As a model and comparator for the Metro, the state used the state-owned subway in Santiago, Chile, which is about the same length, carries almost twice as many passengers at the same average tariff, and has an operating surplus. For Flumitrens, it chose the Buenos Aires suburban rail system, which has been operated by private concessionaires since 1994 and has a productivity three times that of Flumitrens. The Metro and Flumitrens concessions were initially expected to follow the Argentine model. This model, used in the concession of the Buenos Aires urban rail systems, calls for bids to execute an investment plan defined and funded by the state and to be implemented by the concessionaire. It requests a schedule of declining operating subsidies to be paid by the state and of fees to be paid by the concessionaire to the state for the concession rights. Finally, it stipulates a level of service to be met by the concessionaire at a tariff set by the government. The bidder with the lowest net present value for the cost of the investment plan plus the subsidy to be paid by the government minus the concession fee to be paid by the concessionaire wins the concession. The schedule of subsidies must decline to zero by a certain date, after which the concessionaire must start paying the government an annual concession fee. Suburban rail concessions in Argentina were initially granted for ten years, and the subway concession for twenty years. In the event, the model adopted in Rio differed from the one used in Buenos Aires.

In the Rio concessions, as initially planned, concessionaires would not be required to fund the investment plans because the state would assure funding. But the funding for the two concessions was to come from different sources. The Metro had already secured the funds for completing the works required to double its ridership and increase its route length from 23 to 35 kilometers. These works, started ten years earlier, had been halted by the state's financial straits. The investment (US$620 million) was financed by a loan from Brazil's National Development Bank (BNDES). Flumitrens would receive funds under the proposed Rio de Janeiro Mass Transit Project,
under preparation for financing by the World Bank. The investment (US$373 million) would go mainly to rehabilitating rolling stock, signaling, telecommunications, and stations judged necessary to reach a ridership of 1 million passengers a day by 2000. While the Metro investment was under way at the time of the concession, the Bank loan for the Flumitrens investment had been negotiated but not yet signed, representing a risk for potential concessionaires.

**Metro**

The state government commissioned two major studies to help with the design of the concession contract and the bidding process.

The first, funded by a World Bank loan, identified the basic parameters to be included in the bidding documents, undertook a demand analysis of the system for different scenarios, prepared financial projections, reviewed the legal and institutional framework, and proposed actions for dealing with redundant Metro staff who would not be absorbed by the potential concessionaire. The study also looked at how the federal concession law would affect the proposed concession.

The financial projections suggested that the system would require an operating subsidy for one to two years before it would start producing an operating surplus. This subsidy estimate raised an important issue: the federal law did not seem to allow “negative concessions,” like most of those in Buenos Aires. The state therefore had to approve a law that would permit such subsidies.

The second study, funded by the state under a contract that included a success fee, was carried out by local consultants. The study helped produce a preliminary background memorandum, cash flow analysis, environmental and safety assessment, inventory of existing infrastructure and equipment, and procurement documents. The consultants were also responsible for running the concession process, and they assisted the state in the presentation of the concession documents to the public and in some domestic road shows.

**Strategy**

Despite the finding that an operating subsidy would be required for at least two years, the policymakers decided to go ahead with a positive concession—one in which no operating subsidies would be paid by the state. Several factors influenced this decision. First, the concessionaire would have no major investment funding obligations because all the investment was being financed by the state. Second, the concessionaire would take over, by an agreed date and as described in the concession contract, all the ongoing extensions financed by the state as well as additional rolling stock already ordered by the state. Third, the concessionaire was expected to move more boldly in rationalizing staff than the projections had assumed. And fourth, tariffs were increased to account for inflation, in line with the government’s policy.

By contrast to the Argentine concessions, where the concessionaires carried out the works, in the Metro concession the state is implementing all the investment plans funded by the BNDES loan. The implementation of works started two years before the concession and continued after the concession was signed. This was another risk to be taken into account by the potential concessionaires, which would project the revenues on the assumption that the line extensions and additional rolling stock would be ready by a certain date. With the state as implementing agent, the winning concessionaire would have no way to control delays other than by exercising the penalties in the concession contract.

