the negotiation was that incumbent operators would earn at least the same amount of money by participating in the BRT; yet, determining pre-BRT earnings implied significant haggling. Many operators overestimated their net income, ignoring unpaid taxes, non-existing insurance policies, high maintenance expenses, frequent bribes, and their own salaries as drivers and mechanics. Intense discussions also revolved around whom, exactly, held the 262 *Ruta 2* concessions on *Insurgentes*. Since the law prohibited any single person from holding more than five individual concessions, many operators worked with false concession titles or titles registered under different names. Eventually 180 individuals with rights over the corridor were identified. Operators agreed that their profits in the corridor averaged $15,000 pesos/month per bus.

In October 2004, a majority of *Ruta 2* members holding bus concessions on the corridor (representing 68% of the buses) joined to create *Corredor Insurgentes* (CISA). Operators that did not join CISA may have sold the rights to their shares to other members of *Ruta 2*, or joined later. According to official records, 180 of 262 vehicles were scrapped under the substitution program.[13] In March 2005 the Mexico City government awarded CISA a new concession, without competitive tender, to operate the *Insurgentes* BRT corridor. In exchange, the City

[10] *Ruta 2* operated (and continues to operate) services throughout the City. Only 11% of its 2300 members were active on *Insurgentes*, but the fate of this corridor was critical for the organization as a whole as it generated 30% of the organization's total revenues.

[11] Political infighting within *Ruta 2* was not necessarily spontaneous. An official suggested that when a leader resists a key government project, such as this one, SETRAVI strategically "throws its support behind a dissident leader, empowering him. In contrast, doors are closed to enemies of the government, weakening their ability to solve problems on behalf of members. Before long, their leadership deteriorates." Notably, months after the *Insurgentes* experience, Jesus Padilla was elected leader, not only of the new BRT operating company, but also of all of *Ruta 2*.

[12] The approximate market value of bus concessions with authorization to operate on *Insurgentes* was Mex$600,000.

[13] Based on official records accessed August 2011 at the *Fondo de Promocion para el Financiamiento del Transporte Público*, 180 scrappage subsidy payments were paid for buses previously operating on *Insurgentes*.

government suffered no militant opposition from existing bus operators.[14] The first BRT corridor in Mexico City began operations in June 2005, days before the Mayor left office to run for president.

"Original Sins": Politics and the Price of BRT Inclusion

Beyond the location of the first corridor, several additional key elements of the project were politically decided, or adjusted, to mitigate the concerns of existing operators on *Insurgentes*. Each had profound financial effect and became an implicit baseline in future BRT corridor negotiations. We characterize these as Metrobus' "original sins."

a) The number of new buses

The planning team debated intensely and extensively about the number of new buses required on *Insurgentes*. The dispute over the range, from 65 to 120 vehicles, had to do with variations in the estimated speed of BRT in a corridor with no passing lanes, no overpasses and a large number of streetlights. In the end, the number of buses was determined not technically, but based on negotiations with pre-existing operators, who were concerned that more buses implied higher capital contributions from each operator.

Each new BRT vehicle cost Mex$3.5 million, requiring a Mex$700,000 up-front investment by CISA's stockholders to cover the 20% downpayment. Since 180 *Ruta 2* buses had been scrapped, CISA had Mex$18 million available from the vehicle substitution program, enough to cover 25 buses without requiring additional investment from its shareholders. However, an adequate fleet size would require CISA's stockholders to augment their capital contribution to the company, which many resisted. In the end, each agreed to contribute Mex$70,000 beyond the Mex$100,000 from the vehicle scrappage payments, in total enough to purchase CISA's 60 buses – an effective substitution rate for the private operators' fleet of approximately 4.4 minibuses per new BRT vehicle. CISA's fleet, combined with 20 buses purchased by the government to be operated by RTP (see following point) determined the original 80 buses on *Insurgentes*.

This number immediately proved insufficient to service demand on the corridor, leading to a hurried purchase of 17 new buses (10 by the government, 7 by CISA). *Ex-ante* financial plans were, thus, quickly obsolete.

b) Participation of other operators on the corridor

The government wanted to operate a share of BRT services (via RTP) as a way of providing information to the regulator, facilitating management of the new system, and reducing the investment required from existing operators. Perhaps most importantly, the Director of RTP had been an enthusiastic member of the BRT exploratory committee, and she insisted that removing the public company from *Insurgentes* -one of the few routes that turned a profit- would damage RTP's already strained finances.

