

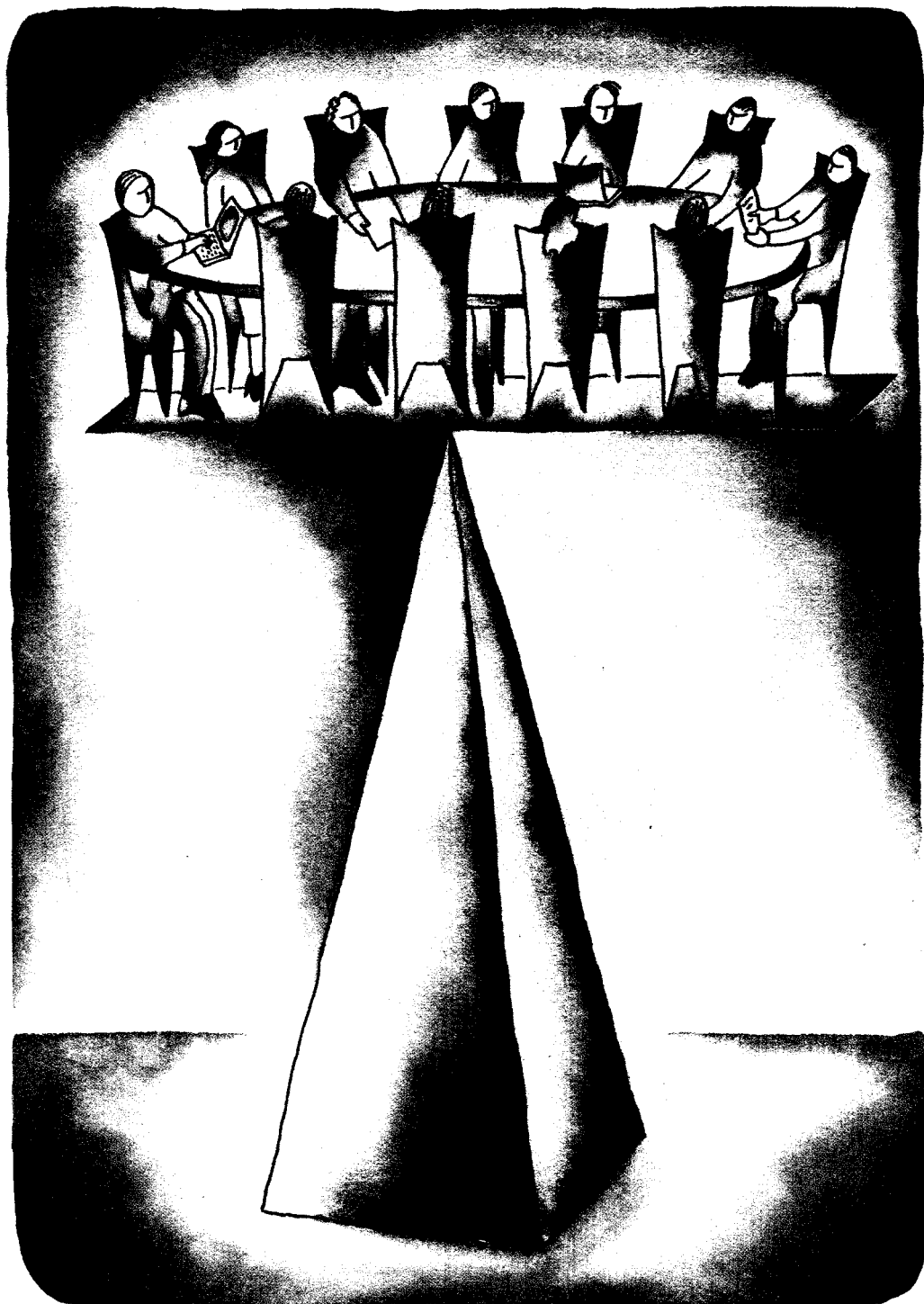
# Privatesector

## INFRASTRUCTURE

- 5 A New Method for Auctioning Highways  
*Eduardo Engel, Ronald Fischer, and Alexander Galetovic*
- 9 Water Privatization and Regulation in England and Wales  
*Caroline van den Berg*
- 13 Designing Regulatory Institutions for Infrastructure—Lessons from Argentina  
*Antonio Estache*
- 17 Colombia's Gradualist Approach to Private Participation in Infrastructure  
*Philip Gray*

## PRIVATIZATION

- 21 Benefits of Privatization—Evidence from Mexico  
*Rafael La Porta and Florencio López-de-Silanes*
- 25 What Factors Determine Auction Prices in Privatization?  
*Florencio López-de-Silanes*
- 29 Which Countries Give Investors the Best Protection?  
*Rafael La Porta, Florencio López-de-Silanes, Andrei Shleifer, and Robert Vishny*
- 33 Investment Funds in Mass Privatization—Lessons from Russia and the Czech Republic  
*Katharina Pistor and Andrew Spicer*
- 37 Ownership and Corporate Governance—Lessons from the Czech Republic  
*Stijn Claessens, Simeon Djankov, and Gerhard Pobl*
- 41 The Veil of Vouchers  
*S. Ramachandran*

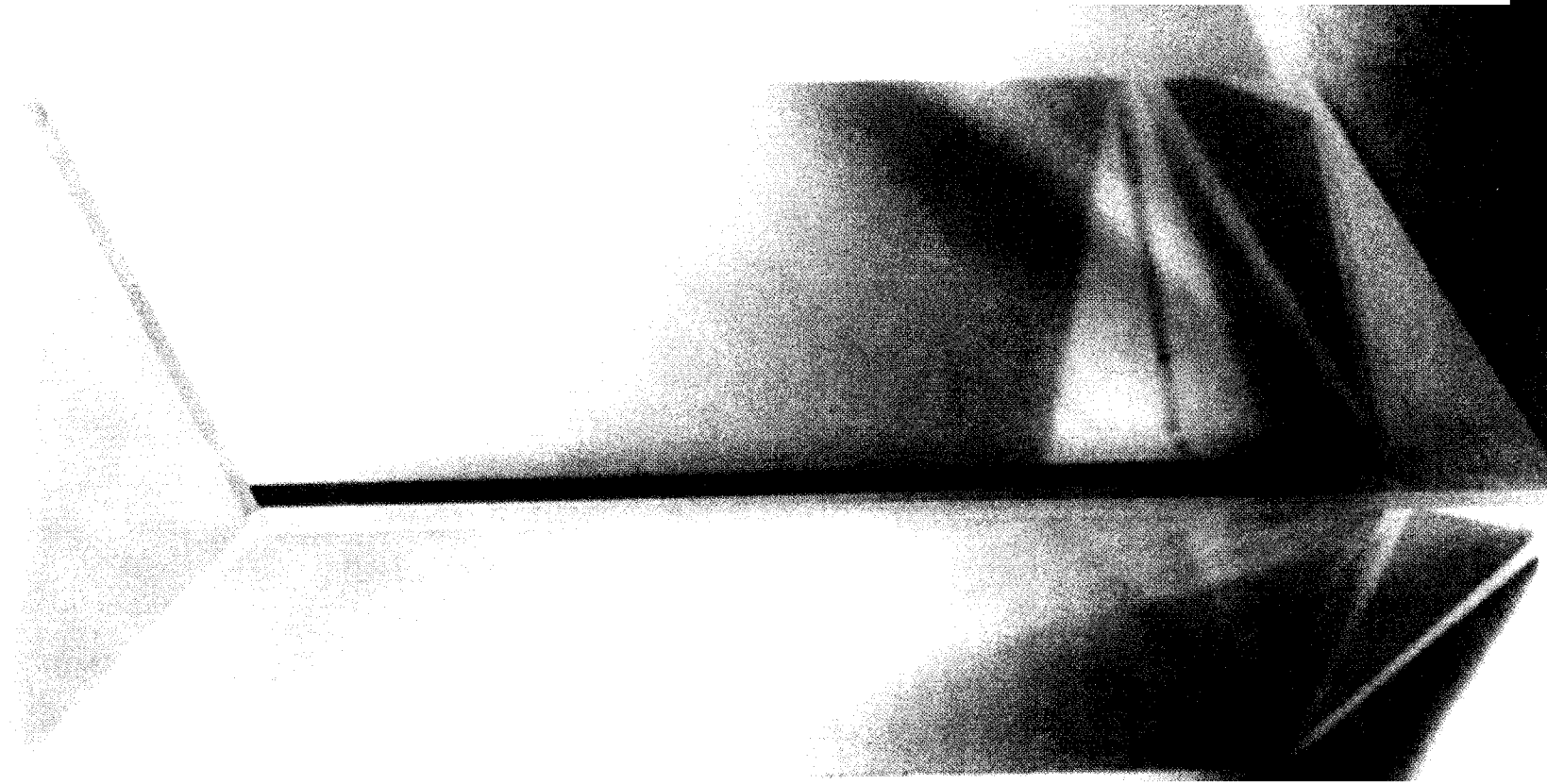


*Private Sector* is an open forum intended to encourage dissemination of and debate on ideas, innovations, and best practices for expanding the private sector. The views published are those of the authors and should not be attributed to the World Bank or any of its affiliated organizations. Nor do any of the conclusions represent official policy of the World Bank or of its Executive Directors or the countries they represent.

*Private Sector* is a quarterly publication distributed free of charge. To subscribe, please send your name, mailing address, telephone number, and fax number to the editor (Suzanne Smith, Room F6P-188, The World Bank, 1818 H Street, NW, Washington, D.C. 20433, email: [ssmith7@worldbank.org](mailto:ssmith7@worldbank.org), fax: 202 522 2961, telephone: 202 458 1111).

Most Notes from *Private Sector* are also available on-line. There is full text in HTML format for on-screen viewing, and a downloadable file in Adobe's PDF format (<http://www.worldbank.org/html/fpd/notes/notelist.html>).

---



**A New Method for Auctioning Highways 5**

**Eduardo Engel, Ronald Fischer, and Alexander Galetovic** attribute many of the problems in highway privatization to the combined effect of features of the highway business and the fixed term contracts used. First, traffic forecasts are notoriously imprecise, and the franchise holder has almost no control over demand. Second, most franchises have been awarded for a fixed term that is independent of demand realization. They propose a new mechanism—the least-present-value-of-revenue auction—that overcomes flaws in the fixed term franchise because the contract term automatically adjusts to traffic growth. If traffic grows more slowly than expected, the term lengthens—and if more rapidly, it shortens. The basic principle underlying the auction is that the franchise holder should not make losses when the long-run demand for the highway is sufficient to pay all costs.

**Water Privatization and Regulation in England and Wales 9**

In 1989, the United Kingdom embarked on one of the first modern privatizations in the water sector, selling assets under license and setting up an independent economic regulator. An important regulatory innovation is its use of price caps and yardstick competition. **Caroline van den Berg** highlights two lessons from U.K. regulatory experience: Effective price cap regulation has heavy information requirements, and the necessary data and analytical tools take time to assemble. And such built-in checks and balances as financial autonomy for the regulator and status as an independent government department are not always enough to prevent political interference.

**Designing Regulatory Institutions for Infrastructure—Lessons from Argentina 13**

In 1989, the Argentine government initiated rapid privatization of infrastructure services—mainly gas, telecoms, electricity generation and transmission, and water and electricity distribution in the Buenos Aires metropolitan area. **Antonio Estache** reviews the performance of the agencies set up to regulate the privatized utilities against criteria for good design: independence, autonomy, and accountability. His assessment: the Argentine experience so far shows that the biggest challenges in regulatory design are achieving political independence and introducing rules to ensure accountability.

**Colombia's Gradualist Approach to Private Participation in Infrastructure 17**

Colombia has taken a more gradual approach to private participation in infrastructure than such other Latin American countries as Argentina, Bolivia, and Chile. Its approach is closer to that in many Asian countries: existing assets remain in state hands, and new infrastructure is financed by the private sector through project finance—but with government guarantees. The approach has attracted much private capital. But it can complicate reform, and the lack of clarity surrounding public and private roles in regulation, operation, and investment can make reform less sustainable. **Philip Gray** explains the approach and the conflicts that can and do arise.

**Benefits of Privatization—Evidence from Mexico 21**

Critics of privatization often argue that its benefits come at a high cost to society. **Rafael La Porta** and **Florencio López-de-Silanes** test the validity of this criticism for Mexico's privatization program, one of the world's largest case-by-case programs. Assessing the performance of newly privatized firms in such areas as profitability and efficiency, they find that these firms quickly close the gap with their peers in the private sector. Their findings suggest that the firms' profit gains come from productivity gains (52 percent), layoffs (33 percent), and higher prices (15 percent).

### **What Factors Determine Auction Prices in Privatization? 25**

Do the timing and type of auction affect the sale price? What kind of restructuring is worth doing before privatization? This Note reports on a study by **Florencio López-de-Silanes** that examines how much these and other factors affect privatization prices. The study shows that speed and competitive bidding consistently increase sale premiums, but that many restructuring measures—such as absorbing debt and improving efficiency—do not. The key lesson for policymakers: Don't do too much—just sell.

### **Which Countries Give Investors the Best Protection? 29**

Does the owner of a share of stock in Mexico have the same rights as one in Germany or India? Is a creditor in Italy as well protected as one in Switzerland? Do laws protecting investors differ among countries in systematic ways? Are they sufficiently enforced everywhere? And if there are differences, do they matter for corporate finance? This Note reports on a study by **Rafael La Porta, Florencio López-de-Silanes, Andrei Shleifer, and Robert Vishny** that examines these issues in a sample of countries covering Asia, Africa, Europe, and North and South America. The analysis suggests that countries whose legal rules originate in the common law tradition tend to protect investors better than those whose laws originate in the civil law tradition, especially French civil law.

### **Investment Funds in Mass Privatization—Lessons from Russia and the Czech Republic 33**

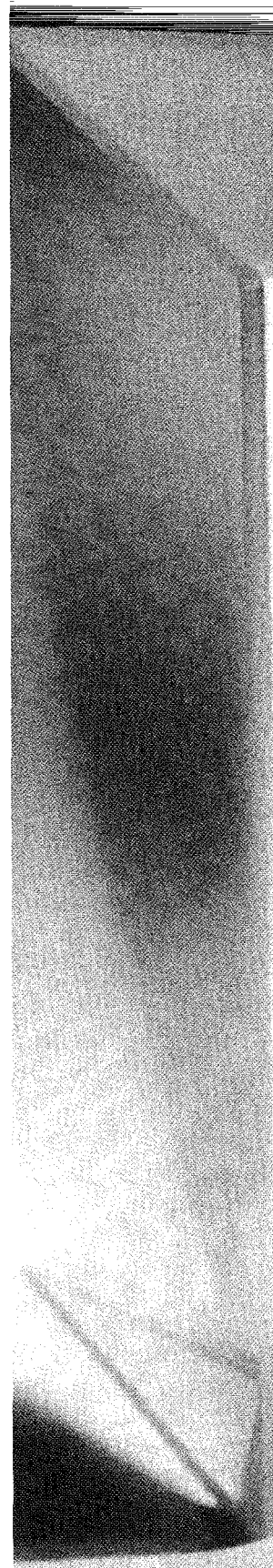
Investment funds have a key role to play in mass privatization in many transition economies. But have they lived up to expectations? **Katharina Pistor** and **Andrew Spicer** look at that question in the two earliest and best-known cases—Russia and the Czech Republic. The evidence is discouraging. The funds appear to have been unable to enhance the value of their holdings. The property rights created in a hasty attempt to depoliticize property relations are weak. And capital markets remain illiquid. Many funds have simply become holding companies rather than active portfolio investors. The initial design problems in mass privatization—asymmetric information and imperfect property rights—remain.

### **Ownership and Corporate Governance—Lessons from the Czech Republic 37**

**Stijn Claessens, Simeon Djankov, and Gerhard Pohl** argue that mass privatization in the Czech Republic has spurred enterprise restructuring and that investment funds have played a key part in this outcome. Using 1992–95 data for more than 700 Czech firms, the authors find strong positive relationships between ownership concentration and profitability. And the higher the ownership concentration, the higher the firm's market value. They argue that these two results suggest that the Czech privatization program was effective in improving firms' management *because* of the concentrated ownership that resulted.

### **The Veil of Vouchers 41**

**S. Ramachandran** exposes some of the myths still surrounding the use of vouchers in mass privatization. He explains why using vouchers will not affect the price level in the economy—even though they carry a face value. He shows that vouchers allow assets to sell despite minimum acceptable bid prices because the secondary market discount of voucher prices acts as a safety valve. And he argues that vouchers do not create purchasing power or overcome capital shortages, as many claim. But why use them? He explains that vouchers help avoid rapid changes in the money supply that could have significant, real short-term effects. And they help create some harmless illusions—allowing reformers to avoid claims of selling assets too cheaply—and so safeguard the difficult transition to a market economy.