The state maintained part of the existing Metro organization to handle issues related to redundant personnel not absorbed by the concessionaire, to assist the secretary of transport with extensions of the system, and to provide support to the Public Services Regulatory Agency in monitoring the performance and safety indicators in the contract. The state indicated that it had access
## TABLE 1  URBAN TRANSPORT CONCESSIONS IN THE RIO DE JANEIRO METROPOLITAN REGION

<table>
<thead>
<tr>
<th>Package size</th>
<th>Metro</th>
<th>Flumitrens</th>
</tr>
</thead>
<tbody>
<tr>
<td>Package size</td>
<td>41-kilometer right-of-way extension.</td>
<td>200-kilometer right-of-way extension.</td>
</tr>
<tr>
<td>Term of the concession</td>
<td>20 years, renewable once for 20 more years.</td>
<td>25 years, renewable once for 25 more years.</td>
</tr>
<tr>
<td>Service quality specification</td>
<td>Based on the performance targets for frequency, reliability, safety, and comfort established in the concession contract.</td>
<td>Based on the performance targets for frequency, reliability, safety, and comfort established in the concession contract.</td>
</tr>
<tr>
<td>Payments by the government</td>
<td>None.</td>
<td>None. But proceeds of the Metro concession fee will be made available to the concessionaire for investments.</td>
</tr>
<tr>
<td>Award criterion</td>
<td>Net present value of best offer above the minimum price (US$25 million) plus materials in stock (US$3.56 million).</td>
<td>Net present value of best offer above the minimum price (US$28 million) plus materials in stock (US$8.25 million), plus the discount on capital made available by the state, plus the cost of optional investments assumed by the bidder.</td>
</tr>
<tr>
<td>Tariff renegotiation conditions</td>
<td>The flat tariff for a one-way trip was set by the state in the bidding documents and can be updated only for inflation, according to a formula. For expansion and new investments under the present contract, the concessionaire must submit a plan for approval by the state government.</td>
<td>The flat tariff for a one-way trip was set by the state in the bidding documents and can be updated only for inflation, according to a formula. The concessionaire will be allowed to increase the tariff by 50 percent if it installs air conditioning in the trains. For expansion and new investments under the present contract, the concessionaire must submit a plan for approval by the state government.</td>
</tr>
<tr>
<td>Performance assurance</td>
<td>Concession contract monitoring by the Public Services Regulatory Agency of Rio de Janeiro State.</td>
<td>Concession contract monitoring by the Public Services Regulatory Agency of Rio de Janeiro State.</td>
</tr>
<tr>
<td>Network planning</td>
<td>The state will establish the conditions for operation of new lines.</td>
<td>The state will establish the conditions for operation of new lines.</td>
</tr>
<tr>
<td>Access to facilities</td>
<td></td>
<td>The concessionaire of the freight railway system has access to Flumitrens lines and pays a track access fee.</td>
</tr>
</tbody>
</table>
to funds to compensate redundant staff, but that turned out not to be the case.

**Bidding process**

The concession included 41 kilometers of right-of-way extension and the operational areas of the terminals and other operational buildings described in the contract (table 1). The concession was awarded in a two-step process: a prequalification in which the experience of the potential concessionaires was compared against the requirements set out in the bidding documents, and a comparison of the bidders’ cost proposals, containing the net present value of the offer over the term of the concession.

The proposals for each step were delivered to a special commission of the Rio de Janeiro stock exchange, which first verified that the candidates met the prequalification conditions. Once bidders prequalified, their cost proposals were opened in a public session on the premises of the exchange. (In the event of a tie between two or more bidders the process allowed the tying bidders to bid in an open outcry auction during the same session in which the cost proposals were opened.)

**Results**

The Rio Metro system was concessioned to the private sector on December 23, 1997. The winning bidder was a consortium led by an Argentine company and a local investment bank. The concessioning process led to several interesting outcomes:

- A large number of bidders presented proposals, reflecting the private sector’s confidence that the Metro’s situation (the annual operating subsidy had been about US$120 million) could be turned around.
- A sizable number of foreign bidders participated even though there had been no international road show, raising a question about whether the expensive international road shows often used for concessions are really necessary.
- The net present value of the concession fee in the winning bid was about ten times the minimum price set in the bidding documents.
- Unlike in earlier privatizations in Brazil, there were no official protests against the final award of the concession. There were initial legal injunctions against the concession, with the main ones filed by unions and the engineers association. These opposed the concessioning of the service to the private sector, arguing that the Metro was a state responsibility. These injunctions were easily defeated. The main unofficial protest came from the runners-up. They argued that the winner would be unable to cover its costs and make a profit because of the high bid. They also claimed that there should have been an intermediate step in the bidding process calling for a business plan in which each bidder would indicate how it would operate the system. That, they argued, would have proved their point about the winner’s bid.
- There were no strikes or destruction of inventory as there had been in other cases in the region in which a state-owned company was taken over by the private sector.
- Unlike the Flumitrens concession, the Metro concession process was completed without postponements at either stage in the two-step process.