RTP previously operated on *Insurgentes* with 90 buses. The initial agreement with CISA was to maintain the pre-existing market shares. According to the *Insurgentes* corridor feasibility studies, RTP transported 38% of bus users, with 26% of the vehicles (Table 1). As a courtesy to CISA,

[14] Former bus drivers of both *Ruta 2* and RTP on the *Insurgentes* corridor, did stage some protests.

the latter criterion (bus share) determined the target service shares in the corridor. To make RTP participation more acceptable to CISA, the government committed to fully pay, up-front, for RTP's buses, without demanding a share of the future flow of fare revenues to finance them.

CISA's concession title established that RTP would be the only other company allowed to operate buses on the *Insurgentes* corridor, with a 3-to-1 proportion of buses (CISA to RTP) to be preserved throughout the 10-year concession term. This shielded CISA from competitive pressure and, as we will see, severely complicated the integration of future BRT corridors into the emerging system.

Table 1 Bus service supply on *Avenida de los Insurgentes,* before and after BRT

Organi-zation	**Prior to BRT Line 1**					**After BRT Line 1 (June, 2005)**				
	Vehicles		**Passengers/Day**		**Passenger Capacity/ Demand**	**Vehicles Scrapped**	**Company Stock**		**BRT Buses**	
	#	**%**	**# (,000s)**	**%**			**Shares**	**Share-holders**	**#**	**%**
Ruta 2 (pre-BRT) CISA (post-BRT)	262	74	156.5	62.4		180	262	180	60	75
RTP (public)	90	26	94.4	37.6					20	25
Total	**352**	**100**	**250.9**	**100**	**55%**	**180**			**80**	**100**

Source: Data from SETRAVI, 2004c and 2005

c) Costs per kilometer: Hidden Profits and Public-Private Disparities

Consultants estimated the cost/km of BRT operations on *Insurgentes* – accounting for fixed and variable costs such as fuel, tires, driver salaries, vehicle maintenance – in order to determine a fair per vehicle-kilometer (vkm) remuneration. Discussions with CISA representatives led to an upwards adjustment of initial estimates, to reach "an equilibrium point" sufficient to sustain payments of Mex$15,000/month per each *Ruta 2* bus operating on the corridor.

The adjustments included an Mex$11.96/vkm "fixed cost," labeled explicitly in CISA's concession title as "payments to concessionaires," which would ultimately account for 35% of the agreed upon cost/km remuneration (SETRAVI, 2005).[15] This fixed payment, with no corresponding cost category, represented a built-in profit margin.

CISA's cost/vkm remuneration was further increased to include Mex$8.97/km to pay the five-year loan to purchase its buses. The trust fund managing fare revenues would pay this money directly to the creditor, but once fully paying off the loans, government planners wanted to reserve this revenue flow for fleet renovation. The final deal, however, established that, starting

[15] These figures appear in Annex 6 of CISA's concession title. Unfortunately, concession titles made available to the authors for companies operating subsequent Metrobus corridors do not include this information.

in year six (2011), this money would be paid directly to CISA, who would decide what to do with it.[16]

While CISA's estimated per vkm cost, and thus remuneration, climbed upwards during negotiations, the amount the government agreed to pay RTP did not change. RTP be paid much less for the same service and additional public subsidy would eventually be required to renew the publicly owned fleet. Furthermore, while CISA's per vkm payments were subsequently adjusted to reflect cost increases for fuel and other inputs,[17] RTP's per-vkm payments have remained fixed. At the initiation of the *Insurgentes* BRT, CISA received Mex$33.87/vkm, 36% more than RTP's Mex$24.9/vkm; by 2011, CISA's cost had increased to Mex$40.2/vkm, 60% higher than RTP's.

d) Fare revenue distribution

Under the original plan, the corridor would cover the costs of the new regulatory agency, *Metrobus*, with 5.6% of the fare revenues. However, as mentioned above, *Metrobus* was sixth "in line" for access to fare revenue payments, after the bus operators were fully paid. This implicitly guaranteed the need to either increase fares or pay planning and control functions from other government sources if fare revenues were insufficient vis-à-vis operating costs.[18]

Indeed, this is exactly what happened. Financial statements published by *Metrobus* reveal that from 2005 to 2007 and again in year 2011[19] the agency did not receive any money from fare revenues (Metrobus, 2008; Metrobus 2012). From 2008 to 2010 the amount paid to *Metrobus* approximated only 1% of fare revenues (Metrobus 2009; Metrobus 2010; Metrobus 2011). In other words, contrary to initial expectations, *Metrobus* regulatory and planning have been almost fully financed through the city budget.