## THREE WAYS TO ORDER

For a free subscription to **PrivateSector**

- 1 Fill out and mail or fax this card to Suzanne Smith, Editor, at 202 522 2961

FIRST NAME	MI	LAST NAME
JOB TITLE		COMPANY
STREET ADDRESS		
CITY	STATE	POSTAL CODE
COUNTRY		EMAIL
WORK PHONE		FAX

**Topics of interest**

- Banking and capital markets
- Privatization
- Competition and regulation
- Telecoms and technology
- Energy
- Transport
- Water
- All

- 2 Call 202 458 1111 to record this information

- 3 Email this information to [ssmith7@worldbank.org](mailto:ssmith7@worldbank.org)

Editor: Suzanne Smith  
Room F6P-188  
The World Bank  
1818 H Street, NW  
Washington, D.C. 20433

Telephone:  
202 458 7281  
Facsimile:  
202 522 2961  
Email: [ssmith7@worldbank.org](mailto:ssmith7@worldbank.org)

Illustration by Ruth Sofair Ketler. Photo on pages 1, 2, and 3 provided by FPG International.

The entire contents of Private Sector ©1997 World Bank. You are authorized to reproduce, duplicate, and disseminate all or part of this publication so long as you include the name of the publication and the name of the respective author. You may not, however, modify, alter, or otherwise change any part of this publication or sell, transfer, or otherwise disseminate any part of the publication for profit.

♻️ Printed on recycled paper.

**Public Policy for the**  
**PrivateSector**

The World Bank Group December 1996

Note No. 99

## Designing Toll Road Concessions—Lessons from Argentina

*Antonio Estache and José Carbajo*

Before Argentina began concessioning its major roadways in 1990, it had a mature, well-connected, but poorly maintained network. Maintenance had been squeezed by both the shortage of new investment funds and the high cost of maintenance, rehabilitation, and capacity improvements. Built into the concessions was a toll structure subject to price cap regulation. It set a uniform value per kilometer for each class of vehicles and was consistent across all concessions.

Page 1 of 4 100% 8.5 x 11 in Document Done

Most Notes are now available on-line in full-text HTML format or in downloadable Adobe PDF format (<http://www.worldbank.org/html/fpd/notes/notelist.html>).

# A New Method for Auctioning Highways

*Eduardo Engel, Ronald Fischer, and Alexander Galetovic*

**This Note argues that many of the problems that have plagued highway privatization stem from the combined effects of special features of the highway business and the type of contract—fixed term franchise—that has typically been used. The Note proposes a new mechanism, the least-present-value-of-revenue (LPVR) auction, that corrects some of the shortcomings of the fixed term franchise. The new mechanism endogenously adjusts the duration of the franchise to the realization of demand: the term lengthens if traffic grows more slowly than expected and shortens if it grows more rapidly than expected.**

There is widespread agreement that most developing countries urgently need massive highway construction programs. Traditionally, highways have been viewed as public goods that must be financed and operated by the public sector. But in recent years, many governments have neglected maintenance because of chronic budgetary problems, and traffic has grown well ahead of capacity. So, it has become increasingly accepted that highways should be built, financed, and operated by private firms and that users should pay for using them. Several advantages are claimed for privatized roads. Private firms build highways faster because they face fewer financing constraints, and they are more efficient than state-owned firms. Users are more likely to accept the concept of paying for roads owned by the private sector. And franchising should prevent the building of “white elephants,” since private firms do not want to lose money.

Despite these avowed advantages, the experience with highway franchising has been far from happy. Three of the four franchises that France awarded in the early 1970s went bankrupt after the oil shock and were taken over by the government. Several of the twelve fran-

chises awarded by Spain before 1973 had building costs four to five times higher than expected, but traffic about a third of original projections. As a result, three firms went bankrupt, two firms were absorbed by stronger franchise holders, and the government granted toll increases and term extensions. In Mexico, excessively high tolls have led to empty highways and the renegotiation of the original franchise agreements. The duration of some of the toll road franchises has more than doubled, and the government has had to pump in US\$2 billion to save firms (and the banks that made loans to them) from bankruptcy.

This Note argues that many of the problems that have plagued highway franchises stem from the combined effects of special features of the highway business and of the type of franchise contract that has typically been used. First, traffic forecasts are notoriously imprecise; it is difficult enough to make accurate traffic predictions for the short run and much harder for the long run (box 1). Moreover, demand for a highway is largely beyond the control of the franchise holder. Second, most franchises have been awarded for a fixed term (say, twenty years) that is independent of demand realization. In

**BOX 1 DEMAND FLUCTUATIONS—VEHICLE FLOW ON TOLL ROADS NEAR SANTIAGO, CHILE**

The demand risk faced by the holder of a fixed term franchise is illustrated by the table below. The table shows the rate of growth in the number of motor vehicles paying tolls during the past decade at the three busiest tollbooths near Santiago, Chile. Even though Chile's economy has been more stable in the past decade than in any other decade this century, with no recessions and GDP growing by an average 6 percent a year, traffic growth rates have fluctuated considerably—both across years and across roads in a given year.

**Annual rate of growth in vehicles paying tolls  
(percent)**

Tollbooth	1987	1988	1989	1990	1991	1992	1993	1994	1995
Angostura	8.8	15.0	11.7	4.5	8.7	12.4	6.7	7.8	9.4
Zapata	21.5	14.4	13.1	8.1	7.2	5.2	2.9	3.9	4.9
Lampa	3.8	13.4	15.9	8.9	6.8	18.0	8.8	16.2	12.5

Source: Ministry of Public Works, Chile.

what follows, this Note describes the main shortcomings of fixed term franchises and then presents a new mechanism, the least-present-value-of-revenue (LPVR) auction, that endogenously adjusts the duration of the franchise to the realization of demand. The Note argues that this mechanism is far better than current systems.

### Fixed term franchises

Fixed term mechanisms typically are one of two kinds. In the version now used in Chile, the regulator fixes the term and the franchise is awarded to the firm that bids the lowest toll in a competitive auction. In the version that was used in Mexico, tolls were fixed by the regulator and the franchise was awarded to the firm asking for the shortest term.

The main defect of fixed term mechanisms is that they create unnecessary risk for the franchise holder. Since demand is uncertain and competitive bidding dissipates ex ante rents, the winner of the franchise chooses a franchise term (or toll) such that it faces significant losses if traffic turns out to be considerably below expectations. This may happen even when traffic flows are sufficient to pay for the road in the long run. Faced with high risk, the franchise holder will demand a risk premium, which

is paid by users (or, through government guarantees, by taxpayers). For Chile, this risk premium is estimated at about a third of the investment cost; for most developing countries, it can be expected to be even larger.

Because of the high risk associated with highway franchises, lenders have refused to grant franchise holders loans unless governments guarantee the debt (as in Spain) or provide generous minimum toll revenue guarantees (as in Chile). Guarantees reduce the incentives for lenders to screen projects and monitor their performance, one of the basic arguments for highway franchises. A second consequence of high risk is that when demand turns out to be lower than expected, contracts are renegotiated and losses shifted to users or taxpayers. The expectation of renegotiation prompts firms to bid artificially low tolls (to lowball), expecting better terms after the contract has been awarded. It also implies that firms that excel at renegotiating contracts can compete with firms that are considerably more efficient at building, financing, and operating highways. Thus, with fixed term franchises, the advantages of privatizing roads are easily lost: taxpayers and users pay for roads that are bad investments, inefficient firms win franchises, and firms do not mind building white elephants.



Fixed term franchises have additional disadvantages. First, they increase the likelihood that the franchise will be awarded to the firm with the most optimistic traffic projection (the winner's curse). Second, fixed term contracts are inflexible, which can be a serious problem if tolls turn out to be out of line or congestion makes it desirable to widen the highway. The problem arises because it is difficult to agree on the fair compensation—the expected income forgone over the remainder of the franchise—to be paid to the franchise holder in these cases.

### LPVR franchises

The least-present-value-of-revenue mechanism corrects several shortcomings of fixed term mechanisms. In this approach,

- The regulator sets a maximum toll.
- The franchise is won by the firm bidding the least present value of toll revenue.
- The franchise ends when the present value of toll revenue equals the franchise holder's bid.
- Toll revenue is discounted at a predetermined rate specified in the franchise contract. The rate should be a good estimate of the loan rate faced by franchise holders.

As an example, consider an auction with two firms. The first firm estimates costs of \$100 million and bids \$112 million, while the second estimates costs of \$99 million and bids \$110 million. The second firm wins and operates the franchise until the present value of toll revenue is \$110 million.

### Advantages

The basic principle underlying LPVR auctions is that the franchise holder should not make losses when the long-run demand for the highway is sufficient to pay all costs. Thus, the term lengthens when traffic grows more slowly than expected, and it shortens when traffic grows more rapidly than expected. Revenues are the same even when demand realizations are different, so the risk borne by the franchise holder is far smaller than under fixed term franchises. For this reason, the franchise holder requires a

smaller risk premium, and users pay less on average. The lower risk for the franchise holder also means that the winner's curse is less likely, because bids are less dependent on demand projections.

With LPVR auctions, the franchise holder still bears the risk that the road may not be self-financing in the long run—that is, that it will turn out to be a white elephant. But since white elephants are usually the result of lobbying by pressure groups, they should be easily detected by potential bidders.

A further advantage of LPVR auctions is that competition for the franchise reveals, through the winner's bid, the income required to earn a normal return. This reduces the scope for opportunism after the contract is awarded, because the winning bid can be used as a benchmark. In the case of government opportunism leading to a regulatory taking, the franchise holder can go to court, asking for fair compensation equal to the difference between its bid and the present value of toll revenues already received.

Opportunistic renegotiations that favor the franchise holder are also less likely, for three reasons. First, because the term automatically lengthens if demand grows more slowly than expected, it is less likely that franchise holders will face financial distress and therefore demand renegotiation. Second, renegotiations in favor of the franchise holders are explicit wealth transfers: term extensions are impossible by definition, and the only effect of a toll increase is to shorten the term of the franchise. Since explicit wealth transfers are easier for the public and the media to understand, they are less likely. Third, the government can discourage lowballing by bidders by threatening to end the franchise if the franchise holder asks for a renegotiation, compensating the franchise holder with whatever sum remains to be collected.

The winning bid determines the fair compensation for termination of the contract at any time as the difference between the present

value of revenue earned and the original bid. This ensures flexibility in LPVR contracts. If demand exceeds expectations and requires an expansion of the highway, the franchise holder can be paid the fair compensation and the franchise reaucted. It is also easy to adjust tolls. If tolls need to be raised because of congestion, the only effect is that the franchise ends earlier. If demand for the highway is highly uncertain before it is built (as is often the case for new highways), the setting of tolls can be postponed until after construction.

### Limitations

The main limitation of LPVR franchises compared with fixed term contracts is that they provide fewer incentives to engage in demand-enhancing activities. Any expense that increases demand shortens the franchise and so increases profits less than it would under a fixed term contract. As a result, the franchise holder may underinvest in road quality or maintenance, speedy attention at tollbooths, or swift cleanup of accidents. For this reason, LPVR auctions require regulatory institutions that set and enforce minimum quality standards for franchise holders. Regulation need not be complicated. For example, independent agencies could monitor waiting times at tollbooths, and the waiting times could be published in newspapers to make the regulators accountable to users. (Even with fixed term franchises, it becomes necessary to monitor quality as the end of the term approaches.) This defect of LPVR auctions can be mitigated by rewarding franchise holders that achieve short franchises.

### Conclusion

LPVR auctions are a promising mechanism for privatizing not only highways but also other infrastructure projects. They are attractive for projects requiring large investments up front and in which demand is unresponsive to efforts by the franchise holder. They also require a low-cost capability to verify revenues, the quality of service, and the residual value of investments.

For further reading, see Eduardo Engel, Ronald Fischer, and Alexander Galetovic, "Highway Franchising: Pitfalls and Opportunities," *American Economic Review* 87(2):68–72 (May 1997).

*Eduardo Engel, Ronald Fischer, and Alexander Galetovic, Centro de Economía Aplicada, Departamento de Ingeniería Industrial, Universidad de Chile, Santiago (eengel@dii.uchile.cl, rfischer@dii.uchile.cl, or agaleta@dii.uchile.cl)*

# Water Privatization and Regulation in England and Wales

*Caroline van den Berg*

**In 1989, England and Wales embarked on one of the first modern privatizations in the water sector. The government sold ten publicly owned water companies—encompassing water and sewerage assets and operating licenses—and set up a new, independent sector regulator. These reforms have delivered an impressive volume of new investment, full compliance with the world’s most stringent drinking water standards, a higher quality of river water, and a more transparent water pricing system. But experience during the first regulatory cycle also reveals some lessons about the information requirements of effective regulation and the risks to the political independence of the regulator. This Note reviews these lessons.**

Before 1989, the water industry in England and Wales consisted of ten publicly owned water authorities and twenty-nine privately owned water supply companies. The government argued for privatizing the publicly owned services on two counts: privatization would result in more efficient companies, and private owners would fund the investments needed to meet tighter water quality standards and make up for past underinvestment.

The government split the water authorities, transferring the main environmental regulatory responsibilities to the National Rivers Authority and converting the remaining water and sewerage services into private companies to be sold on the stock exchange. The government also set up a new regulatory agency, Ofwat, which sets the maximum prices that water companies can charge. The agency’s primary duty is to ensure that the companies can finance themselves by earning a reasonable rate of return on capital. One of the major objectives in the new regulatory design was to avoid political interference in the regulatory process. Built-in checks and balances, such as financial autonomy for the sector regulator and status

as an independent government agency, were supposed to limit political discretion in policy and investment decisions. To further strengthen independence, the regulator was given broad discretion in interpreting the law, implementing general rules, and modifying company licenses.

An important innovation of the British system of economic regulation is the use of price caps. These caps set maximum prices for all water companies, in five-year cycles. A second innovation—the use of yardstick, or comparative, competition—addresses the problem of the water companies’ monopoly over information the regulator needs to do a good job. Through performance comparisons, Ofwat derives yardsticks that it can use to assess the efficiency of water companies. Less efficient utilities are given more demanding efficiency targets and are expected to come up to the standard set by the best performers.

Because large investments were necessary and water privatization was new territory for the government, the privatization was done on terms favorable to shareholders to ensure that the pub-

lic flotation would succeed: the government wrote off most of the debt on the public companies' books. (As a result, the government's costs ended up exceeding its revenues: the direct net effect of the sale of the companies was a deficit of about £1.3 billion.)

The reforms also affected the twenty-nine privately owned water supply companies. Before the reforms, these companies had been subject to statutory controls on profits, dividends, and borrowings. In 1989, they were brought under the same regulatory regime as the privatized water authorities and were able to convert themselves into public limited companies. By the end of 1996, after a spate of mergers and takeovers, only nineteen such companies remained.

### **Impact on investment, operating efficiency, and profits**

With regard to the government's two objectives—investment and efficiency—the results have been mixed. By volume, the government's investment targets have been realized. In the six years after privatization, the water companies invested a massive £17 billion, compared with £9.3 billion in the six years before privatization.

But there are signs that not all this investment has been efficient. First, because the price cap worked more like rate-of-return regulation during the first regulatory cycle (1989–94), there may have been incentives to gold-plate investment plans. Second, the separation of economic and environmental regulatory responsibilities made creating the right investment incentives more difficult—especially given customers' low willingness to pay for the water quality improvements mandated in European Union directives. Establishing closer coordination between these two regulatory functions earlier in the reforms could have resulted in clearer and less conflicting investment incentives.

Third, because Ofwat's mandate is limited to ensuring the financial viability of the utilities, it does not take the public costs and benefits

of water policies sufficiently into consideration when assessing companies' investment programs. The most striking case in point is water metering for residential customers, on which almost no progress has been made. Although in the medium to longer term metering is desirable as a means of managing water resources more effectively, its high up-front costs have led many water companies to drag their feet. Finally, since privatization, investments in the regulated water business have occurred in a cycle that corresponds with the regulatory cycle. This pattern tends to distort the timing of investments and weaken utilities' incentives to generate cost savings toward the end of the regulatory cycle.

Real sector operating costs per unit of water actually increased slightly during the first regulatory cycle, though staff numbers fell. The companies attribute this rise in operating costs to the additional investment to achieve higher water quality standards. Another reason for the higher costs could have been high transfer pricing between regulated and unregulated parts of the business (such as laboratory and consultancy services). As long as cost pass-through is allowed, a holding company can increase its profits by pricing such internal transactions above cost. The regulator has taken steps to prevent these cross-subsidies and requires companies to disclose more information on transfer pricing. But the main factor in the higher costs appears to be the generous first price cap. Utilities apparently had few incentives to reduce their operating costs. The regulator tightened the price cap considerably in 1995, however, so it is likely that companies will reduce their operating costs during the second regulatory cycle (1995–2000).