**Flumitrens**

The main criticism after the concession was that the minimum price set by the state had been too low, as evidenced by the fact that the price offered was ten times the minimum. Hindsight suggests that the state could have required additional investment as part of the concessionaire’s obligations, such as additional trains or small line extensions.
term, close to the start of the state governor’s electoral period in April 1998. The decision-makers were forced to rethink the process twice as a result of hasty decisions and other factors.

Flumitrens had been transferred to the state in 1995, benefiting from a World Bank loan supporting decentralization of the system from the federal to the state government. At the time of the transfer the federal government agreed to pay a full year of staff salaries to the state, which was expected to use those funds to reduce staff redundancies; instead, the state used the funds for another purpose. The investments under the Bank loan, especially those in rehabilitating rolling stock, were expected to allow Flumitrens to maintain its ridership and prepare for the concession. But because of poor decisions and delays in the rehabilitation of trains, train fleet availability decreased, passenger demand declined, and fare evasion increased. In the second year the state started a rationalization program. But Flumitrens continued to suffer from lack of train availability because the companies that had won the train rehabilitation contracts in international competitive bidding failed to meet the proposed schedules, contributing to a further decline in ridership. As a result the Bank agreed to finance another loan to rehabilitate the remaining fleet if the state would concession Flumitrens.

The Flumitrens concession process produced two major studies similar to those for the Metro concession. The first, funded by the Bank, evaluated the options and the market for concessioning the system. The second, funded by the state under a contract with a success fee, prepared the preliminary background memorandum, cash flow analysis, and bidding documents. The financial projections in the first study suggested that the system would require an operating subsidy (of roughly US$150 million to US$250 million a year) for three to four years before it would produce an operating surplus. This led to the conclusion that Flumitrens would have to be a negative concession, similar to the ones in Buenos Aires.

In addition, using Japanese funding, Flumitrens hired consultants to help the state review the transaction report, to undertake a road show in Miami, to explain the process to potential concessionaires, to hire procurement consultants, and to prepare the “data room.”

Strategy

Although the Metro concession had been a great success, the opposition party had harshly criticized the minimum price set for the concession and launched a media campaign aimed at showing that the administration was giving away state property. In response to this criticism, and despite the projections showing that Flumitrens would probably require an operating subsidy over the first four years, the state decided against a negative concession.

The state project team floated the idea of a formula to provide the Flumitrens concession with additional capital (from the concession fees paid by the Metro concessionaire) and tariff increases if improvements were made to the trains (such as installing air conditioning). The funding from the Metro would amount to a capital rather than an operating subsidy but would be risky because it assumed that the Metro’s concessionaire would not default on any of its payments.

The rehabilitation of infrastructure and equipment financed by the Bank’s decentralization loan, the additional rehabilitation provided by the new loan, and the additional capital from the Metro were expected to be sufficient to attract the private sector.

The original aim was to include the Bank loan in the bidding documents, giving the winning bidder the right to execute the investment program financed by the loan without further procurement. This would have the advantage of allowing the concessionaire to implement its own works and to coordinate its operations with ongoing works, a task that becomes difficult when the operator and the implementation agent for the works are not the same. To include the
Bank loan in the bidding documents, the state would have had to comply with the Bank’s guidelines for international competitive bidding. Since the state did not comply with Bank procurement guidelines, it simply indicated in the bidding documents that it had obtained a loan of US$186 million from the Bank to support the rehabilitation of infrastructure and equipment listed in the loan documents. The loan would be implemented by the state, not by the concessionaire as originally planned. This was another risk to be taken into account by the potential concessionaires. Some chose not to bid because in their opinion implementation of the package by the state would lead to unacceptable delays.

**Bidding process**

The concession included 200 kilometers of right-of-way extension and the operational areas of the stations, main terminals, and other buildings indicated in the contract. Contracts with retail businesses operating in the stations could be renegotiated or terminated by the concessionaire.

The bidding process was similar to the two-step approach used in the Metro concession. The state administration prepared the concession documents according to Brazilian procurement law and called for prequalifications. Five consortia indicated that they would seek prequalification, but at the last minute only one appeared ready to present the bid bond required. Suspecting a cartel, the state canceled the first bid and set a new date for the bidding process. In the meantime the state revised the bidding documents to make the concession more attractive and the process more transparent and to allow time for other bidders to enter.

The state adopted the formula for providing a capital subsidy from the Metro concession fees. It called for new prequalifications and set the minimum price at US$28 million plus the cost of materials in Flumitrens’s inventory. The net present value of the bid would include the net present value of the offer above the minimum price to be paid over the concession period, the cost to repair the rolling stock included in the bid, the cost of other works listed in the bid and assumed by the bidder, and the discount offered on the investment capital made available by the state. Finally, the state would allow tariff increases if the winning bidder introduced air conditioning in the trains before a specified deadline.