Paying for "original sins"

Financial strains emerged immediately. Little leeway existed between the technical fare (sufficient to cover costs and commitments to operators) and the published fare of $3.50 pesos. Operating costs grew quickly, primarily because more services than originally projected were needed to deal with passenger congestion. This led to the previously mentioned purchase of more buses. By the end of 2005, six months after inauguration, and despite the promise of a self-sustaining fare, the *Insurgentes* corridor was operating at a growing deficit.

Presidential and mayoral elections slated for July 2006 ruled out a fare increase. Renegotiating conditions with CISA was abandoned as an option. Instead, the city government negotiated on behalf of CISA with the creditor, to lower interest rates on its bus purchase loan, from 14.5% to 10.5%.[20] Even with this adjustment, it soon became clear that fare revenues would not cover the

[16] Financial statements presented by Metrobus suggest that this payment to CISA amounted to Mex$49.6 million in 2011 (Metrobus, 2012).
[17] The first adjustment to CISA's remuneration scheme occurred in 2008, coinciding with the first fare increase; a second on happened in November 2009.
[18] The original plan also considered a share of fare revenues to fund feeder bus services. This was subsequently cancelled.
[19] For 2011, the amount "owed" to Metrobus was Mex$47 million (Metrobus 2012), almost exactly equal to the additional Mex$49.6 million paid to CISA that year from the revenue flow previously used to pay the original bus loans.
[20] Volvo's financing branch provided the original loan for 14.5%. Several interviewed stakeholders indicated that the 10.5% interest rate was not originally available, as banks did not trust the project would work. For reference, minibus operators interviewed said that interest rates offered to individual operators by the banking system reached 26.5%.

costs of operating the regulatory agency, servicing stations, and perhaps even paying operators. So, the Mexico City government chose instead to implement a formal, albeit hidden, subsidy: on December 26, 2005, Metrobus ordered the trust fund that manages fare revenues to stop vkm payments to RTP, the public operator, which instead would be paid from the city government's general funds.[21]

By the end of 2007, the amount paid to RTP through this non-fare-based operational subsidy summed to Mex$89.5 million (Mex$44.2 million in 2005-6 and Mex$45.3 million in 2007[22]). Interestingly, this amount corresponds almost precisely to CISA's total built-in profit margin (the Mex$11.96/vkm "fixed cost" identified above). In other words, the government general fund-subsidy to RTP equals almost the value of the additional revenues negotiated by CISA shareholders. Intentionally or not, RTP participation on the corridor provided the government with a "hidden" mechanism through which it could effectively subsidize overall BRT operations, freeing up resources needed to pay for its agreed committments with incumbents.

The legacy of sin: Expanding the system

A larger challenge loomed, however: sustaining this inclusionary, "fostering" model as Mexico City strived to expand the system. *Insurgentes* had been a choice BRT corridor, due to the combination of high passenger demand with relatively few operators grouped into one *ruta* organization. Other corridors considered for BRT had lower revenue generating potential and/or larger numbers of incumbent operators. To make matters worse, the CISA deal set a precedent: other bus organization leaders would want similar conditions.

Mexico City's subsequent BRT corridors reveal a gradual tightening of the terms offered to incumbent operators. The increasing experience of *Metrobus* personnel partially contributed to this shift.[23] However, the picture that emerges suggests a broader strategic reassessment, in which Mexico City moved from a "fostering" towards a "forcing" strategy. Nonetheless, the original sins, those conditions agreed upon with CISA for *Insurgentes* and partially replicated in later corridors, continued to haunt *Metrobus*, limiting its ability to govern the sytem and ultimately expanding the level of subsidy required from the government.

Line 1 expansion: Same corridor, different deal

In 2008, The *Insurgentes* BRT corridor was extended 8.5 km to the south. This segment had much lower demand (53,503 passengers/weekday) and many more pre-existing operators (315 private buses in addition to 21 RTP vehicles) than the northern segment. The team planning this expansion estimated that demand in the south could be served with only 26 articulated buses, implying a very high substitution rate (12.92 buses for each BRT vehicle) (Table 2).