The investment boom has led to significant price increases for consumers. The real average residential water and sewerage bill has gone up by 28 percent since privatization. The regulator has accepted that there are large differences among water companies and has calculated different price caps. As a result, there are large variations in average water and sew-

erage bills among utilities. For the average household, water and sewerage are still affordable but low-income households have difficulty paying for these services.

At the same time that prices were rising for consumers, the profitability of the water and sewerage companies soared, creating a serious public backlash against the reforms. If these profits are adjusted for the £5 billion debt write-off, the increase is less spectacular, though still positive.

### Regulatory lessons

It is still early days for the new regulatory model. But the experience so far has shown that the tools of price cap regulation are both complex to administer and critical: if the price cap is set too high, the utilities will earn excess profits; if it is set too low, underinvestment will result. As mentioned, in the first regulatory cycle, price cap regulation did not differ significantly from rate-of-return regulation. The second cycle will be a truer test of the mechanism. But setting the key parameters in the mechanism—using financial prices, defining the price adjustment factor, choosing the method of asset valuation—has been complex and time-consuming. The price cap also suffers from being grafted onto the inefficient tariff structure of the original publicly owned utilities—a tariff regime that was not based on water consumption levels and did not provide an incentive for efficient water use. Ideally, the rate structure should be revamped before privatization—after privatization, it is hard to revise.

Even though price caps are said to reduce the possibilities for cross-subsidization, the experience so far shows that price cap regulation has not eliminated the incentive for companies to selectively alter prices. The tariff basket formula used by Ofwat still provides the companies leeway for price discrimination between rate categories while they keep the overall price for the tariff basket below the price cap. The companies apply the price cap to an average price for a group of services or rate

categories. Using moral suasion, the regulator has insisted on rebalancing tariffs, but many of the inefficiencies in the rate structure remain. In most companies, for example, households with water meters still pay higher effective rates than those without meters.

The water companies' performance shows how important it is to provide the right incentives. To do this, the regulator must have access to good information. But the water companies' control over information affords them opportunities to manipulate the information they make available to the regulator. Yardstick competition was supposed to address this problem. Under yardstick competition, the regulator sets price caps on the basis of comparative data from similar utilities in the United Kingdom or abroad. Efficiency levels for inputs, unit costs, and quality of service are set on the basis of lowest-cost, highest-service standards. Yardstick competition is most effective when firms face similar conditions. Ofwat's calculation of individual price caps for the water companies suggests that each company operates under different conditions. So far, Ofwat has not been very successful in developing robust measures of relative performance. When used, relative performance indicators have resulted mainly in broad groupings indicating below- or above-average performance. Building a reliable database and related analytical tools has proved a regulatory challenge requiring much time and effort.

The water companies' information monopoly increases the risk of regulatory capture. Aware of this risk, Ofwat has stepped up its efforts to prevent regulatory capture by expanding the scale and scope of regulation and by applying more elaborate tools for monitoring. For example, it is using expert engineering appraisals, through capital expenditure certification and through cost reductions based on the results of econometric models. But econometric modeling suffers from lack of sufficient data to run regressions, problems in quantifying explanatory factors, and difficulties in assessing an appropriate charge for capital assets. Monitoring the performance of private utilities to ensure

the effectiveness of price cap regulation has become an elaborate process that increasingly resembles Treasury scrutiny and control of utilities under public ownership. This can in the longer run result in excessive control, which could erode utilities' management autonomy.

The regulator has broad discretionary power to modify the licenses of a company, thus altering the fundamental regulations that apply. This discretion, combined with the importance in the British model of the individual regulator's personality, adds up to a regulatory environment that is less stable than often presumed. At the same time, and despite efforts to insulate regulation from political interference, politics remain an important influence on the orientation of regulation. Although price caps are supposed to be reset every five years, the water regulator intervened twice during the first regulatory cycle, forcing two interim price reductions—clearly under political pressure. The current debate about profit sharing and the introduction of competition in the water industry is inspired mainly by political considerations. As a result of the perceived instability of the regime, investors require higher risk premiums and thus higher rates of return.

The degree of regulatory discretion has led to criticism about the regulator's lack of accountability. There are mechanisms to challenge regulatory decisions, but only a few companies have used them, suggesting that utilities have little confidence that they can overturn Ofwat's decisions. There is evidently a tradeoff between accountability and maintaining an independent regulator. Although the independence of the regulator is important, the balance between independence and accountability needs to be shifted in favor of the latter so as to reduce the instability of the regulatory system.

## Conclusion

The England and Wales privatization rates as a partial success over the first regulatory cycle. It has delivered the large investments needed to meet higher water quality standards, but it

is still too early for a verdict on efficiency because the first price cap was not tough enough to force companies to reduce operating costs. The experience shows that to set appropriate price caps, the regulator needs a sound and reliable database and effective tools to analyze the data. Building the database and assembling the necessary tools takes time and effort. The second regulatory cycle should be a better test of price cap regulation. But the early difficulties have had costs. The combination of steep tariff increases and sale terms that were too favorable for shareholders and firms has created credibility problems for the reforms. Public resistance to the price rises associated with privatization has made the regulatory system more susceptible to political interference—against which the built-in checks and balances have not provided sufficient insulation. The experience has also shown the need for better coordination between economic regulation of the water companies and such government functions as water resource management and support for lower-income households.

*Caroline van den Berg, Latin America and the Caribbean Country Department III  
(cvandenberg@worldbank.org)*

# Designing Regulatory Institutions for Infrastructure—Lessons from Argentina

*Antonio Estache*

**As in many aspects of infrastructure reform, Argentina has been a leader in experimenting with the design of regulatory agencies. This Note describes the essential elements of good regulatory agency design—*independence, autonomy, expertise, and accountability*—and rates Argentina’s performance against these benchmarks in the gas, power, water, and telecommunications sectors. The Note concludes that the biggest challenges in design are achieving political independence and establishing rules to ensure regulatory accountability.**

## **What the doctor would order**

Most regulatory experts would argue that there are some common elements that designers of regulatory agencies must address.<sup>1</sup> First, governments must decide on the breadth of regulatory authority. In principle, regulatory authorities can be *industry-specific*, with separate agencies for gas, water, electricity, and so on, as in the United Kingdom. They can be *sector-specific*, with separate agencies for groups of related industries, such as for gas and electricity combined, as in Colombia and Hungary. Or they can be *multisectoral*, with a single regulatory agency for all or most infrastructure sectors, as at the state level in the United States and the national level in Jamaica. Most experts agree that a multisectoral agency offers advantages over the alternatives. It pools regulatory resources (regulatory economists and lawyers, for example), especially important in countries with limited regulatory capacity. And by pitting interest groups against one another, it tends to increase resistance to regulatory capture and political interference and to improve the consistency of decisions across sectors.

Next, the designers face a set of related issues having to do with independence, autonomy, and accountability.

**Independence.** Ideally, regulators should operate independent of political pressure—from ministries and from the regulated enterprises, private or public. Here, most experts would argue that as a minimum for ensuring this independence, regulators should be appointed on the basis of professional rather than political criteria and should have formal protection from arbitrary removal during their term. In addition, the appointment process should involve both the executive and the legislature, to ensure proper checks and balances.

**Autonomy.** To be autonomous, regulatory agencies must first have their own resources—from their own funding sources. Reliance on budgetary transfers controlled by politicians is often viewed as a threat to regulators’ independence. Cutting regulators’ allocation would be an easy way to reduce their effectiveness. The most common method of funding is through levies on the regulated firms or on the consumers of the regulated services. These levies can be viewed as user fees for the protection services provided by the regulators. But autonomy must go beyond financing. Regulators should also have autonomy in staffing, so that they can recruit staff with high levels of expertise. The tasks of the agency should determine the size of its staff—not political considerations such as how many people have lost

### BOX 1 MAIN FEATURES OF ENRE'S STRUCTURE AND FUNCTION

#### Structure

- Government-appointed board of five directors.
- The president, the vice president, and one director were recruited and hired through public job listings (candidates were required to be an engineer or economist and to have relevant experience; they were interviewed by an international consulting firm, which short-listed three from which the secretary of energy selected the president and the vice president). The other two directors were selected from a shortlist proposed by the Federal Energy Council (a provincial entity).

#### Functions and obligations

- Determine the basis and criteria for assigning concessions.
- Enforce the regulatory framework, contracts, and public service obligations.
- Issue rules and regulations on safety matters, technical procedures, and norms and monitor compliance.
- Monitor billing, control and use of meters, interruption and reconnection of service, access, and service quality.
- Define the basis for calculating tariffs and ensure compliance.
- Publicize the general principles that regulated entities must follow to avoid discrimination among consumers.
- Organize public hearings.
- Regulate the proceedings for imposing sanctions and impose the appropriate penalties.
- Take relevant issues to court.
- Issue an annual report and recommend policy actions to the executive as needed.

- Rules setting deadlines for decisions.
- Rules requiring detailed justifications and nonpolitical reviews of decisions.
- Processes to ensure that all concerned parties have the opportunity to express their views in public hearings and to appeal decisions.
- Rules to permit the removal of regulators in cases of proven misconduct.

Another key factor in accountability is the number of regulators. Generally, a regulatory commission made up of three to five members is a better choice than a single regulator, because each member of the commission ends up monitoring the others, increasing accountability. The advantage of regulatory commissions is now widely recognized even in the United Kingdom, which originated the single-regulator approach.

### The national regulators

In Argentina, responsibility for infrastructure services is divided between the national and the provincial governments. The national government initiated a privatization program in 1989 for all utilities under its purview—mainly gas, telecommunications, electricity generation and transmission, and water and electricity distribution in the Buenos Aires metropolitan area. Like the United Kingdom, the national government created industry-specific agencies for the four main utilities: gas (ENARGAS), electricity (ENRE), telecommunications (CNT), and water and sanitation (ETOSS). But unlike the United Kingdom, Argentina has opted for regulatory commissions for each agency rather than a single regulator.

their jobs through privatization. Overstaffing an agency can lead to interference with the commercial operation of regulated firms. Achieving staffing autonomy in regulatory agencies often requires exempting them from civil service salary and recruitment rules. It may also require allowing them to recruit external consultants. Where economic, accounting, and legal expertise is in short supply, banning subcontracting can constrain regulatory capacity.

**Accountability.** Accountability requires transparency in the regulatory agency's decisionmaking process, something that is often counterintuitive for many bureaucrats. It also requires clear, simple procedural rules. Most important are:

**Gas and electricity.** Most successful have been the two agencies covering the power sector, ENARGAS (Ente Nacional Regulador del Gas) and ENRE (Ente Nacional Regulador de la Electricidad). These agencies are addressing many issues that are similar or strongly related, and it could be argued that the two should be amalgamated into one (see box 1 for structure and functions of ENRE). Still, they have generally been extremely effective in carrying out most of their responsibilities. Both are reasonably independent, autonomous, and accountable. They have sufficient funding—some would argue too



much—to perform all their tasks, and from their own sources. Both have a small, technically competent, well-paid staff (less than 100, including regional offices), and the regulators on their commissions are accountable to both the legislative and the executive branches of government.

But both have been criticized for the absence of any systematic external scrutiny of their practices and administrative processes and for the lack of transparency in some of their decisions. This lack of transparency increases the risk of capture—and the risk that regulatory costs may be too high and that users may be overcharged. There is public concern about the power that the energy secretary still retains over some aspects of the regulation of the gas and electricity sectors. The secretariat is the first administrative step in appeals of regulatory decisions, implying that in conflicts between a regulator's decision and the government, the regulator is likely to lose. (In other countries, appeals often go straight to the courts.) And both agencies still lack a key regulatory tool—a set of accounting standards and procedures. Consistent regulatory accounts across all firms, with detailed cost information for each type of service, are essential for effective economic regulation, particularly for revising prices and monitoring whether regulated firms are using cross-subsidies.

**Water.** The water regulator, ETOSS (Ente Tripartito de Obras y Servicios Sanitarios), has been less effective. Although its performance is improving, it has taken about two years to start to come to grips with its problems. Some issues will be hard to resolve. For example, a potential problem for the agency's independence is that its commission represents the interests of three different levels of government: the national government (as owner of the assets), the municipality of Buenos Aires, and the province. All three layers of government may be controlled by different political parties, which could lead to political tensions that affect decisions.

ETOSS is funded by a fee the concessionaire levies on consumers (2.67 percent of the bill).

But it may not have sufficient autonomy—or accountability—in staffing: there may be too many staff, and they lack many of the skills required for effective regulation. Over the past year or so, ETOSS has begun to fix these problems, hiring international consultants to deal with specific issues. But as a result of initial failures in resolving problems with the concessionaire, ETOSS still operates under heavy scrutiny from the media and interest groups. This shows the importance of getting things right at the start. Once lost, credibility is hard to rebuild—especially when there is a lack of transparency in decisionmaking.

**Telecommunications.** The weakest performer has been CNT (Comisión Nacional de Telecomunicaciones). It was created by a 1990 executive decree that divided the regulatory responsibilities for telecommunications between CNT and the Secretariat of Telecommunications. Creation by executive decree tends not to be conducive to independence, because it makes the regulator accountable to the executive branch, not the legislative. The decree creating CNT has already been modified twice, reducing the agency's regulatory role and expanding the executive's.

CNT's operation is supposed to be financed through a 0.5 percent sales tax on telecommunications firms and payments by broadcasters for radio spectrum. But it has not yet managed to achieve autonomy in decisionmaking or expertise. The problem stems in part from the executive branch's influence on some key decisions and in part from the way regulatory responsibilities have been divided between the ministry and CNT. For example, end-user rates and access rates need to be harmonized, but the ministry is responsible for the first, and CNT for the second. The costs of the division have been highlighted recently in the controversy over rebalancing the rates to correct the distortion between long-distance and local rates and between commercial and residential rates. This controversy also exposes the cost of CNT's staffing problem: CNT has not yet assembled in-house the skills required to address the complex issues it faces. But it has begun to hire consultants to

address the rebalancing issue, and staff training is on the regulators' reform agenda.

CNT's accountability performance has also been under the spotlight. With no time limits for making decisions or resolving conflicts, CNT has typically been slow. And review of CNT's activities has been less transparent than it should be, even though CNT reports directly to the president's office. Overall, the regulatory experience in telecommunications has shown the tough political consequences that failures in institutional design can have for policymakers. But it has also provided useful lessons for regulators in other sectors.

### The provincial regulators

Provincial governments began to follow the national government's privatization lead in the mid-1990s. Seven provinces have granted concessions for water and sanitation services, and eleven provinces concessions for electricity distribution. The privatization process and the concession contracts in electricity, prepared with technical assistance from the National Energy Secretariat, have been fairly standard across provinces. There is more variation in the water concessions, which differ in award criteria, contractual obligations, and tariff design.

The institutional arrangements adopted by the national and provincial governments have much in common, and the provincial regulatory institutions, just now getting off the ground, face problems similar to those at the national level. Most provinces are following the national government's lead, opting for industry-specific agencies—though some, such as Catamarca, have opted for the public utility commission approach. Most of the effort at this early stage centers on staffing. Some provinces have fallen short in ensuring the political independence of commission staff, with some staff having been politically appointed. Staff numbers are reasonable, however (ranging from seven to forty). The regulatory agencies avoided an important misstep early on, rejecting suggestions that they hire much of the personnel of the public utilities declared redundant by the concessionaires. That

could have led to conflicts stemming from new regulators' resentment at not being kept on by the private company taking over the utility.

Regulatory agencies are addressing the training needs of their staff. But salaries are not always high enough to retain the most qualified staff or to attract new staff. Funding seems secure—all provinces have introduced a regulatory user fee. But as at the national level, processes are not yet adequately defined, raising concerns about accountability. In Cordoba and Tucuman, the problems led to the cancellation of privatization processes.

### Conclusion

The biggest challenges in regulatory design are achieving political independence and introducing rules to ensure accountability. Political independence requires a commitment by the government early in the process. And accountability requires sound procedural and accounting rules. But ensuring the independence of regulatory agencies is likely to be more complex, because politicians often have a hard time giving up control over resources considered politically sensitive.

Argentina's experience shows that even the most innovative reformers can have problems ensuring the independence, autonomy, and accountability of regulatory agencies. But even in telecommunications, these problems have not yet been serious enough to offset the short-term gains of privatization. Argentines are receiving better utility services—and often at lower prices—than before privatization. Whether these gains can be sustained depends on the strength of the regulatory agencies and on their capacity to deliver on their responsibilities. Time is the test for these institutional issues.

<sup>1</sup> For a recent overview of best practice in utility regulation, see W. Smith, "Utility Regulators: Creating Agencies in Reforming and Developing Countries" (paper presented to the International Forum for Utility Regulation, Oxford, England, June 1996).