**Results**

Five consortia submitted bids. The highest price was more than six times the minimum price set. The winning bid, awarded in January 1998, was from a Spanish-Brazilian consortium. A good number of the trains and works included in the investment package for the loan negotiated with the Bank, and listed as optional investments in the bidding documents, will instead be financed by the concessionaire as part of its bid, leaving room for additional investments excluded during preparation of the loan because of budget restrictions.

Unlike the Metro concessionaire, which will have to pay the state the concession price agreed to in the contract, the Flumitrens concessionaire will have an out-of-pocket cost equivalent only to the minimum price and the materials in the inventory. The rest of the bid consists of the cost for rehabilitating the fleet, the civil works assumed, and the discount on the capital made available by the state. The Flumitrens concessionaire must deliver the rehabilitated trains back to the state and complete the civil works according to a specified deadline, but will not have to pay the state for these services. Thus the concessionaire’s payment will be in terms of trains made available and civil works completed. If the concessionaire is efficient in procurement, it might be able to deliver those outputs for less than the cost quoted. The state must be strict in ensuring that the deliverables meet the specifications in the concession contract.

**Lessons**

The Rio de Janeiro experience suggests that even in systems experiencing very high deficits as a result of inefficient management, poor infrastructure, and inadequate equipment, concessions can
be designed in such a way as to attract the private sector. Unlike Buenos Aires, which pioneered modern urban rail concessions, the state of Rio de Janeiro was able to concession its systems without providing operating subsidies. This was a major achievement, and a big factor in it was political commitment.

A robust bidding process helped achieve this outcome. First, Rio ensured transparency in the process. The use of the Rio stock exchange for presentation of the bids (through a certified broker hired by the bidders), and their evaluation by a commission associated with the exchange, are not acceptable under Bank procurement guidelines. But in Brazil these measures added to the transparency of the process because the Rio stock exchange is a highly respected institution.

Second, the state team was careful to prevent the formation of cartels. When it suspected that a cartel was forming, it simply delayed the process and provided time for other bidders to join. And to prevent monopolistic behavior, the Public Services Regulatory Agency prevented the Metro operator from bidding in the Flumitrens concession.

Third, the process was run by the secretary of planning and finance rather than the secretary of transport, who is generally too closely associated with the operating agencies and subject to the pressure of strong transportation lobbies.

**Next steps**

During preparation of the reforms, the state indicated that it had access to a credit line with the Federal Savings and Loan (Caixa Economica Federal) to finance the severance payments of redundant staff not retained by the concessionaires. The state had planned to eliminate redundancies through voluntary and involuntary staff reduction programs. But this goal was only partially accomplished. Nine months after the rail concession was awarded nearly 3,000 redundant staff remained (2,500 at Flumitrens and 500 at the Metro), at a monthly cost of US$6.3 million. Failing to make adequate provision for severance payments was a major flaw in the process, and the state must quickly take steps to correct it. To realize the potential savings offered by the concessions, the state must either reallocate the redundant personnel to agencies where they are needed or find funding for the severance payments.

Another challenge for the new state administration that took over in 1999 will be to ensure that there is true modal integration between subway, rail, ferry, and bus services in a context in which all operators are private. Creating a multimodal ticket will require the introduction of special ticketing, such as a smart card, and an agreement on revenue sharing through some sort of clearinghouse. The state must play the role of sector coordinator and regulator.

Since the state and municipal administrations are controlled by different political parties, care must be taken to ensure that municipal buses do not engage in predatory pricing to undercut privatized buses or Flumitrens. Proposals during the election campaign to impose a flat fare for intercity buses should be carefully examined to ensure that they would not have a major impact on Flumitrens’s ridership. These regulatory issues may be hard to deal with because the buses and trains are not regulated by the same agency. The bus lobby prevented bus regulation from being included in the mandate of the Public Services Regulatory Agency, arguing instead to retain the state transport ministry as regulator. The state administration must work hard to bring the intercity buses under the same agency that regulates trains and to persuade the Rio municipality, which regulates the urban buses, to put them under the same umbrella. Only in that way can there be coherent regulation of the main urban transport modes.

The regulator must also be very strict in ensuring compliance with the performance targets set in the contracts signed by the concessionaires, applying the penalties set out in the contracts for noncompliance. Without strict compliance with agreed on targets, a point of failure in other
urban rail concessions, it will be difficult to ensure the level of service that the state has promised to users.


Murilo Junqueira, former Managing Director of Flumitrens, and Regina Amélia Oliveira, former Planning Coordinator of Flumitrens, provided data for this Note.

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