In practice, this meant that not every incumbent operator could expect to participate in the BRT *and* maintain its profit levels. Since the corridor's predicted fare revenues were fixed, increasing

[21] This order was formalized with an agreement among *Metrobus* and RTP, signed July 28, 2006 and renewed until further notice on February 21, 2007, establishing that payments owed to the public bus company would not be paid from BRT fare revenues but instead from the City's general fund.

[22] These figures are registered in the minutes of the *Insurgentes* fare revenue trust fund.

[23] For example, the price per kilometer offered to CISA included many costs, such as for insurance policies, that should not increase directly with the number of kilometers. In future corridors, *Metrobus* would distinguish between "base kilometers" and "extra kilometers", with the latter paid at a lower price.

the number of participating operators reduced each operator's guaranteed monthly profit. Perhaps for this reason, only 137 buses from this segment were removed under the Mex$100,000/vehicle scrappage program, a number likely to correspond to the number of operators from *Ruta 1* and *Ruta 76* that actually joined to create Rey Cuahutemoc, SA (RECSA), the second private BRT operator in Mexico City. These operators contributed Mex$57,000 in addition to the $100,000 vehicle scrappage payment in exchange for RECSA stock. Given the lower revenue potential, authorities negotiated lowerper kilometer remuneration than that paid to operators on *Insurgentes* northern segment: Mex$22.66[24] for RECSA and Mex$16.00 for RTP.

Table 2 Bus service supply on *Avenida de los Insurgente Sur*, before and after BRT

Organi-zation	Prior to BRT Line 1-South					After BRT Line 1-South (March, 2008)				
	Vehicles		Passengers/Day		Passenger Capacity/ Demand	Vehicles Scrapped	Company Stock		BRT Buses	
	#	%	# (,000s)	%			Shares	Share-holders	#	%
Ruta 1 (pre-BRT)	245	73%	38.0	71%		115	137	109	19	73%
Ruta 76 (pre-BRT)	55	16%	3.0	6%		22				
RECSA (post-BRT)										
Ruta 111 (pre-BRT)	15	4%	1.7	3%					-	
RTP (public)	21	6%	10.8	20%					7	27%
Total	**336**	**100%**	**53.5**	**100%**	**28%**	**137**			**26**	**100%**

Source: Data from SETRAVI, 2007 and 2008a

Granting the service concession on the *Insurgentes* corridor southern extension to a different operator posed barriers to service integration. From the passengers' perspective, traveling north or south for the length of the entire corridor should be seamless; RECSA, however, wanted remuneration equal to CISA for service on the northern segment. CISA, on the other hand, whose concession prohibited any other private company from operating on "their" corridor, opposed RECSA's operations on northern *Insurgentes*. Thus, when the southern extension began operations, passengers had to change buses and pay a new fare when switching between the northern and southern segments. This situation lasted until October 2008, when *Metrobus* found an extra-contractual arrangement that suited both operators (probably, although unverifiably, at the expense of RTP).

Line 2: Many operators, many firms, lower profits

Line 2 began operations in December 2008 on the 18.7-km east-west *Eje 4 Oriente* corridor (estimated demand: 142,847 passengers/day). Prior to the BRT, 620 private minibuses, grouped around 5 *ruta* organizations (*Rutas 111, 27, 53, 49* and *11*) served this corridor, along with 30

[24] This per vkt payment to RECSA does not include the additional amount paid from fare revenues to cover bus purchase loans.

trolleybuses operated by the publicly owned *Sistema de Transportes Eléctricos* (STE). Planners estimated this corridor required no more than 71 BRT vehicles to operate efficiently, with 20 of these to be RTP vehicles replacing STE's Trolleybuses. As in the case of *Insurgentes*, participation by the publicly owned RTP effectively enabled the City Government to continue subsidizing, discreetly, BRT operations. The original plan was to allocate the remaining 51 buses to one or two firms that resulted from the merger of several incumbent organizations. In the end, beyond the difficulties associated with not being able to guarantee operator profits equivalent to pre-BRT earnings, government negotiators faced an additional obstacle: merging the incumbents into one firm proved unfeasible.