*Antonio Estache, Economic Development Institute (aestache@worldbank.org)*

# Colombia's Gradualist Approach to Private Participation in Infrastructure

*Philip Gray*

**Like the model adopted by many Asian countries, the Colombian approach to private participation in infrastructure aims to attract project financing for new facilities, leaving most existing assets in state hands. While the approach has been successful in attracting substantial private capital to Colombia, it has been less successful in delivering the potential efficiency gains or the reforms that will ensure that assets remain private and that private sector actions are constrained by a stable set of rules and regulations. Recently, Colombia has moved toward the model adopted by other countries in Latin America—privatizing existing assets—a policy likely to provide a more enduring basis for reform.**

Three main factors have shaped the Colombian program. First, for many years, Colombia had the most stable economy in Latin America. A record of high growth and relatively low inflation earned the country an investment-grade credit rating, making it attractive to foreign private investors (though lately drug trafficking has undermined some of this stability). As a result of this record, Colombia has had great success in attracting private investment in infrastructure, particularly through project finance. It led Latin America in project finance in 1995 and ranked fifth in the world, drawing US\$1.56 billion of loan finance for infrastructure projects. Private financing has been coming in for new power projects, toll roads, gas pipelines, and telecommunications lines. Some of these projects have been very innovative. For example, at El Dorado airport in Bogotá, a private firm is building a second runway while operating the existing runway in return for landing fees.

Second, state enterprises and their trade unions have been effective at resisting large-scale privatization of existing assets. An abortive attempt to privatize the state-owned telecommunications company in 1992 led to a week-long

disruption of telephone service, weakening the political will for the kind of “big bang” approach that the Argentine government had pursued. So the government has instead chiseled away at the edges of public monopolies by phasing in competition and privatization only gradually. Until recently, privatization was confined to build-operate-transfer (BOT) contracts, although the government also set up private operating concessions in the rail sector and privatized the ports. Third, much of the country's infrastructure is owned by municipal governments, and the central government has no legal authority to privatize these assets. As a result, it can influence most of the privatization process only indirectly, for example, through advice and financial support.

Colombia's gradualist approach manifests itself in the three major features of its infrastructure program: the competitive framework, the different forms of private participation, and the development of the regulatory framework.

## **Competitive framework**

The competitive framework within which infrastructure is provided is halfway between out-

right liberalization and complete monopoly. In telecommunications, for example, the country opened the sector through a phased program, starting with three regional duopolies in cellular telecommunications (although the cellular market will be opened to further competition in 1999). In each of the three duopolies, one operator has mixed public and private ownership and the other is fully private. A "managed" opening of the long-distance sector has been repeatedly postponed and is now being relegated to further study. The introduction of competition in long-distance services was meant to bring in two new competitors for the incumbent, Telecom, with the entrants to pay a fee for entering the market. The planned policy is similar to the approach taken by the British government, which started with a duopoly in long-distance services and opened the sector to new entrants seven years later. By contrast, Chile opened the sector completely, attracting six new private entrants. The fierce price competition that followed allowed Chileans to enjoy international prices that for a time were cheaper than those in the United States.

In power, the government recently set up a market for generation similar in some respects to those in Argentina and Chile—though it is more open and transparent because it allows generators to bid prices at which they are willing to generate (rather than audited costs) and it allows traders as well as generators to participate. The market has been in operation for about a year. But most new private generation capacity has been sold through long-term power purchase contracts with public distribution companies at prices well above the prevailing power market price. Part of the reason for the low market prices is that most power is still sold through publicly owned and vertically integrated companies. Another factor contributing to the low prices has been the ample rainfall in the predominately hydro-based system. But the government has taken several steps to ensure that the market becomes more dominant. It has refused to guarantee any future power purchase contracts and forced the distributors to purchase at least 40 percent of their power through the market. It has also adjusted the market rules to

ensure that generators can receive a fixed capacity payment regardless of actual operation. This is meant to encourage new private entry into generation by reducing the market risks in the hydro-dominated market.

The shift to privatizing existing generation assets should also lead to more new investment as the new private owners become more comfortable with the market risks they face. Encouraging signs are also coming from new BOT generation deals. In the recent Termovalle project, for example, 20 percent of power generation has not been placed under long-term contracts and is available for sale through the market. Perhaps even more significant, the planned privatization of distribution, starting with the vertically integrated firm EPISA, should lead the way toward the creation of more credit-worthy purchasing entities, further promoting the sustainability of reforms.

In contrast to the telecommunications and power sectors, among privatized ports competition has been vigorous. Prices have fallen by some 50 percent a year since privatization, and the quality of port services has improved dramatically, with productivity increasing by 60 percent and handling times cut in half. Even here, though, intervention continues, and temporary price caps and floors have been imposed to prevent competition from completely undermining the position of the highest-cost ports.

### **Ownership framework**

The Colombian approach to ownership is eclectic, using models ranging from joint ventures and leases to outright privatization, with varying success. An important feature of the ownership framework is the degree of municipal ownership, particularly in water and sewerage. Municipal ownership also extends to "multi-utilities," such as the Empresa Pública de Medellín, which combine electricity, local telephone service, water and sewerage, and other utilities. As mentioned, the extent to which the central government can dictate a privatization strategy to the municipalities is limited—part of the reason for the eclecticism. The central

government can only provide a series of carrots and sticks to try to prompt municipal authorities to move in the direction it wants them to go.

One popular approach to infrastructure privatization among municipalities has been to create “mixed” companies, jointly owned by the public and private sectors. This approach allows municipal authorities to involve the private sector without completely losing control of corporate actions. A recent example is the joint public-private company established to provide water and sewerage services in Cartagena under a lease contract. The private operator runs the system and collects revenues, but the municipality retains the responsibility for major new investments. This arrangement has improved operating performance. But experience in other countries shows that separating operations and investment can lead to difficult disputes between the public and private parties because it shares the commercial risks of the contract between the two.<sup>1</sup>

Mixed companies are a popular transitional step in almost every privatization process. Governments argue that they can extract better value through phased privatization—selling shares in state-run companies in tranches—perhaps because the risk premium demanded by private investors diminishes as governments strengthen their credibility on the regulatory framework. But empirical studies of the performance of mixed companies suggest that they are less effective than either pure public or pure private ownership in the long run, possibly because of the potential conflicts of interest between the owners.<sup>2</sup> It is thus unclear whether experiments such as Cartagena will succeed in the long run unless more efforts are made to limit the political interference inherent in the ownership structure.

Another interesting feature of the Colombian system has been the “subconcessioning” by public companies of parts of their services to the private sector. The public entity maintains the main interface with consumers, and the private sector provides a specific input under a contract

with the public entity. Examples of such arrangements include the subconcessioning of rail services, the creation of subconcessions known as joint ventures in telecommunications (with equipment providers installing new lines), and the BOT contracts in electricity generation.

Although these subconcessions have had great success in achieving physical targets, they may be the least sustainable part of the program. For example, in the joint ventures set up to install new telecommunications lines, the contracts share the revenue risk associated with each line between Telecom and the private equipment provider, although the private firms receive minimum revenue guarantees. These contracts have been criticized as simply a means for Telecom to avoid budgetary restrictions and as an expensive form of financing. They do not increase competition or private ownership of the system.

In the rail sector, the provision of track and services has been separated, with the public sector retaining responsibility for the track through Ferrovias and private rail concessions providing services. This arrangement has led to disputes between Ferrovias and the private concessionaires over their responsibilities. The condition of the rail infrastructure has declined, and each has blamed the other for the sector's poor performance. Following the reorganization of the sector, freight declined from 900,000 tons to 300,000 between 1989 and 1992, and passengers from one million to 125,000. The government is now creating a new arrangement allowing vertically integrated concessions of both track and services, which it hopes will overcome the problems in the current arrangement by placing responsibility more clearly in the hands of the private operators.

The electricity generation sector has attracted new capacity and private financing, but the government worries that it has been at the cost of excessive guarantees. In the future, new capacity will have to come onstream without extensive government support, relying more on the creditworthiness of the offtakers and revenue streams from the electricity market.

## Regulatory framework

Like other countries, Colombia has developed a series of regulatory commissions to regulate the private infrastructure providers. It now has regulatory commissions for energy, telecommunications, and water and sewerage. Although initially these commissions were to be essentially independent of the government, political fears of lack of control over the sectors led to the establishment of quasi-independent regulatory bodies with ministers sitting on the boards. Most of the commissioners appointed to the boards are independent of the government, however. But because most private participation has been through upstream contracts relatively unaffected by regulation, the actions and decisions of these regulatory bodies have not yet affected private firms significantly.

In the water and sewerage sector, the commission's role is ill defined because of the dispersed public ownership, with more than 1,000 municipalities remaining the dominant service providers. Until there is greater private participation in water and sewerage, the commission's functions are unlikely to become any clearer. In fact, unless regulatory decisions come to have a greater impact on private operators, the regulatory system is unlikely to be sustainable: with the regulators acting primarily to discipline public providers, conflicts of interest will arise as sector ministers continue to be both owners and regulators.

As in Chile, there is a division of labor in regulation between the regulatory commissions, which are responsible for developing the pricing and other regulatory rules under which companies provide services, and the Superintendency of Public Services, which was given a broad mandate in the 1991 constitution to ensure that the rules are adhered to and that the companies provide services efficiently. In practice, the roles of these agencies have not been closely defined, and a turf war could well ensue. Moreover, it is not clear whether such a division of labor makes sense. In describing a similar situation in the United Kingdom, John

Kay, director of the Oxford University Business School, said that "separation between policy and administration could never work very well because, in any but the simplest of cases, it was impossible to make sensible decisions about what to do without being involved in doing it and difficult to do it well without some knowledge of and sympathy for the reasons it needs to be done."<sup>3</sup>

Only as more private providers come under the purview of the regulatory agencies is it likely that strong pressure will be exerted to ensure that the regulatory agencies work efficiently, with greater independence from the line ministries, and that the division of work between the superintendency and the regulatory commissions is clarified.

## Conclusion

Colombia has attracted large amounts of private capital into its infrastructure sectors, primarily through project finance, an approach made possible by the country's investment-grade rating. It has avoided the "big bang" route of outright privatization taken by Southern Cone countries such as Argentina and Chile. But in doing so, it has made private participation more complex and potentially less sustainable because of the lack of clarity surrounding the public and private roles in regulation, operation, and investment. These problems have been recognized, however, and Colombia is now moving to privatize electricity generation and distribution and to set up rail concessions that give the private sector full responsibility for sector performance.

<sup>1</sup> See, for example, Penelope Brook Cowen, "The Guinea Water Lease—Five Years On" (*Private Sector*, June 1996).

<sup>2</sup> Boardman and Vining, "Ownership and Performance in Competitive Environments: A Comparison of Private, Mixed and State-Owned Enterprises," *Journal of Law and Economics* 32:1-33 (1989).

<sup>3</sup> "A Description of the Problems of Separation of Policy and Administration," *Financial Times*, November 8, 1996.

*Philip Gray, Private Sector Development  
Department (pgray@worldbank.org)*

# Correction

The table below should replace the table on page 21, which contains an error.

**TABLE 1 IMPROVEMENT IN THE PERFORMANCE OF  
PRIVATIZED FIRMS IN MEXICO (percent)**

<b>Indicator</b>	<b>Average change</b>	<b>Source of higher profitability</b>	<b>Contribution</b>
<b>Profitability</b>	<b>40</b>	<b>Efficiency</b>	
<b>Costs per unit</b>	<b>-18</b>	<b>improvements</b>	<b>52</b>
<b>Output</b>	<b>54</b>	<b>Price rises</b>	<b>15</b>
<b>Employment</b>	<b>-20</b>	<b>Employment cuts</b>	<b>33</b>
<b>Wages</b>		<b>Total</b>	<b>100</b>
<b>Blue collar</b>	<b>120</b>		
<b>White collar</b>	<b>78</b>		

*Note:* These are industry-adjusted results using as a benchmark private firms in the same industry and listed on the Mexican stock exchange.

*Source:* Authors' calculations based on data from the Mexican Ministry of Finance and Public Credit and the Mexican National Statistics Institute.

# Benefits of Privatization—Evidence from Mexico

Rafael La Porta and Florencio López-de-Silanes

Critics often argue that the benefits of privatization come at significant cost to society. This Note reports on a study that looks at whether this criticism is valid for Mexico's privatization program, one of the world's largest case-by-case programs. Using data for more than 200 nonfinancial firms privatized between 1983 and 1992, the study first calculates the changes in profitability, efficiency, employment, wages, investment, output, prices, and taxes paid. Then it considers the two most likely channels of any losses to society following privatization—higher prices (and lower output) as firms capitalize on market power, and layoffs and lower wages as they roll back generous labor contracts. To what extent do market power and price increases explain improvements in the performance of privatized firms? Does the increased profitability of privatized firms result from the expropriation of workers? The study also looks at the importance of deregulation to privatization: Is there any evidence that deregulation accelerates restructuring in newly privatized firms?

## The Mexican program and the data

Before the 1982 debt crisis, the Mexican government had been actively involved in the economy through state enterprises set up to meet multiple goals: infrastructure improvement, import substitution, regional development, and job creation. In 1982, Mexico had nearly 1,200 state enterprises, in almost every sector of the economy. They received subsidies and transfers equal to 12.7 percent of GDP, produced 14 percent of national output, employed 4.4 percent of the labor force, and accounted for 38 percent of fixed capital investment. The government began to unravel the state sector in

1983. It first reduced the number of state enterprises, largely through mergers and liquidations. Privatization began in earnest in 1985—though 96 percent of all assets were actually sold during the period 1988–92.

By June 1992, the government had privatized 361 firms. Data are available to the study for 218 of these firms. For each one, the study measures the change in indicators of performance by comparing the value in 1993 to the average value for the four years before privatization. The sample includes both privately owned and publicly traded firms—in sectors ranging from steel to airlines to food. Whenever possible, the study controls for macroeconomic and industry factors, to rule out (isolate) the effects

**TABLE 1 IMPROVEMENT IN THE PERFORMANCE OF PRIVATIZED FIRMS IN MEXICO (percent)**

Indicator	Average change	Source of higher profitability	Contribution
Profitability	40	Efficiency	
Costs per unit	18	improvements	52
Output	54	Price rises	15
Employment	-20	Employment cuts	33
Wages		Total	100
Blue collar	120		
White collar	78		

*Note:* These are industry-adjusted results using as a benchmark private firms in the same industry and listed on the Mexican stock exchange.

*Source:* Authors' calculations based on data from the Mexican Ministry of Finance and Public Credit and the Mexican National Statistics Institute.



of the rapid economic expansion and great sectoral transformations during the early 1990s in Mexico on the growth in sales and profits seen in privatized firms.

### Performance

Empirical analysis of the firms in the sample shows that profitability increased significantly after privatization according to four indicators, all ratios—operating income to sales, net income to sales, operating income to fixed assets, and net income to fixed assets. The firms were highly unprofitable before privatization, with a median ratio of net income to sales of –12.97 percent. The mean change in profitability from the preprivatization average to 1993 ranges from a low of 24.1 percentage points for the ratio of operating income to sales to a high of 39.9 percentage points for the ratio of net income to sales. These sharp increases exceed those found in other empirical studies. William Megginson, Robert Nash, and Matthias van Randenborgh, for example, show that in a sample of newly private firms, the cumulative mean change in the ratio of net income to sales in the three years following privatization was 7.5 percent.<sup>1</sup>

Large increases in operating efficiency underpin the gains in profitability in the Mexican sample. The average cost per unit plummeted 21.49 percent, while the average ratio of sales to fixed assets rose 64.64 percent and the average sales per employee nearly doubled. The higher sales per employee had a dramatic effect on the bottom line: the average operating income per employee rose from N\$1.67 to N\$54.17 (new 1993 pesos). Employment cuts are a big part of the story. Privatized firms reduced the number of both white- and blue-collar employees by half. And this probably underestimates the total layoffs, because the preprivatization figures are based on the average number of employees over only the four years before sale and employment fell steadily throughout the presale period.

Analysis of the sample shows that in the year before privatization, on average, half the installed

capacity of the firms was idle, so no large changes in investment were expected. But investment indicators show a moderate increase in the rate of capital accumulation, with the ratio of investment to sales increasing from 3 percent to 4.5 percent. Thus, the analysis shows, privatized firms were able to increase sales despite halving their workforces and increasing their capital stock only modestly. In fact, at 54.28 percent, the growth in average output (measured by real sales) is nothing short of spectacular. And in answer to politicians' prayers, privatized firms became significant taxpayers. Slightly more than half their gains in operating income go to taxes, offsetting transfers from the rest of society that result from privatization.

Adjusted for macroeconomic and sector effects, the performance indicators tell much the same story. Growth in sales remains strong even relative to the industry norm: the mean industry-adjusted growth in sales for the sample firms was 42.39 percent. In fact, improvements in overall industry conditions account for only about a fifth of the average growth in sales. The key finding from the industry-adjusted ratios: in 1993, the average privatized firm had profitability very similar to that of its private sector peers despite having previously underperformed this control group by as much as 26 to 40 percentage points (depending on the benchmark ratio used). This result suggests that the big performance gains are being driven by a catch-up effect.