Ruta 111 was already an established, fairly well-run firm and transitioned into Corredor Eje 4-17 de Marzo, SA (CE4-14M), operating 20 BRT vehicles. *Rutas 27, 53* and *49* explored a merger, but soon splintered into two groups, with *Rutas 27* and *53* joining into Corredor Tacubaya-Tepalcates, SA (CTTSA) and *Ruta 49* organizing into Corredor Oriente-Poniente, SA (COPSA). Both groups tried to expand their claim to the new BRT corridor by attracting dissident groups from the rival organizations. In the end, COPSA was able to double its membership, partly by not requiring its stockholders to invest more than the $100,000 vehicle scrappage payment.[25] As a result, COPSA's fleet expanded from eight to 15 vehicles, while CTTSA kept only 16 from the expected 23.

City authorities did not originally consider *Ruta 11* for participation in Line 2, since the supporting studies revealed that its existing bus services covered only a small portion of, and carried a small share of passengers on, the corridor slated for BRT. However, this organization protested vigorously against its intended exclusion[26]. To avoid a mounting political conflict and resulting delays, the Mayor ordered RTP to cede 12 of its alloted 20-bus slots to SAJJ, a firm owned by the leader of *Ruta 11*.

Ultimately, SETRAVI awarded BRT operating concessions to these four new private companies (COPSA, CTTSA, SAJJ and CE4-17M), without competitive tender. The decision to have several companies operating on the corridor, with a relatively small number of buses each, enabled the project to advance. However, it was yet another politically expedient sin, creating significant coordination problems upon the operators and eliminating potential operational economies of scale.

[25] In contrast, CTTSA stock required an investment of Mex$64,000 in addition to the $100,000 scrappage fee (SETRAVI, 2008c).
[26] See Table 3 for detail.

Table 3: Bus service supply on *Eje 4 Oriente*, before and after BRT

Organization	Prior to BRT Line 2					After BRT Line 2 (December, 2008)				
	Vehicles		Passengers/Day		Passenger Capacity/ Demand	Vehicles Scrapped	Company Stock		BRT Buses	
	#	%	# (,000s)	%			Shares	Share-holders	#	%
Ruta 111 (pre-BRT) **CE4-14M (post-BRT)**	35	5%	30.5	21%		31	60	3	20	28.2%
Ruta 11 (pre-BRT) **SAJJ (post-BRT)**	217	33%	5.0	3%		52	50	2	12	16.9%
Ruta 27 (pre-BRT)	148	23%	34.3	24%		81				
Ruta 53 (pre-BRT) **CTTSA (post-BRT)**	44	7%	7.6	5%		33	114	85	16	22.5%
Ruta 27 (pre-BRT)	40	6%	9.3	7%		22				
Ruta 53 (pre-BRT)	52	8%	9.0	6%		21				
Ruta 49 (pre-BRT) **COPSA (post-BRT)**	84	13%	18.4	13%		39	82	63	15	21.1%
STE/RTP (public)	30	5%	28.6	20%					8	11.3%
Total	**650**	**100%**	**142.8**	**100%**	**19%**	**279**			**71**	**100.0%**

Source: Data from SETRAVI, 2008b-f

Authorities offered a relatively low guaranteed profit to each incumbent operator in this corridor (Mex$7,300/month, compared to $15,000 offered to incumbent operators on *Insurgentes*). As a result, many operators opposed the project or demanded to participate without scrapping their existing buses. Only 279 of the 620 privately run buses were officially destroyed,[27] with most of

[27] One Metrobus official confided that despite collecting the vehicle scrappage fee, up to 70 of the 279 minibuses were never destroyed. Others have observed similar cases of fewer vehicles scrapped than originally planned in BRT. systems; Orrico Filho et al 2007, for example, suggest that Bogota's *Transmilenio* expected to retire 5,000 vehicles, while only 1550 were eventually eliminated.

the non-scrapped units reemerging as competition to the BRT on parallel streets. This kept ridership and revenues well below original estimates.[28]

The combination of competition from incumbents remaining on the corridor and the reduced ability to subsidize Line 2 operations through RTP (since the original 20 RTP buses were reduced to eight to allow SAJJ to participate) strained the already precarious finances of the system. In fact, Line 2 has operated at a significant financial deficit every year since the start of its operations (Mex$31 million in 2009, $26 million in 2010 and $28 million in 2011).

Furthermore, *Metrobus* authorities were unable to easily re-allocate vehicle resources across the different BRT Lines, to leverage RTP's lower price (and willingness to delay payment). Line 2 had excess supply, while Line 1 had excess demand, but *Metrobus* was legally unable to order Line 2 companies (who were paid a lower price per kilometer than CISA on Line 1) to run services on Line 1, due to CISA's "exclusivity." What would otherwise be a simple redistribution of resources within an integrated network became a protracted negotiation between the regulator and the operating companies. In the end, a complicated scheme was agreed upon: RTP would increase operations on Line 2 while one of the Line 2 companies would operate RTP's slots on Line 1. This reduced the number of Line 2 buses that depend on fare revenue for payment.

While this move was revenue-neutral from a system perspective, it served two important purposes: It enabled the city to introduce another -lower cost- private operator into Line 1, while reducing the likelihood that the rest of the private companies in Line 2 would require a formal, direct subsidy.

Line 3: From fostering to forcing change

Line 3 began operations in February 2011, running 17 km on the north-south *Eje 1* corridor (estimated demand: 123,293 passengers/day). This corridor represented a major shift in implementation strategy, as existing operators were forced to partner with *Autobuses de Oriente* (ADO), the country's largest private inter-urban transport company. This requirement triggered opposition and risked galvanizing transport operators throughout the City against *Metrobus*. However, by this point, the City likely had little choice. The public subsidies required to operate the emerging system continued to grow, and RTP could not continue to increase its fleet and operate at a loss.

Rutas 1, 3 and *88* had a total of 702 buses on this corridor, but according to government estimates, only 430 could be integrated into the BRT, while the rest would need to accept relocation as "feeder and complement routes" (SETRAVI 2010). Even so, producing a financial model that sustained acceptable monthly individual payments for 430 operators required freeing a larger share of fare revenues, by reducing the amount needed for monthly payments to banks financing the BRT buses. This implied that the government had to put on the table unpopular options such as increasing the required down payment on the BRT buses from 20 to 40%, or establishing a much larger participation of RTP in the corridor, with fare-financed buses.

[28] Line 2 took seven months to reach 80% of the ridership originally estimated while Line 1 achieved this milestone only three weeks after the start of operations.

Negotiations with the *rutas* strained to the point that operators began mobilizing against the project. On several occasions, streets were blockaded. At this point the government invited (without tender) ADO into the project, arguably because ADO offered to operate the corridor without public subsidy, while also committing to include existing operators as minority shareholders. Gonzalo García, ADO's Director of Metropolitan Transport, claimed this approach was possible due to the company's better financing conditions and higher operational efficiencies.[29] In 2011 a new BRT company, Movilidad Integral de Vanguardia, SA (MIVSA), commited to operate Line 3, at the same per-vkm price paid to RTP on Line 1 ($24.90/vkm), and to pay a monthly stipend to the incumbent operators that joined.

ADO offered 49% of the stock in MIVSA and a "guaranteed monthly flow" ranging from Mex$8,000 to Mex$12,000 to 430 incumbents (MIVSA 2011). In addition, operators that joined MIVSA would not contribute any capital beyond the Mex$100,000 vehicle scrappage payment.

Nonetheless, a large outsider company entering the public transit market in Mexico City triggered uproar. Many *ruta* organizations interpreted the arrival of ADO as a first step towards displacing them throughout the City. A major strike was announced on the eve of a World Summit of City Mayors hosted by Mexico City on November 2010. The government worked quickly to avoid this situation, leveraging its close relationship with other *ruta* leaders and promising that ADO would not expand beyond Line 3.

Opposition weakened when the Leader of *Ruta 1* announced that most of its members in the corridor would join MIVSA. On December 11, 2010, operators were given 75 days to accept their stock options, after which they could be offered to other buyers. To avoid repeating the experience of Line 2, in which supposedly scrapped buses reemerged as competition to the BRT, MIVSA required the submission of a scrapping certificate, and established in its bylaws that any stockholder found competing "directly or indirectly" against the firm would lose all its privileges.

ADO committed to hiring former operators as mechanics, drivers and administrative staff in MIVSA.[30] Otherwise, however, Line 3 offers little evidence of the "fostering" model whereby the government attempts to transition small scale, informal operators into larger, professional organizations. As minority shareholders, incumbent operators joining MIVSA would simply collect their checks without taking part in running the company.

ADO's majority stake in MIVSA allowed *Metrobus* to overcome many of the consequences of the "original sins." MIVSA accepted a lower price per kilometer, committed a share of its revenues for a fleet replacement fund, and accepted that Metrobus could run buses from other BRT operators on its corridor if needed. Government officials hoped to leverage ADO's strengths to reduce the public subsidy needed to operate Metrobus, and to use these freed-up resources to accelerate BRT network expansion.