Turning to price data, the analysis shows that the mean increase in the firms' prices relative to the producers price index is only 4.14 percent. One way to gauge how much price hikes may have contributed to the growth in profitability is to compare the increase in the ratio of operating income to sales with the increase that would have occurred if privatized firms had increased output but left prices unchanged (in real terms). Using this method, the study finds that price increases explain about 15 percent of the change in the mean ratio of operating income to sales. Thus, the analysis so far suggests that higher markups are not a big factor in the profitability gains. But to shed more light on this, the study looks at the role of market power.

### The role of market power

To assess the extent to which market power explains the success of privatized firms, the study first analyzes changes in profitability for firms grouped into competitive and noncompetitive industries on the basis of proxies for market power. It then analyzes the behavior of product prices for a subsample of firms for which such data are available. The most interesting finding is how similar the results are for competitive and noncompetitive industries—in profitability, productivity growth (as measured by sales per employee), investment policies, and growth in sales. There is no evidence that profitability improved only for firms in noncompetitive sectors—that is, for those with market power. Nor is there evidence that firms in noncompetitive sectors raised their prices in real terms after privatization. Indeed, some results suggest that prices in noncompetitive sectors not only grew more slowly than those in competitive sectors but actually fell in real terms. In sum, the evidence so far is not consistent with the view that monopoly power is important in explaining the increased profitability of privatized firms.

### The role of transfers from workers to shareholders

Can cuts in labor costs explain the large gains in profitability? Since labor costs often make up a large share of total costs, reductions in labor expenditures—through layoffs and wage cuts—could potentially be the driving force behind the large increases in profitability after privatization. The analysis shows that in fact wages increased substantially in the firms in the sample for which data are available, with the mean annual wage rising from N\$14,925 in the pre-privatization period to N\$26,348 in 1993. Interestingly, gains were larger for blue-collar workers than for white-collar workers: the mean blue-collar wage rose from N\$9,498 to N\$21,977, and the mean white-collar wage from N\$27,831 to N\$43,368. These large increases in real wages are all the more striking given the stagnation of real wages in the overall economy during the sample period.

To estimate the savings due to layoffs, the study looks at the counterfactual question of how much lower profits would have been if all laid-off workers had been retained at their old wage. As it turns out, the savings are small relative to the layoffs, for two reasons. Wages tend to be low in Mexico, and total wages were equal to only 23.21 percent of sales in the preprivatization period. And after privatization, labor costs were spread over a much wider base, since sales increased rapidly (on average by 60 percent). The mean savings from layoffs were equal to 6.88 percent of sales in 1993, indicating that savings due to layoffs account for roughly a third of the gains in profitability.<sup>2</sup>

The wage increases are consistent with the catching-up story. That is not to say that transfers from workers to shareholders do not play a role in explaining the success of privatization. But one cannot say for sure whether workers as a group suffered as a result of privatization: the answer depends on the postprivatization wage received by laid-off workers in their new jobs and on the weight given to the income gains of workers who were not laid off.

### Deregulation and restructuring

Research on regulation in connection with privatization has focused almost exclusively on the regulation of natural monopolies and public utilities. But the telephone company is the only utility in the sample, so the study focuses instead on deregulation as a potential complement to privatization for the oligopolistic but structurally competitive industries that dominate the sample.

Like many other countries, Mexico coupled privatization with deregulation to increase the role of market forces in the economy. In 1983, the beginning of the sample period, the prices of almost all goods and services were controlled. Imports were severely restricted, with import licenses required for all but a few essential imports. Foreign direct investment was limited, with foreign majority ownership of local firms ruled out and many sectors off-limits to foreigners. During the sample period, these

restrictive regulations were relaxed as a result of both an ideological shift and government efforts to join the GATT and the OECD and to enter into the North American Free Trade Agreement with the United States.

Can deregulation complement privatization, prompting newly privatized firms to restructure for increased competitiveness and thus speeding their convergence to industry benchmarks? To assess the extent of restructuring, the study evaluates the change in the industry-adjusted performance ratios. The results confirm that by 1993 privatized firms raised their profitability to the average level in their industry. Again, this finding is consistent with the view that much of the restructuring in the postprivatization period reflects firms' efforts to catch up with their more efficient peers in the private sector. And again, there is no evidence that market power explains the large changes in profitability. All privatized firms undertook substantial restructuring, and there is no evidence that firms in noncompetitive sectors did less of it. Finally, the results show that deregulation, particularly the removal of trade barriers and price and quantity controls, is associated with faster convergence to industry benchmarks.

### Conclusion

Losses to society as a result of privatization may come from many sources, ranging from higher pollution to loss of access to newly privatized services. The study described in this Note focuses on what are perhaps the two most likely channels for social losses: higher prices as firms capitalize on their market power, and layoffs and lower wages as firms renegotiate generous labor contracts. It looks at how much improved incentives contribute to the observed increases in profitability after privatization, and how much of those gains comes at the expense of the rest of the society.

The study finds evidence of large increases in profitability as a result of privatization and estimates that price increases account for roughly

15 percent of the gains. But these price increases do not appear to be linked to monopolistic power. Firms do not simply increase their markups following privatization. Instead, they undergo a harsh restructuring process. They increase their sales quickly in the postprivatization period despite little change in their stock of fixed assets and sharp cuts in their workforce. This increased efficiency translates into large gains in profitability, and privatized firms quickly "catch up" to their private sector peers.

Transfers from laid-off workers to shareholders are an important source of increased profitability, accounting for 33 percent of the gains in operating income. But workers who stay with the firm receive large increases in real wages, supporting the view that productivity gains are the dominant factor in postprivatization outcomes. The study attributes to productivity gains due to better incentives the share of the growth in operating income not accounted for by higher prices and layoffs (52 percent).<sup>3</sup>

In the first empirical analysis of the importance of the interaction between privatization and deregulation, the study finds that deregulation—particularly the removal of trade barriers and price and quantity controls—is associated with faster convergence to industry benchmarks. Governments often expend much energy in restructuring firms to be privatized and designing optimal auction rules. López-de-Silanes (see page 25) shows that these efforts often destroy value. Together, these findings support privatization policies that stress speed and promote market competition.

<sup>1</sup> "The Privatization Dividend—A Worldwide Analysis of the Financial and Operating Performance of Newly Privatized Firms" (*Private Sector*, December 1995).

<sup>2</sup> Because data on benefits are unavailable, however, it is unclear whether the cuts were in the total wage bill or in benefits.

<sup>3</sup> This estimate of the contribution from productivity gains may be too high if other channels for transferring value from society to privatized firms are quantitatively important.

Rafael La Porta and Florencio López-de-Silanes  
(f\_lopezdesilanes@harvard.edu), Harvard  
University

# What Factors Determine Auction Prices in Privatization?

*Florencio López-de-Silanes*

Auctioning public enterprises is a standard way to achieve a fundamental objective of privatization: generating government revenue. This Note reports on a new study that empirically examines what determines auction prices in privatization. The Note discusses the possible influences on prices, reviews the characteristics of the study sample of more than 200 transactions in Mexico's privatization program between 1983 and 1992, and then reports the empirical results from the study's tests of its predictions. The results provide answers to such questions as: How do residual claims on a firm by the workforce or existing shareholders affect its privatization price? Do the timing and design of the auction process matter? What restructuring policies are worth implementing before privatization? Is speed a key ingredient precluding further government intervention during the sale process?

## **Possible influences on auction prices**

The study divides the possible influences on auction prices into three categories: company and industry characteristics, the auction process and its requirements, and firm restructuring policies prior to the sale.

**Company and industry characteristics.** At the company level, prices might be influenced by operating and financial performance before privatization and the set of contracts between the state firm and its stakeholders, including workers, managers, and shareholders. Labor issues typically matter more in state enterprises because they often have excess workers as a result of political pressure. Also, public sector unions tend to place greater weight on higher employment levels than do private sector

unions. Furthermore, public union contracts are typically generous by industry standards. Strong and active unions are likely to have a negative impact on price, because restructuring by newly privatized firms is likely to be directed at cutting excess employment and bringing wage levels closer to industry standards.

The presence of private shareholders at the time a firm is privatized might also have an important effect on prices in a public auction. Governments have sometimes been a minority shareholder in what is a privately controlled firm. For any level of preprivatization performance, privatizations in which a controlling share is sold might be associated with higher prices. And bidders might be likely to pay low prices for noncontrol packages, since the benefits of control would accrue to the preexisting controlling shareholder. These benefits of control may be large in such countries as Mexico, which have weak legal systems and poor investor rights. If outside investors are reluctant to become partners in closely held corporations in Mexico, prices might be very low, and in non-control privatizations the preexisting shareholders might be the only bidders.

A firm's market share and the regulation, trade barriers, and market structure of the industry in which it operates might play a part in determining privatization premiums. Industries dominated by government-owned firms often enjoy higher protection and favorable regulation. This may reflect political objectives: politicians may try to shield state enterprises from competition to increase their profitability and thus reduce the subsidies channeled to those firms. Another factor inducing bidders to pay higher prices might be the expectation that

industries dominated by state enterprises have the most to gain when opened to private ownership.

**The auction process and its requirements.** Prices might also be influenced by the type of auction mechanism, its implementation and timing, and the order in which companies are auctioned. If learning is important, for example, governments might start by privatizing companies in competitive sectors, where any errors will have less impact, and end by selling firms in oligopolistic or nontradable industries, where mistakes may be more costly. And it is possible that as privatization and its results become better known to the public, credibility could increase, translating into willingness to pay higher premiums.

Another possible influence on sale prices is the speed of each privatization. The study's analysis of speed focuses on the reaction of insiders to the news that their firm will be privatized. The announcement or even the rumor of a firm's privatization could trigger a change in stakeholders' behavior. Like a firm in financial distress, a firm about to be privatized might experience lower productivity, lower performance, wage increases, costly liquidations, or the outright theft of assets.

The structure of the auction and competition among bidders are also possible determinants of auction prices. Both theoretical and empirical work so far on this subject suggests that more competitive auctions should lead to higher prices. Other characteristics of the auction's structure—such as possibilities for renegotiation or for several rounds of bids when the initial offers do not reach the minimum price expected by the seller—also influence bidding strategies. Another influence on competition in the auction process is the participation of foreign investors. The government may favor domestic groups by isolating the sale from foreign bidders. But opening the process to foreign bidders should drive up prices by increasing competition and reducing scope for collusion, particularly in oligopolistic industries of developing countries. Insufficient private domestic savings, often an issue in Eastern Europe, may be another argu-

ment for allowing foreigners to bid. Auction requirements that serve to reduce participation, such as bidder prequalification and restrictions on the form of payment (for example, cash-only sales), can also affect prices.

**Prior restructuring.** What can the government do prior to a firm's sale to raise the price? Or should the government sell as fast as it can without attempting to restructure the firm? To date, there has been no comprehensive research on the effectiveness of restructuring policies, although some are advocated by international agencies, valuers, bidders, and government officials from around the world. The study looks at six types of prior restructuring: (1) change in management; (2) labor cutbacks and renegotiation of worker contracts; (3) absorption of outsiders' debt, cross-liabilities among state enterprises, or past-due fiscal debt; (4) efficiency programs to improve performance; (5) investment measures such as rehabilitation plans, agreements on financial restructuring tied to improvements in operations, or temporary reopenings of plants; and (6) de-investment, or cutting the flow of resources for physical capital.

Management shake-ups before privatization could lower premiums if the loss of experienced management results in declining performance. Or getting rid of an old team could actually improve results or reduce the financial squandering often associated with public enterprises. And the old managers may be flawed if they are good at dealing with politicians but not at facing competition and market conditions.

The argument against restructuring labor contracts or firing workers before privatization is based on the premise that the private buyer may achieve these objectives at the same cost and more in line with its preferences and future investment plans. The public sector may have less bargaining power with labor than the private sector if unions can influence the outcome of political elections. But the public sector may have a comparative advantage in bargaining with the unions if it has in place mechanisms to assist workers displaced by

structural changes, such as severance payments and retraining and job search assistance programs.

If a government is willing to absorb debt, it might consider doing so especially when a firm faces large financing costs or is on the brink of bankruptcy. The net effect of debt absorption on price is uncertain. Classic finance theory would hold that a government's absorption of a state enterprise's debt should have a neutral effect on price. But it could have a negative effect if the borrowing terms for the private buyer are worse than those for the government (state enterprise). In effect, the buyer would be able to profit at the expense of preexisting creditors when debt is left in place. But the effect on price might be positive if debt absorption reduces the cost of possible financial distress from an excessively leveraged capital structure—in effect allowing the firm to start afresh, with a new balance sheet.

Another group of restructuring policies includes programs aimed at improving the performance of a firm before privatization. Upgrading efficiency could solve its main problems, improve performance, and result in a higher privatization price if the government can take the measures more cheaply than the private sector. Governments also sometimes invest in firms before privatization to avoid shutdowns and the ensuing unemployment or to support sectors that supply basic goods or services. Or they may decide to de-invest, cutting the flow of resources and canceling previously approved investment programs. Investments to transform large firms into viable smaller units that are a better match for specialized bidders may sometimes sound reasonable. But opponents of investment plans point out that significant time and money may be required to transform state firms and that governments have a poor record in corporate reorganization. Furthermore, the buyer might achieve the same result for the same cost or less, but more in accordance with its preferences. In the extreme, if managers were investing in the wrong assets, cutting the flow of investment resources might have a positive effect or no effect on prices.

## The privatization program in Mexico

To address all these issues, the study assembled a database on all the companies privatized in Mexico between 1983 and 1992. The data cover company and industry characteristics, bidders in the auction and their bids, and all restructuring actions taken by the government before the sale of each firm. The firms range across many sectors, from steel mills to banks to sugar-cane mills.

The unraveling of Mexico's large state sector began in 1983. In the first two years, the program focused on reducing the number of state enterprises, mainly through mergers and liquidations. By June 1992, 361 firms had been privatized—though the number of separate sale contracts was only 236. Overall, 96 percent of all assets privatized were sold during 1988–92, under the administration of President Salinas. The amount of revenue generated was the main criterion in selecting the winning bidder for more than 98 percent of the firms privatized.

The study focuses on the net price received by the Mexican government—after all sale, restructuring, and special commitment costs (for example, tax breaks and promised severance payments for workers) are taken into account. The net price is often very different from the price announced in the sale—in the sample, the costs totaled 33 percent of the price paid by the buyer. On average, the net prices were low—only 54 cents on the dollar of the book value of assets privatized, compared with the average of US\$1.42 for publicly traded firms in Mexico during the same period.

## Results

Analysis of the sample confirms that net income and capacity utilization have a positive impact on net price. The labor contract also affects privatization prices. For example, a labor union's power, as measured by the number of strikes and the cost of contingent labor liabilities, has a significant negative effect on net price. Industry traits also affect prices. Industries in which state enterprises produce a

TABLE 1 DOS AND DON'TS IN PRIOR RESTRUCTURING

Action	Increases price	Has little effect on price	Decreases price
Fire the CEO	X		
Cut labor	X		
Absorb debt		X	
Undertake investment			X

large share of total output carry a premium, reflecting the expectation that favorable regulation and entry barriers will continue, as well as possible previous underexploitation of market power. Finally, there are large premiums for majority (or control) blocks: the price paid for a controlling share is on average four times that paid for a noncontrolling one. Preexisting shareholders were the winning bidders in 83 percent of noncontrol privatizations.

Net prices rose in the second phase of the program (1988–92), when privatization became central to the government's agenda. While the results show no positive learning or credibility effect on prices, speed turns out to be very significant. The data show that companies' profitability and market penetration significantly deteriorate as the day of sale approaches and insiders' incentives collapse. Firms with a shorter sale period—the time between the first rumor of privatization and the announcement of the winning bidder—fetch higher prices overall. The number of days from rumors to completion of the privatization averaged 719 in the sample, and for at least 25 percent of the firms it was more than 1,000. The analysis shows a significant discount for longer sale periods, with the price dropping 24 percent for every additional year. Finally, more competitive auctions lead to higher prices, demonstrating the positive effect of broad participation. Auction requirements that limit participation, such as restrictions on foreign direct investment, reduce the price. When foreign bidders were allowed to participate, the price was on average 25 percent higher.

With regard to restructuring before the sale of an enterprise, the results suggest that it is worthwhile to replace the chief executive officer with a "privatizer" whose task is to clean up the com-

pany, reduce the waste of resources, and get the firm on the auction block as quickly as possible. Removing the chief executive officer leads to a 54 percent increase in price. Cutting employment before selling has a small positive effect on price, while renegotiating a union contract has no significant effect. Other restructuring measures, such as absorbing debt and cutting the flow of resources for new investments (de-investing), have no impact on price. Finally, investing in new physical capital and embarking on efficiency programs not only fail to improve firms' performance, but also fail to increase premiums (table 1).

## Conclusion

The study finds evidence that helps explain the low net prices of privatized firms in Mexico. Part of the explanation is that state-owned firms are simply less productive than private firms. Econometric estimates suggest that the mean net price of privatized firms evaluated at the average profitability of the private sector would have risen from 54 cents on the dollar (of the book value of assets) to 85 cents. The other, probably more important part of the explanation is that a large share of the assets were wasted in the restructuring process. Suppose that the government had emphasized speed in its privatization strategy, reducing the average sale period by a year, and that firing the chief executive officer was the only restructuring step taken. Under that scenario, the econometric estimates suggest that the net price of a state enterprise that was as profitable as the average publicly traded firm would have roughly doubled to US\$1.56 on the dollar of the book value of assets sold. The key lesson from Mexico's experience: don't do too much—just sell.

This Note is based on a longer article by the author, "Determinants of Privatization Prices," forthcoming in the *Quarterly Journal of Economics*.

Florencio López-de-Silanes (*f\_lopezdesilanes@harvard.edu*), *Harvard University*

# Which Countries Give Investors the Best Protection?

*Rafael La Porta, Florencio López-de-Silanes, Andrei Shleifer, and Robert Vishny*

Does the owner of a share of stock in Mexico have the same rights as a shareholder in Germany or India? Is a creditor in Italy protected as well as one in Switzerland? Do laws protecting investors differ among countries in systematic ways? Are these laws sufficiently enforced everywhere? And if there are differences, do they matter for corporate finance? This Note reports on an empirical study that examines these issues by looking at the rules governing investor protection and the quality of law enforcement in a sample of countries in Asia, Africa, Europe, and North and South America.

## **Investor rights and governance**

Shares in a company typically give their owners the right to vote for its directors, while debt gives creditors the power to, for example, repossess collateral when a company fails to make promised payments. Thus, shareholders receive dividends because they can vote out the directors who do not pay them, and creditors are paid because they have the power to repossess collateral. Without these rights, investors would be unable to get paid, and firms would therefore be unable to raise funds from them.

But these rights also depend on the legal rules of the jurisdiction where the securities are issued. And since the protection investors receive determines their readiness to finance firms, corporate finance may critically turn on these legal rules and their enforcement. Indeed, differences in the legal protection of investors might help explain why firms are financed and owned so differently in different countries. Why do Italian companies rarely go public? Why

does Germany have such a small stock market, but also maintains very large and powerful banks? Why is the voting premium—the price of shares with strong voting rights relative to that of shares with limited voting rights—small in Sweden and the United States and much larger in Italy and Israel? Indeed, why were Russian stocks nearly worthless immediately after privatization—by some estimates one hundred times cheaper than Western stocks backed by comparable assets—and why do Russian companies have virtually no access to external finance? The content of legal rules in different countries may well shed light on these corporate governance puzzles.

## **Analytical approach**

The starting point for the analysis is the recognition that there are only four broad “families,” or “origins,” of most laws governing investor protection, and commercial laws more generally: English, or common, law, French civil law, German civil law, and Scandinavian civil law. (Most countries adopted their legal system as a result of colonization or conquest by England, France, or Germany—or Spain, which was conquered by Napoleon and so adopted its laws from France.) Thus, a study of investor protection in different countries is largely a study of protection in the four legal families. The focus of the analysis of legal rules is on a fairly narrow range of differences in two types of laws relating to investor protection: company laws and bankruptcy and reorganization laws.

## **Shareholder rights**

The analysis begins by considering shareholder rights under company laws. Because sharehold-



**The survey sample****Common law tradition**

Australia  
Canada  
Hong Kong  
India  
Ireland  
Israel  
Kenya  
Malaysia  
New Zealand  
Nigeria  
Pakistan  
Singapore  
South Africa  
Sri Lanka  
Thailand  
United Kingdom  
United States  
Zimbabwe

**French civil law tradition**

Argentina  
Belgium  
Brazil  
Chile  
Colombia  
Ecuador  
Egypt  
France  
Greece  
Indonesia  
Italy  
Jordan  
Mexico  
Netherlands  
Peru  
Philippines  
Portugal  
Spain  
Turkey  
Uruguay  
Venezuela

**German civil law tradition**

Austria  
Germany  
Japan  
Republic of Korea  
Switzerland  
Taiwan (China)

**Scandinavian civil law tradition**

Denmark  
Finland  
Norway  
Sweden

ers exercise their power by voting for directors, evaluations of shareholder rights focus on voting rights. These include voting rights attached to shares, rights that protect the voting mechanism against interference by insiders, and remedial rights. Investors may be better protected when dividend rights are tightly linked to voting rights, that is, when companies are subject to one-share-one-vote rules. The idea is that when votes are tied to dividends, insiders cannot appropriate cash flows by maintaining voting control despite controlling only a small proportion of the company's shares.

Five other rights essentially describe how easy it is for shareholders to exercise their voting rights. These rights measure how strongly the legal system favors shareholders relative to managers in the voting process.

- To vote in shareholders meetings in some countries, shareholders must show up in person or send an authorized representative. In other countries, by contrast, they can vote by mail, which makes it easier for them to cast their votes. In Japan, for example, about 80 percent of companies hold their annual meetings the same week, and voting by mail is not allowed.
- In some countries, the law requires that shareholders deposit their shares with the company or a financial intermediary several days before a shareholders meeting. This practice prevents shareholders from selling their shares for several days around the time of the meeting and keeps shareholders who do not bother to go through this exercise from voting.
- Some countries allow cumulative voting for directors, which in principle gives minority shareholders more power to put their representatives on boards of directors.
- In some countries, the law provides minority shareholders with legal recourse against perceived oppression by directors. The mechanisms may include the right to sue directors (as in American derivative suits) or to force the company to purchase the shares of shareholders who object to such fundamental changes as mergers or asset sales.

- Company law also establishes the percentage of share capital needed to call an extraordinary shareholders meeting—the higher the percentage, the harder it is for minority shareholders to organize a meeting.

Two major facts emerge from the analysis of shareholder rights in the countries in the sample. First, countries with a common law system afford the best legal protection to shareholders. They most frequently allow shareholders to vote by mail, they never block the sale of shares for shareholders meetings, they have the highest incidence of laws protecting oppressed minorities, and they generally require a relatively small percentage of shares to call an extraordinary shareholders meeting. Second, countries with French civil law afford the worst legal protection to shareholders. They have the lowest incidence of allowing voting by mail, a high incidence of blocking share sales for shareholders meetings, and a low incidence of laws protecting oppressed minorities, and they require the highest percentage of share capital to call an extraordinary shareholders meeting.

The next step is to ask whether, in a statistical sense, once all the legal rules are considered together, the origin of legal systems matters. The analysis confirms that it does. In Australia and South Africa, two common law countries, a minority shareholder can vote by mail, can trade his shares during a shareholders meeting, is protected from certain expropriations by directors, and needs only 5 percent of share capital to call an extraordinary meeting. By contrast, in Italy and Belgium, whose legal systems are based on French civil law, a minority shareholder cannot vote by mail, cannot trade his shares during a shareholders meeting, is not protected from expropriation by directors, and needs 20 percent of share capital to call an extraordinary meeting.

A final step is to control for income level and see whether origin still matters. Again, the results show that it does. Thus, the importance of legal origin comes out loud and clear from this analysis of shareholder rights.

## Creditor rights

The creditor rights most essential for debt finance are those to repossess collateral and to have a say in reorganization. In some countries, the law makes it difficult for lenders to repossess collateral in part because such repossession can lead to the liquidation of firms, which is viewed as socially undesirable. In these countries, lenders may still have some powers against borrowers through their votes in decisions on how to reorganize the company and pay off the creditors. The analysis uses four variables for creditor rights.

- In some countries, the reorganization procedure imposes an automatic stay on the debtor company's assets, preventing secured creditors from getting possession of loan collateral. This rule obviously protects managers and unsecured creditors against secured creditors and prevents automatic liquidation. In other countries, by contrast, secured creditors can pull collateral from firms being reorganized without waiting for the reorganization to be completed.
- Some countries do not ensure secured creditors the right to collateral in reorganization. In these admittedly few countries, secured creditors are in line behind the government and workers, who have absolute priority over them. In Mexico, for example, various social constituencies must be repaid before secured creditors, often leaving the creditors with no assets to back their claims.
- In some countries, management can seek protection from creditors by unilaterally filing for reorganization, without creditors' consent. Such protection, called Chapter 11 in the United States, gives management a great deal of power against creditors, since creditors can at best get their money or collateral only after a delay. In other countries, creditors' consent is needed to file for reorganization, so managers cannot so easily escape creditors' demands.
- In some countries, management stays in place pending the resolution of the reorganization procedure, while in others, such as Malaysia, management is replaced by an agent ap-

pointed by the court or the creditors. This threat of dismissal may enhance creditors' power.

The results of the analysis of creditor rights show a pattern similar to that for shareholder rights. Common law offers the best protection, and French civil law the worst. Thus, it does not appear that some legal families protect shareholders while others protect creditors—though German civil law countries favor secured creditors.

## Adaptations

How do the countries with poor laws cope with their consequences? Do firms in these countries receive no financing? Or is finance made possible by other, substitute mechanisms of corporate governance that have been incorporated into the law or that lie outside the law? One possible adaptation to fewer laws is strong enforcement. Another is to introduce mandatory standards of capital retention and capital distribution to investors; legal scholars sometimes refer to these standards, which limit the opportunities for managerial expropriation, as “bright line” rules.

Yet another adaptation is ownership concentration. Some concentration of ownership of a firm's shares is typically efficient: it provides managers with an incentive to perform, and large investors with an incentive to monitor the managers. But some dispersion of ownership among small investors is also desirable, to diversify risk. When the law protects investors, even small investors can hope to get something back on their money. When it does not, investors must be large and powerful to stand up to management and extract payments from it.

To assess enforcement, the analysis uses five measures: efficiency of the judicial system, rule of law, corruption, risk of expropriation (outright confiscation or forced nationalization) by the government, and likelihood of contract repudiation by the government. In addition to these rule-of-law variables, the study uses an estimate of the quality of accounting standards.

The results show that the quality of enforcement is highest in Scandinavian and German civil law countries, next highest in the common law countries, and lowest in French civil law countries. And they show that French civil law countries are more likely to have bright line rules—mandatory dividends and capital reserves.

The analysis also shows that the quality of shareholder protection and the protection of the voting process against manipulation by directors are significant determinants of ownership concentration. Moreover, between them, these two variables account for the higher concentration of ownership in the French civil law countries. These results support the idea that heavily concentrated ownership results from poor protection of investors—and may in fact substitute for investor protection. The evidence shows that poor laws do make a difference, and that they may have costs. One of the costs of heavily concentrated ownership for large firms is that their core investors are not diversified. The other cost for these firms is that they probably have difficulty raising equity finance, since minority shareholders fear expropriation by managers and majority shareholders. Are these results simply a consequence of income level? Here again, the evidence suggests weaknesses in French civil law regardless of income level.

### Is there a legal trap?

Do poor countries offer systematically lower protection to investors? The study finds no correlation between income level and shareholder rights, and, if anything, some creditor rights are weaker in richer countries. Some countries—such as France and Italy—have managed to get rich despite having few laws protecting investors. But richer countries have a higher quality of law enforcement, and poor countries' failure to consistently enforce basic investor protection may well help keep them poor.

### Conclusion

The results of the analysis suggest three broad conclusions. First, laws protecting investors

differ markedly around the world, though in most places they tend to give investors a rather limited bundle of rights. Countries whose legal systems stem from the common law tradition tend to protect investors considerably better than do countries whose systems are based on civil law, especially French civil law. Countries whose systems are based on German and Scandinavian civil law take an intermediate stance toward investor protection. There is no clear evidence that different countries favor different types of investors; the evidence points instead to a stronger stance favoring all investors in common law countries.

Second, law enforcement too differs a great deal around the world. German and Scandinavian civil law countries have the best law enforcement, although to some extent this reflects their higher average income. Law enforcement is also strong in common law countries, and weakest in the French civil law countries.

Third, good accounting standards, rule of law, and shareholder protection have a strong negative correlation with the concentration of ownership. This result suggests that inadequate protection of investors may be costly. If small investors are not protected, companies will be unable to raise capital from them, and entrepreneurs will be unable to diversify their holdings. High ownership concentration, then, may be a symptom of a poorly functioning capital market.

This Note is based on a longer paper by the authors, "Law and Finance" (National Bureau of Economic Research Working Paper 5661, Cambridge, Mass., July 1996).

*Rafael La Porta, Florencio López-de-Silanes (f\_lopezdesilanes@harvard.edu), and Andrei Shleifer, Harvard University, and Robert Vishny, University of Chicago*

# Investment Funds in Mass Privatization

## Lessons from Russia and the Czech Republic

*Katbarina Pistor and Andrew Spicer*

**Investment funds have a key role to play in mass privatization. But have they lived up to expectations? This Note looks at that question in the two best-known cases—Russia and the Czech Republic, the first to experiment on a large scale with mass privatization and the only two for which enough time has elapsed and enough data are available to permit a tentative assessment. The Note argues that in both cases expectations have not been met and the initial design problems in mass privatization—asymmetric information and imperfect property rights—still remain.**

In many transition economies, investment funds have been assigned an important role during both the implementation phase of mass privatization and the postprivatization development of financial institutions and capital markets.<sup>1</sup> In the implementation phase, investment funds were expected to amass necessary data about companies and to develop the portfolio management expertise to make informed investment decisions. Moreover, endowed with a pool of voucher capital accumulated from citizens, investment funds could invest in a large number of companies and thereby diversify their own risk as well as that of their investors. Thus, investment funds were developed to help speed the process of mass privatization while ensuring that individual investors had equitable access to opportunities to invest in newly privatized companies.

Investment funds were also expected to contribute to the creation of private property rights and to capital market formation in the post-privatization environment. A potential danger of mass privatization is widely dispersed share ownership in privatized companies, which the architects of mass privatization recognized could result in a control vacuum: large numbers of investors with only small stakes in companies would be unable to monitor their management. The solution to this tension between broad par-

ticipation and effective governance was to create financial intermediaries in the form of investment funds. By pooling investment capital, the funds would consolidate shares, essential for effective corporate governance.

Finally, the funds were expected to serve an important function as financial intermediaries in the newly emerging capital markets. By forming a link between productive assets and small private shareholders, the funds would represent the initial experience of the investing population in the development of new financial markets. Thriving on the returns of their original investments, the funds were expected to attract additional capital from households. Moreover, by developing the portfolio management expertise to make informed investment decisions, the funds were expected to contribute to the development of credible information about attractive investment options.

The immediate goals of mass privatization—speed, equitable outcomes, and property rights formation—form the baseline for this assessment of the role of investment funds in Russia and the Czech Republic. The Note also examines the relationship between mass privatization and the emerging domestic capital markets in both countries.

### Russian voucher funds

Russia began its mass privatization in 1992. By mid-1994, there were more than 500 registered funds. But by late 1996, only about 350 active funds remained, and only 25 to 30 have an active portfolio with long-term prospects. Most of the successful funds have leveraged their portfolio investments to offer investment banking services—though the profits from these services often go to the management company, not the fund shareholders. The successful funds also usually obtained large or controlling stakes in a number of key firms so that they would be able to participate in decisionmaking and monitor their investments. Often, this meant getting around the law limiting voucher fund investment in a firm—initially to a 10 percent stake and then, in 1994, to a 25 percent stake.

But by far the majority of funds have been small and unable to maintain sufficient cash flow to meet their operating expenses and to increase their stakes in their best prospects. The illiquidity of the securities market and of the market for shares in the funds and the lack of dividends from companies have left voucher funds little opportunity to generate earnings. In addition to the economic difficulties faced by companies during transition, a key reason for the lack of dividends has been insider control. Generous privileges under the privatization program enabled insiders to secure control of an average stake in companies of 65 percent. Policymakers hoped that the size of this stake would soon dwindle, but that has happened only at the margin. In fact, the share owned by top management may have increased. This insider control has been at the heart of a survival strategy that has prevented real enterprise reform: top management discourages employees from selling their shares in return for ensured employment—though as the mounting wage arrears show, without much pay. This strategy has secured management's position and the nominal survival of firms. But it has crowded out outside investors, including funds with an interest in improving profitability. Holding less than 7 percent of a company's

shares on average, funds have been too weak to exert much control and initiate much-needed restructuring.

The illiquidity of the markets has several causes. When the funds had to make their initial decisions about where to invest, their information was generally poor. Funds frequently had to make quick or arbitrary decisions and ended up with weak portfolios. Since then, the illiquid market has made it hard to unload underperforming assets. Double taxation of profits and dividends makes the funds relatively unattractive for investors. And the failure to index capital gains has undermined the economic viability of share transactions in a high-inflation environment. Also hampering funds' ability to raise new investment capital has been the public's increased skepticism, stemming from a series of scandals involving voucher funds and other financial intermediaries. Most infamous was MMM, which attracted more than 5 million investors. The government estimates that there were 2,000 unlicensed investment companies active during 1993–94, taking money from more than 80 million Russians.