[29] García suggested that MIVSA paid US$280,000 per bus, relative to a price US$317,000 available in the market at the time of purchase. Financing cost available to MIVSA was 8%, the lowest achieved by a Metrobus operator yet. ADO's long history as a consolidated bus operator, with well-trained personnel and an established line of suppliers, support its stated ability to operate at a lower cost.

[30] For example, 110 of the 130 drivers originally hired by MIVSA were previously working in this corridor under *Ruta 1*, the first organization to agree to the proposed scheme.

Nonetheless, *Metrobus*' 2011 financial statements show that Line 3 operated at a Mex$16.1 millon deficit. Furthermore, by March 2011 only 250 minibuses had been scrapped on behalf of MIVSA, much lower than the 430 expected. Leaders of *Rutas 3*, *88*, and of a dissident faction of *Ruta 1* suggested in interviews that once they lost their battle against the project, many members decided to sell their stock option to ADO and negotiate their relocation and compensation from SETRAVI.

Table 4: Bus service supply on *Eje 1 Oriente*, before and after BRT

Organization	Prior to BRT Line 3					After BRT Line 3 (February, 2011)				
	Vehicles		Passengers/Day		Passenger Capacity/ Demand	Vehicles Scrapped (As of March. 2011)	Company Stock		BRT Buses	
	#	%	# (,000s)	%			Shares	Share-holders	#	%
Ruta 88 (pre-BRT)	218	31%	27.3	22%		250	79 (9%)	81		
Ruta 3 (pre-BRT)	153	22%	47.5	39%			152 (17%)			
Ruta 1 (pre-BRT)	331	47%	48.5	39%			199 (22%)			
ADO	0	0%	0	0%			447 (51%)	1		
MIVSA (post-BRT)									54	100%
RTP (public)	0	0%	0	0%					0	0%
Total	**702**	**100%**	**123.3**	**100%**	**32%**	**250**	**877**		**54**	**100%**

Source: Data from SETRAVI, 2010; MIVSA, 2011

Does *Metrobus'* Line 3 provide a model for expanding the system while keeping incumbent operators as integral partners? Perhaps it simply reflects authorities' increased willingness for confrontation – a government emboldened, confident that it can survive the legal, political and social costs of displacing incumbent operators.[31] Maybe it marks a step towards the long-abandoned objective of enticing larger, stronger, private investors into the bus industry.

Assessing *Metrobus*

While rarely, if ever, acknowledged by authorities or advocates, Mexico City's BRT system incurred an operating deficit every year since its creation. That is, not only did the city government invest in stations, pavement, and the publicly owned buses; it also subsidizes operations. Using the presence of the publicly owned operator (RTP) on relevant corridors, paying an important share of RTP's per-kilometer remuneration from the City's general fund, without inflation adjustments, the government essentially subsidizes all operations on the

[31] At the suggestion that the government's inclination for inclusion was ideological, one *ruta* leader responded: "Bullshit. Our participation happens only as long as the government believes it needs us. As soon as it is able to displace us it will do so without asking for permission."

corridor. Furthermore, the city pays for the regulator/planner of the system, *Metrobus*, from general funds, although these costs were originally to be covered by farebox revenues.

Available evidence suggests a deteriorating financial situation. In 2005, the operational subsidy per transported passenger was Mex$0.30, amounting to a Mex$12.3 million deficit. In 2008, coinciding with the two system expansions, two fare increases took place: in March, from Mex$3.50 to $4.50; and, in December, from $4.50 to $5.00. These increases left the system from the mythical "self sustaining fare." In 2011, the per-passenger subsidy was Mex$0.72, more than double the 2005 level, while the yearly deficit, $135.3 million, was 10 times greater than in 2005.

Public transit subsidies can be justified on economic efficiency and equity grounds and *Metrobus* operating subsidies are not particularly high. However, the subsidy remains hidden from the public eye, a product of political negotiations, preventing an important policy discussion. Notably, most of the subsidy goes as rents to original incumbents, shareholders in companies holding concessions awarded non-competitively, with substantial profit guarantees. For example, in 2011, the guaranteed profits paid as operational costs to CISA's shareholders (Mex$47.2 million) plus the additional payments formerly going to the bank to finance the vehicle loans and now paid directly to CISA (Mex$49.6 million) account for 72% of the financial deficit registered by the system (Mex$135.6 million).