These scandals and the generally poor performance have led to a crisis of confidence in investment intermediaries. In response, the government recently created a new class of mutual funds—unit trusts—to serve as the main vehicle for financial intermediation in the Russian securities market. Unit trusts will not be subject to corporate profit taxes and therefore will not face double taxation. The question is whether voucher funds will be allowed to transform themselves into new organizational forms such as the unit investment fund, or whether the 25 million new investors who purchased fund shares during mass privatization will lose their investments. Integrating the voucher funds into the new class of funds risks tarnishing the effort to rebuild confidence in financial intermediation. So most industry experts believe that voucher funds have little chance of being important players in the development of capital markets in Russia, though a few of the largest will probably remain in operation.

## Czech funds

The former Czechoslovakia started its first wave of mass privatization in early 1991. The number of funds created (and the proportion of vouchers they accumulated) far exceeded policymakers' expectations: more than 400 investment funds were established in the former Czechoslovakia for the first wave, and another 221 funds for the second wave in the Czech Republic alone. Despite the many differences in design between the Czech and Russian mass privatization programs and the markedly better economic environment in which Czech funds operated, the investment funds in the two countries have encountered similar problems.

Czech funds had several advantages that gave them a better chance of being active shareholders in better companies: they were able to buy up to 20 percent of a company's shares, insiders did not gain control of large stakes, and the design of the auction system led to much better information for making investment choices. Funds typically hold the legally permitted 20 percent in a large number of companies in their portfolio, and several funds together often own a majority stake, enabling them to acquire board seats. But the strong representation has not resulted in significant shareholder activism by the funds, and there is little evidence that fund ownership and board representation have had much impact on restructuring. (A recent study suggests that bank-sponsored funds with large ownership stakes have a higher market valuation [see page 37]. But the study does not control for other factors that might be driving this result, such as the sector, excessive lending by banks to the firms in which their funds invest, or exploitation of arbitrage opportunities unrelated to restructuring efforts.)

There are several reasons to expect that a liquid capital market would develop more easily in the Czech Republic than in Russia: the absence of high inflation and the uncertainties it creates, the easier flow of information and lower transaction costs characteristic of a small country, and the lack of a highly distortionary tax re-

gime. Yet even though the Czech stock market has been more liquid than the Russian market, most trading has taken place off the exchange, often through swaps between voucher funds. Czech funds have even mounted mergers and takeovers of several companies. But the market for corporate assets has been characterized by insider dealing and a lack of transparency. This may be a result of the large stakes acquired by funds during privatization, which cannot be easily liquidated on official markets without steep discounts in prices. But it could also reflect the lack of legal oversight of the capital market.

In the Czech Republic, more funds have been listed on the stock exchange than in Russia (in 1995, they accounted for 8 percent of stock market capitalization). But Czech funds have faced similar difficulties in raising additional capital and developing a secondary market for their shares. As a result, many of their investors are locked into their current holdings. Recent scandals surrounding Czech investment funds have highlighted the control vacuum—and fund managers' exploitation of it.

One of the most intriguing aspects of the Czech funds has been their close relationship with the banking sector and the degree of cross-ownership in the financial sector. The largest banks in the country are owned mostly by other banks and by investment funds, including funds established by investment companies that in turn were created by the banks. Investment fund regulations that could and probably should have been interpreted as counter to this degree of cross-ownership proved ineffective. The cross-ownership between banks and funds, and between them and the companies they own, enables the participants in this network of cross-ownership to hedge against hostile takeovers and other market adversities. But evidence suggests that cross-ownership of funds has hurt shareholders because of the heavy discount at which fund shares have been trading. And many observers doubt that banks have managed to raise firewalls between themselves and the funds. In the light of recent bank failures, that raises concerns about funds that are directly or indirectly controlled

by these banks and that frequently also hold assets in them.

Since mid-1995, several funds in the Czech Republic have been transformed from portfolio investment funds into holding companies. As simple joint stock companies, these funds are no longer subject to investment fund regulations. They may increase their stake in companies beyond the 20 percent ceiling and freely transfer capital abroad for foreign investment activities. As company owners, these funds may take on a more proactive role, but doubts remain as to whether the funds' investors will benefit.

### Assessing the record

The Russian and Czech mass privatization programs have succeeded in privatizing a once inconceivably large number of companies in a short period. But if we are to take the goals of mass privatization seriously, other criteria must also be considered in assessing the outcomes. Did investment funds help to ensure equitable outcomes in mass privatization? The record on this is discouraging in both the Czech Republic and Russia. The discount at which fund shares are being traded—if they are traded at all—reflects the market's perception that the funds either have been unable to enhance the value of their holdings or have failed to share any gains with their investors. Dividends, if paid at all, have been extremely low. By and large, citizens have become owners of the worst-performing assets in Russia and the Czech Republic, while the “crown jewels” have gone to insiders. This experience in mass privatization makes small investors' lack of confidence in capital markets a rational response.

Have investment funds contributed to effective private property rights? The evidence suggests that establishing property rights is a longer and much more complicated process than nominal allocation of title. Moreover, there are troubling signs—particularly in Russia—that the property rights created in mass privatization in a hasty attempt to “depoliticize” property relations may be too weak to support sustainable property rights reform. Many new outside

owners—including the funds—have been effectively frozen out by company insiders. Where new owners have been unable to establish their rights, companies remain in a control vacuum. And the government, particularly at the regional level, has continued to play an important role as a silent owner and rescuer of last resort. In the Czech Republic, the outcome has been more positive, but recent banking failures and fraud surrounding voucher funds caution against too positive an assessment of the new property rights regime.

What is the relationship between investment funds and capital markets? While markets were supplied with a large amount of equity as a result of mass privatization, they have remained undersupplied by (domestic) capital in both countries. One reason that efficient capital markets have failed to develop is the lack of an institutional framework. Investment funds had the potential to play an intermediating role in the development of new capital markets, but many have become holding companies rather than actively engaging in portfolio investment. Information asymmetries between small investors and large firms persist in both Russia and the Czech Republic, increasing the risks of investing in markets. Moreover, the negative experience of a large part of the population with voucher privatization has reduced confidence in emerging financial markets. The development of mechanisms of financial intermediation remains a serious issue in both Russia and the Czech Republic.

This Note is based on a chapter by the authors in Ira Lieberman, Raj Desai, and Stipon Nestor, eds., *Between State and Market: Mass Privatization in Transition Economies* (Washington, D.C.: World Bank, forthcoming).

<sup>1</sup> Countries other than Russia and the Czech Republic that have recently undertaken privatization with investment funds include Bulgaria, Georgia, Kazakstan, Kyrgyzstan, Latvia, Lithuania, Moldova, Poland, Romania, the Slovak Republic, Slovenia, Ukraine, and Uzbekistan.

*Katharina Pistor, Harvard Institute for International Development (kpistor@hiid.harvard.edu), and Andrew Spicer, Wharton School of the University of Pennsylvania (spicer@management.wharton.upenn.edu)*

# Ownership and Corporate Governance— Lessons from the Czech Republic

*Stijn Claessens, Simeon Djankov, and Gerhard Pohl*

**The Czech voucher privatization scheme, which started in 1991, was one of the earliest, most comprehensive, and most rapidly implemented of all the mass privatization schemes in Eastern Europe and the former Soviet Union. The scheme has resulted in relatively concentrated ownership: of the shares offered, two-thirds ended up with investment funds, most of them with a small number of bank-sponsored funds. How have these changes in ownership affected enterprise governance and restructuring? There is some evidence to suggest that Czech firms are performing better than firms in other Central and Eastern European countries. But so far there has been only limited anecdotal evidence about the impact of the ownership changes on Czech firms' governance. This Note reports on a new study that assesses whether concentrated ownership leads to better oversight of firm managers in the Czech Republic.**

## **The best approach to enterprise restructuring?**

Large-scale enterprise restructuring in transition economies is a wide-ranging process of moving from a highly distorted economy with many loss-making firms to a normal market economy in which most firms are profitable. For government policy, it implies making losses transparent by liberalizing prices and adopting new accounting standards and practices. For firms, it usually means shedding labor and concentrating on activities in which they have a competitive advantage.

How to bring about enterprise restructuring most efficiently is a matter of lively debate. Different countries have used different strategies over the past seven years: depoliticizing management by giving managers more autonomy, increasing competition, improving financial discipline (including through bankruptcy and liquidation of loss-making firms), revamping state asset management systems, and privatizing firms. How

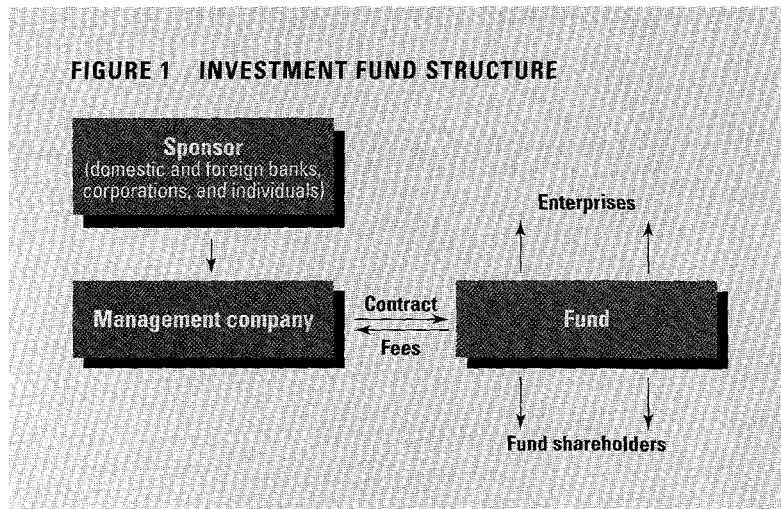
much each of these reforms has contributed to improved performance has not been empirically established. But it is clear that better management is vital for restructuring—and better management will come about only through changes in firms' ownership structure.

There is much debate, too, over which method of privatization is best. Some countries have stressed the importance of attracting good owners in the form of strategic—usually foreign—investors. But the number of enterprises privatized and restructured through direct sales to foreign investors has been small. In Hungary, for example, the sale of firms to foreign investors has received much publicity, but only a few large firms with significant market power have in fact been privatized this way. Foreign investors have been uninterested in the average-size industrial firm.

Countries such as the Czech Republic and Russia have developed mass privatization programs where the emphasis has been on speed. The



FIGURE 1 INVESTMENT FUND STRUCTURE



Czech mass privatization program, implemented first and covering the largest share of the enterprise sector, moved about 70 percent of the Czech economy from the state to private hands within a short period. The Czech program is thus a good test case of the effect of this predominant approach to changing the ownership of firms—an approach that has probably contributed to the Czech Republic's better record in enterprise restructuring compared with other transition economies.

### The Czech mass privatization

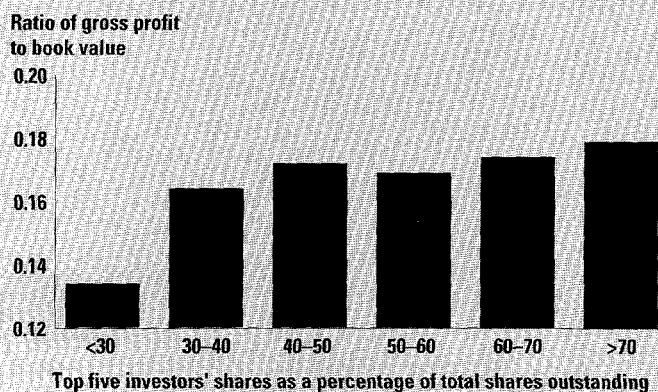
In preparation for privatization, firms were corporatized but only limited restructuring was carried out. Privatization occurred in two phases.

The first phase, offering nearly 1,000 firms, started in late 1991 and ended in mid-1993. The second, offering more than 850 firms, started in January 1994 and ended in October of that year. The share auctions, organized in five sequential rounds of bidding, were designed to reveal as much information and analysis of firm valuation as possible, to improve price discovery. After the bidding rounds, vouchers were exchanged for shares and secondary trading started on the Prague stock exchange.

All citizens aged eighteen and over could buy vouchers for a nominal fee to use in bidding at these auctions—directly or through financial intermediaries called investment funds. In essence, these investment funds involve a sponsor first setting up a management company, which then sets up a fund to own the shares. The management company manages the fund under contract for a fee. The shareholders of the fund are the former voucher holders and any new investors who buy fund shares in secondary markets. (See figure 1 for the structure of these funds.)

When initiated, the program elicited much skepticism. Mass privatization would lead to ownership by outside investors, but many expected that it would also lead to diffuse ownership and poor oversight of management. As things turned out, many investment funds emerged and, through aggressive marketing, collected 75 percent of the vouchers held by citizens. Bank-sponsored funds acquired the most, with the ten largest holding nearly 70 percent of the vouchers acquired by the investment funds. This outcome held out the promise of better oversight by owners: concentrated ownership gives the owners better incentives to monitor firms and make necessary changes in management. By contrast, in firms with diffuse ownership, no single owner has an incentive to “mind the store,” so management is not disciplined for bad performance or rewarded for good performance.

FIGURE 2 OWNERSHIP CONCENTRATION AND PROFITABILITY



Source: Calculations based on data from the Aspekt Stock Market Database.

In 1992-95, the Czech Republic had a good record in enterprise restructuring. A separate

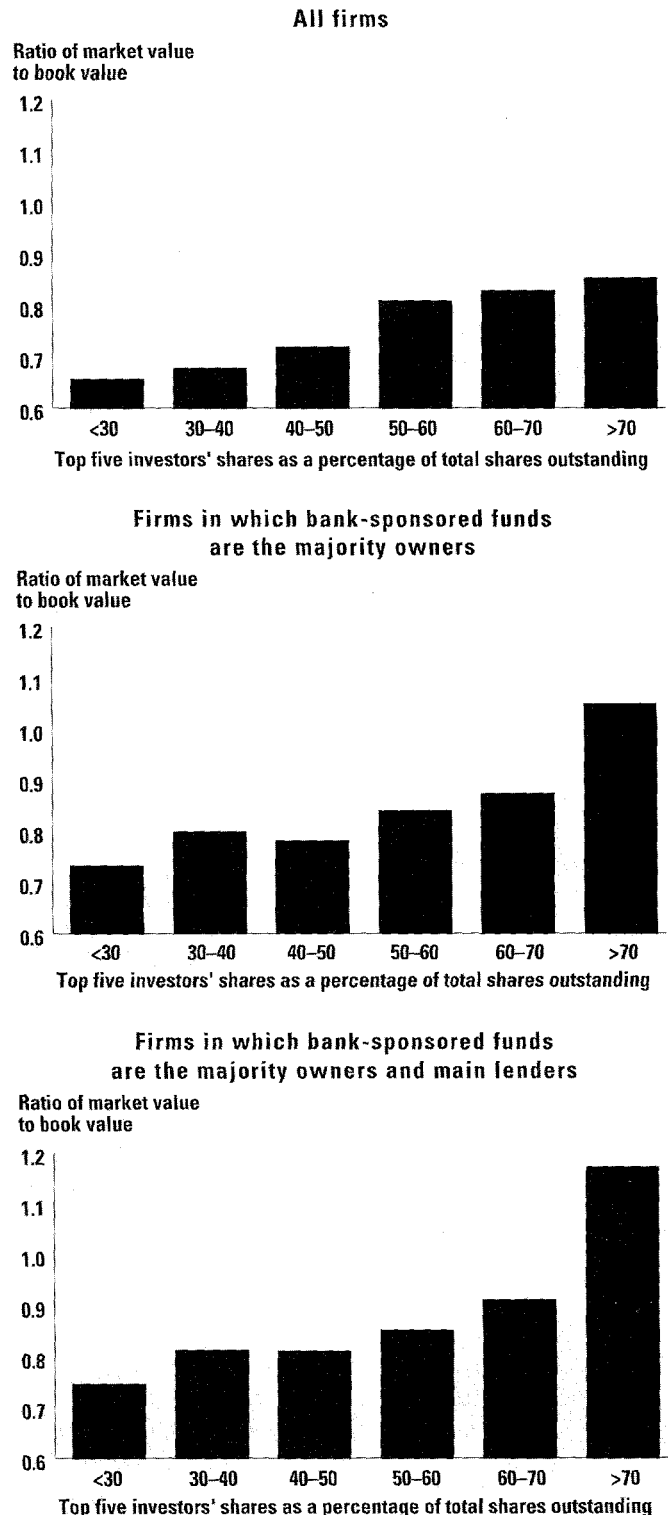
study comparing enterprise performance in all Central and Eastern European countries (Bulgaria, the Czech Republic, Hungary, Poland, Romania, the Slovak Republic, and Slovenia) shows that Czech firms had the highest growth rates in labor and total factor productivity, followed by Polish and Slovak firms.<sup>1</sup> To shed more light on this result and to see how changes in ownership affect the way Czech firms are managed, the study that is the subject of this Note looks at whether firms with more concentrated ownership are indeed better managed. If that is the case, these firms should have higher profitability than firms with less concentrated ownership, and their shares should trade for higher prices in the stock market. After all, if more concentrated ownership leads to better oversight of managers, profitability should correlate positively with the degree of ownership concentration. And market prices, which incorporate the effect of better oversight on future firm performance, should be higher for firms with more concentrated ownership. In market economies, where this is a much-studied topic, these relationships are quite strong.

### Analysis

Using data for all the more than 700 Czech firms consistently listed on the Prague stock exchange during 1992–95, the study finds that there are indeed strong positive relationships between ownership concentration and profitability (figure 2).<sup>2</sup> It also finds that the more concentrated the ownership of a firm, the higher its market value (figure 3, top panel).<sup>3</sup> (This correlation sometimes breaks down when a single investor holds more than 50 percent of all shares, since the shares of minority shareholders are then valued less.) Together, the two results suggest that the Czech privatization program was effective in improving firms' management because of the concentrated ownership structure that resulted.

Much of the ownership is concentrated in turn among funds sponsored by commercial banks, which themselves are large creditors of the firms

**FIGURE 3 OWNERSHIP CONCENTRATION AND MARKET VALUATION**



Source: Calculations based on data from the Aspekt Stock Market Database.

in which the funds hold equity stakes. What does this mean for the quality of corporate governance? Many analysts have argued that the investment funds face conflicts of interest because they have to serve multiple objectives: when deciding in which company to invest and how to value firms, a bank-sponsored fund has to balance the interests of the bank with the interests of the fund shareholders. Under pressure from the sponsor, for example, the fund managers could encourage firms to borrow from the sponsor bank at higher interest rates than available elsewhere, thus treating fund shareholders unfairly in favor of the bank. But it can also be argued that a bank that has an (indirect) equity stake in a firm can better monitor the firm and its management. Through its representation on the board of directors, the bank has access to more information and is more willing to monitor the firm. The better corporate governance that can result makes it more likely that the firm will restructure, leading to higher market value and profitability. The firm may also have easier access to bank financing, which again makes restructuring more likely.

Since ownership by bank-sponsored funds potentially has two opposite effects on the value and profitability of firms, the net effect is an empirical matter. But banks clearly have dual incentives to help firms restructure. First, improvements in firms' performance will increase their market value and thus the return on the assets of bank-sponsored funds. Second, firms with improved profitability are likely to borrow to finance new investments.

The empirical analysis shows that concentrated ownership by bank-sponsored investment funds is beneficial in improving firm management (figure 3, middle panel). And it finds no evidence that market value and profitability are lower for firms in which investment funds sponsored by the firm's main bank have a large ownership stake, which would be the case if conflicts of interest dominated. On the contrary, it finds that (indirect) ownership control by the main bank has a positive effect (figure

3, bottom panel). This suggests that, on balance, banks play a positive role in supervising firms when they also hold an (indirect) equity stake. Any negative effects of conflicts of interest due to banks' controlling equity thus appear to be outweighed by the positive effects of banks' close monitoring of firms in which they have an (indirect) equity stake.

## Conclusion

The Czech Republic's mass privatization program has spurred enterprise restructuring and led to better monitoring of firms. The investment funds, which supervise and manage firms on behalf of their investors, have played a key part in this. The Czech model offers useful lessons for other transition economies: the speed of privatization matters, and both more concentrated ownership and indirect ownership by banks lead to faster restructuring.

This Note is based on the authors' paper of the same title (Policy Research Working Paper 1737, World Bank, East Asia and Pacific, Office of the Regional Vice President, Washington, D.C., April 1997).

<sup>1</sup> Stijn Claessens, Simeon Djankov, and Gerhard Pohl, "Determinants of Performance of Manufacturing Firms in Seven European Transition Economies" (World Bank, Europe and Central Asia, and Middle East and North Africa Technical Department, Washington, D.C., March 1997).

<sup>2</sup> Profitability =  $\frac{\text{Gross operating profit}}{\text{Net fixed assets} + \text{inventory}}$

<sup>3</sup> Market value =  $\frac{\text{Stock market valuation} + \text{total debt}}{\text{Net fixed assets} + \text{inventory}}$

*Stijn Claessens, Principal Economist, East Asia and Pacific, Office of the Regional Vice President (claessens@worldbank.org), and Simeon Djankov, Financial Economist (sdjankov@worldbank.org), and Gerhard Pohl, Manager (gpohl@worldbank.org), Private Sector Development and Finance Group, Europe and Central Asia, and Middle East and North Africa Technical Department*

# The Veil of Vouchers

*S. Ramachandran*

In the five years since the former Czechoslovakia and Mongolia pioneered vouchers, other countries have also used them in their mass privatization programs. But the effect of vouchers and how they work are often misunderstood. Using a simple extension of monetary theory, this Note shows why vouchers do not affect the price level even though, like currency, they carry a face value. And it shows that vouchers allow assets to sell despite seemingly binding minimum acceptable bid prices.

## Basic voucher arithmetic

Consider the simplest case of a closed, transforming economy whose 10 million people use the pengo as currency and whose government is privatizing 150 million pengos (in book value) of state-owned assets such as enterprises and houses.

### Cash-only auction

To understand the effects of vouchers, it is helpful to first consider what would happen in their absence—if the government sells the assets for cash only. The value of cash (in terms of goods such as coconuts or hamburgers)—and thus the price level—depends on the demand for real balances. Assume that in the simple case described above there are 500 million pengos in cash outstanding and people wish to hold the equivalent of 500 million coconuts (or hamburgers) to effect transactions conveniently. Then each pengo would be worth a coconut—and vice versa. The relative prices of all other goods would be determined by supply and demand.

If state-owned assets are privatized for cash alone and no vouchers are created, the market

would still clear. How much cash would be tendered in the cash auction cannot be predicted—except that it would necessarily be less than 500 million pengos, the total cash outstanding. But two results can be predicted: First, the aggregate cash bid would be unrelated to the assets' book value.<sup>1</sup> Second, regardless of how much cash is tendered, the price level would fall until the untendered cash is again worth 500 million coconuts.

This last result lies at the core of monetary theory. If, for example, 100 million pengos of currency are tendered and therefore withdrawn permanently from circulation, the 400 million pengos still outstanding must be enough to buy the 500 million coconut-equivalent that the public desires to hold as cash to effect transactions. The price of each coconut must therefore fall from 1 pengo to 80 pengitos ( $400 \div 500$ , with 100 pengitos to the pengo), and the nominal price of all other goods would fall by an equivalent amount so that relative prices remain unchanged. One cannot say how quickly the price level would fall, but the final equilibrium is unambiguous. (If the cash tendered is subsequently reinjected into the economy, the price level would not change.)

### Vouchers-only auction

Now assume the government distributes 200 million vouchers—pieces of paper that can be used to bid for the assets, each with a face value of one pengo. Recipients pay nothing (or a token amount) for the vouchers. And whether each receives twenty vouchers or an amount related to his or her age, height, or military service is a detail that affects the redistribution of wealth, not the market prices of vouchers or assets.

Let's say state-owned enterprises are sold for vouchers only (that is, no cash is accepted) and the auction involves multiple rounds of bidding, but final allocation and payment are made only when there is no excess supply of or demand for any firm. (In the Czech privatization program, most firms were sold in just two rounds of bidding.) Because vouchers have no use except in buying these firms, the voucher price of each firm would be bid up or down until every voucher distributed is tendered and every firm is sold.<sup>2</sup> Some firms may sell for more than book value and some for less, but the aggregate price paid for all firms would have to equal the aggregate face value of vouchers. Thus, if only 50 million vouchers had been issued rather than 200 million, all firms would still have sold, though for an aggregate 50 million pengos in vouchers—a value unrelated to the assets' book value of 150 million pengos.

In addition, with 200 million vouchers issued, each with a face value of one pengos, the cash value in the secondary market for vouchers need not equal 200 million pengos. Some voucher recipients would be uninterested in buying firms and others would be interested in buying a sizable stake; and the cash price of a voucher could be greater or less than a pengos depending on the (unobservable) market price (in cash) of the assets being sold.

#### **Cash and voucher auction**

If the government accepts any combination of vouchers and cash as payment for assets, this puts a ceiling on the cash price of vouchers.<sup>3</sup> And the cash price of vouchers in the secondary market would invariably be lower than the ceiling.

Consider what would happen if 200 million pengos in vouchers were outstanding and assets were sold without a reservation price for either cash or vouchers. If the market value of all the assets was 100 million pengos in a cash-only auction, a voucher would trade for 50 pengos cash ( $100 \div 200$ ) in the secondary market. Such secondary trading allows individuals

to accumulate or divest vouchers but would not alter the aggregate outstanding stock of cash or vouchers. Because bidders would find it cheaper to tender vouchers at the auction, no cash would be tendered.

But some cash could be tendered if there were so few vouchers outstanding that they traded at par in the secondary market. If only 80 million pengos in vouchers were distributed, for example, each voucher would tend to trade for 1.25 pengos in cash ( $100 \div 80$ )—a substantial premium over face value. But because people could pay cash for assets, no one would pay more than a pengos for a voucher. So vouchers would never actually trade at a premium,<sup>4</sup> and all 80 million vouchers would be tendered at the auction along with 20 million pengos in cash.

In this example, cash is tendered only because the government had in effect put too low a ceiling on the cash price of vouchers. Accepting each voucher at face value—on par with cash—prevented the vouchers' real value (in terms of goods) from rising enough to clear the asset market. (The cash price ceiling on vouchers is binding only if the aggregate nominal stock of vouchers is less than the assets' market value in cash—which is unobservable before the auction.)

This result has a simple policy implication: If policymakers do not want to alter the amount of cash outstanding (and perhaps the price level), it is better to issue "too many" vouchers. Harmlessly bidding up the voucher prices of firms also allows the sale to fetch a "good" price, helping to avoid the criticism of selling too cheaply. Of course, issuing more vouchers lowers the cash price of vouchers in the secondary market (that is, increases the discount from face value). But the government will not be blamed for this if the secondary market is not explicitly legal—and trades are therefore conducted only surreptitiously (though efficiently).

#### **Adding a reservation price**

In the examples so far, assets are sold for any price, no matter how low. But governments

often set a reservation price (a minimum acceptable bid price) to deflect the inevitable criticism that they are “giving away the crown jewels” or in a misguided attempt to counter perceived collusion by bidders. (It is ironic that those who object to firms’ being sold too cheaply barely protest when vouchers are distributed for free, although the two are equivalent, as shown below.)

To see how having a reservation price affects outcomes, let’s extend the earlier example—in which 200 million pengos in vouchers are issued—by having the government set a reservation price of 220 million pengos (to be binding, the reservation price must exceed the aggregate face value of vouchers outstanding). Assets will not sell unless the additional 20 million pengos are paid in, so vouchers must be augmented with cash. But the assets do not become more valuable just because a reservation price is set, and the market value remains 100 million pengos in cash (or coconut-equivalent). Since 20 million pengos must be paid in cash, the 200 million vouchers can be worth only 80 million pengos in cash—implying a secondary market price for vouchers of 40 pengitos ( $80 \div 200$ ), down from 50 pengitos with no binding reservation price.

Two important results should be noted. First, a binding reservation price does not prevent asset sales but only reduces the secondary market price of vouchers. This counterintuitive result occurs because the secondary market discount of voucher prices acts as a safety valve. Second, for the secondary market discount to undo the normally pernicious effect of a reservation price, the market must have sufficient information about the rules of the auction and the assets being sold. When important information—such as the amount and sequence of assets to be sold—is wanting, the secondary market prices of vouchers may not fall sufficiently, thereby inhibiting asset sales. Recently, the World Bank sought—and failed—to persuade the government of a transition economy to eliminate minimum prices in its voucher privatization. But far more important would

have been to persuade the government to announce the sequence of the asset sales—an action to which it would have agreed. That would have led to sufficient widening of the secondary market discount of vouchers—and a more successful privatization.

Thus, reservation prices are not fatal to voucher privatization. They can be a useful illusion, shielding the government from the common criticism of “selling too cheaply.” Assets would sell even if the reservation price exceeds the (unobservable) market price of assets—as long as it is less than the sum of the market price in cash and the aggregate outstanding vouchers. This result favors distributing lots of vouchers.

But to say that reservation prices are not fatal to privatization is not to argue that they are desirable. Reservation prices are usually set for each firm, not in the aggregate, and firms whose market values are lowest relative to their reservation prices would remain unsold. A firm whose market value was 1 million pengos but whose reservation price was 3 million, for example, would go unsold because buying 3 million pengos in vouchers would cost 1.2 million in cash—200,000 pengos too much.<sup>5</sup>

### Voucher myths

It is often claimed that vouchers make privatization affordable, create purchasing power, and overcome capital shortages. These are myths that arise from the paradox of composition: what appears to be true from an individual’s point of view is not true in the aggregate.

A person who receives a voucher may think that she is wealthier than before, but if everyone receives a voucher, she is not. Wealth represents her share of the economy’s income, and everyone obviously cannot get a larger share. More important—and counterintuitively—when the government “sells” assets, the public pays nothing real. The public has the equivalent of 500 million coconuts in cash before and after the sale regardless of whether vouchers or cash or both are used. Both cash and vouchers are

mere pieces of paper, costlessly created by government fiat. The only difference is that using cash may lower the price level. Voucher privatization merely transfers assets held in collective (state) ownership to segregated individual accounts, and purchasing power is irrelevant in this “redesignation.” If vouchers or cash could add to wealth or augment capital or purchasing power, the printing press would be the philosopher’s stone that alchemists have long sought.

### Why vouchers?

If cash can do what vouchers can, why vouchers? Some prefer vouchers as a means to redistribute wealth, to make privatization “fair,” but in reality any redistribution would be very small. Even in the most totalitarian of communist societies, the value of physical assets the government owns is dwarfed by human capital, which is unaffected by privatization. Labor income generally accounts for about three-quarters of GNP—but for far more early in transition, when existing capital has been rendered nearly worthless—with the rest of GNP the return to capital, both land and machines. State-owned assets are only part of such capital, so the potential wealth redistribution through vouchers is small. The growing disparities in wealth in postcommunist economies reflect the highly skewed distribution of entrepreneurship (and rent-seeking abilities, given the continued price distortions and subsidies), not unfair privatization.

Although privatization practitioners may advocate using vouchers for the wrong reasons, there are defensible advantages. First, although the nominal aggregate stock of cash has no real effect in the medium to long term, fiddling with the money supply could generate temporary real effects when changes in price levels cannot be easily distinguished from changes in relative prices. Although cash tendered in privatization could be quickly reinjected into the economy by buying back government bonds or by giving a one-time pay increase to civil servants, economists are a nervous breed who see vouchers as

less risky than using cash. Second, used cleverly, vouchers are one way—but not the only way—of generating some harmless illusions. Using vouchers may seem more equitable to the public, and it helps avoid claims that the government is selling assets “too cheaply”—thereby safeguarding the difficult transition to a market economy.

<sup>1</sup> If book values were not adequately adjusted for inflation, market values would be higher. But if the assets cannot be redeployed from producing what central planners dictate to producing what customers want, market values would be lower. In either case, however, the coconut equivalent of the untendered currency would remain unchanged.

<sup>2</sup> For simplicity, this example ignores the 5 to 10 percent of those eligible who are too apathetic to collect vouchers and the similar share of distributed vouchers that expire unused.

<sup>3</sup> A ceiling on the currency price of vouchers is a floor on the voucher price of currency. A discount is often allowed for cash payments, but this detail would only clutter, not alter, the analysis. Even if a 100 pengo (face value) voucher were accepted as equivalent to cash for asset sales, it would not exchange for a 100 pengo currency note in secondary market trades. While the government is obliged to accept a 100 pengo voucher instead of a 100 pengo note, it is not obligated to convert one into the other on demand (as it must exchange a 100 pengo currency note for five 20 pengo notes, or vice versa). The pengo prices of different denominations of currency notes are pegged (with both a floor and a ceiling), but the currency price of a voucher has only a ceiling.

<sup>4</sup> Vouchers may still trade at a slight discount because their option value is smaller than that of cash, which does not expire. At modest interest rates, this option value would be swamped by the transaction cost (bid-ask spread).

<sup>5</sup> If some firms remain unsold, the vouchers freed up would be used in bidding for the other firms, depressing secondary market prices for vouchers below 40 pengitos.

*S. Ramachandran (sramachandran@worldbank.org), Private Sector Development Department*