Returning to the fostering-forcing continuum, the sequential implementation experience of *Metrobus* suggests a gradual shift toward more foreceful strategies of reform. Nonetheless, the original sins committed during the initial "fostering" era continue to haunt the sytem. Regarding our hypotheses, we find:

- the fostering era's initial compromises certainly hampered system expansion (evidenced in Line 1's southern extension) and conditioned (not necessarily negatively) the rest of the system expansion, as all actors in the system learned from the process;
- the effects on regulatory leverage have not been entirely negative as the authorities certainly have more regulatory power than over the non-BRT system and this power is likely increasing and possibly spilling over into the non-BRT system;
- the process has increased operating costs as measured by the levels of operating subsidies, themselves product of the initial fostering stance, although possibly also necessary for BRT operations in the city; and,
- somewhat negative effects on performance insofar as operational flexibility (e.g., adding buses) has been constrained due to initial deals struck.

These initial findings are not necessarily generalizable and could be strengthened by, for example, comparing with other systems; we are currently examining the Santiago de Chile case towards that end.

Although Mexico City remains committed to expanding its BRT system, this objective will continue to clash with its stated committment of incorporating incumbent operators into the new system. As even Jesus Padilla, the President of CISA, recognizes:

"*I am now convinced that this model is not viable. I am sorry to say this now, because I wouldn't have said it before. It is not viable financially, and it takes too much work to keep everyone happy all of the time."*

Metrobus' recently inaugurated Line 4 (in April, 2012) appears to represent another step towards a "forcing" strategy. For the first time, authorities did not require the selected BRT company to reserve stock for and guarantee profits to incumbent bus operators affected by the project, despite the fact that the City's own reports acknowledge that 15 different *ruta* organizations serviced sections of the selected corridor (Metrobus, 2011). Instead, the selected company has only four shareholders, none of which has a history operating buses in this area of the city.[32] Achieved without significant protest, this deal's details remain, for the moment, unknown.

Conclusion

Developing world experiences with adopting BRT represent various points on a force-foster change continuum: BRT can "force" change, replacing existing operators with public or private newcomers; or BRT can "foster" change, catalysing the transition of existing operators into more formal and accountable organizations, working under new rules. Mexico City's *Metrobus* BRT implemented incrementally over the first decade of the 21st Century, represents various points on the force-foster continuum and shows the price paid in early fostering stages can condition future stages. Original sins return to haunt the system.

Starting with a fostering approach to Line 1 in the early 2000s, by the end of 2011, Mexico City's adoption of three BRT corridors (plus an extension to Line 1) led to the scrappage of almost 900 small and underutilized minibuses and their substitution with at least 230 articulated buses. It also facilitated the transition from several quasi-informal *ruta* organizations into eight more professional and accountable private firms. Service has improved along the affected corridors, with reduced travel times, and safer and more reliable trips. The public sector's role as regulator of public transport has been clarified and reasserted in the process. However, the sequential implementation of BRT corridors has involved increasingly complex negotiations, increasing the cost and decreasing the pace of system expansion. Each additional corridor typically has more incumbents organized around more *ruta* organizations, fighting over smaller passenger demand pies. And, while officials initially asserted that *Metrobus* could function without an operating subsidy, the government is subsidizing operations, increasingly so, and primarily to satisfy initial deals made to mitigate harm to existing operators.

Mexico City appears to be adopting increasingly "forceful" strategies as it attempts to introduce additional BRT corridors. This tendency may be partly attributable to an increasingly empowered public authority; but, it also appears to be correcting for original sins committed during the initial corridor implementations. These original sins may have been inevitable, the unavoidable costs of initiating change in a complex urban system, meaning that *Metrobus* required a fostering strategy to enable it to eventually assume a more forceful posture. We cannot know for sure; nor can we know whether the price of the original sins was "worth it." However, we do find that *Metrobus*' "fostering" strategy has not proven sustainable; both

[32] One of these stockholders is CISA's Jesus Padilla.

operators and implementers learn from experience, adjust their expectations, and position themselves to extract more value from the system.

BRT holds great potential to improve bus-based public transportation in developing world cities. It provides a path to transition away from the weakly regulated, privatized and atomized system, while in the process empowering the role of the state as regulator and planner. However, BRT planners from cities pursuing a "fostering" approach to industry transition should take note. The Mexico City case serves as a powerful reminder that this transition is costly, and that compromises, when managed without a healthy dose of conflict, can become obstacles to realizing BRT's true potential.

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