



CAPITALIZATION AND PRIVATIZATION IN BOLIVIA: AN APPROXIMATION TO AN EVALUATION

Written by
Gover Barja^{*}
David McKenzie^{**}
Miguel Urquiola^{***}

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* Maestrías para el Desarrollo, Universidad Católica Boliviana, gbarja@mpd.ucb.edu.bo

** Economics Department, Stanford University, david.mckenzie@stanford.edu

*** SIPA and Economics Department, Columbia University, msu2101@columbia.edu

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Introduction and summary

During the 1990s, Latin America experienced a wave of privatizations, which were an integral part of stabilization programs and a general reordering of the role of states in the regional economy. Over the past few years, these privatizations have come under increasing fire. Adverse effects ascribed to them range from an increase in utility service prices, to aggravating or even causing the recession currently affecting the region. In short, they are sharing in criticism directed at the entire liberalization process.

In this context, accurate knowledge on the real consequences of privatization can be of considerable value. But while research has been carried out on some of its economic effects, there is less information on privatization's broader "social" consequences. The goal of this chapter is to try to fill in some of these gaps as they concern the case of Bolivia.

We first describe Bolivia's privatization process, placing emphasis on the particularities of the *capitalization*² mechanism that was used, and the regulatory framework introduced as its essential complement. We then detail the changes in the industrial organization and ownership patterns in the electricity, oil and gas, telecommunications, transportation, and water industries. Our concern is mainly with the large privatizations in infrastructure, in part because of their economic size and in part because of the availability of data and methods allowing one to estimate the social and distributional impact of these transactions.

The discussion then turns to these processes' economic and social consequences. In the first case, the key issues are which agents benefited from the transfer of assets, and the effects on firm-level variables like investment, profitability, and transfers to the State. With regards to social outcomes, we focus on the effects on employees and consumers. For the first, interest centers on what happened to employment and wages in the sectors affected; for the second, on what occurred to access, prices, and service quality for privatized utilities, and to consumer welfare more generally.

This chapter touches on all these issues, and additionally tries to provide a sense of the Bolivian population's changing assessments of the entire process. Although in several cases data limitations make a full treatment impossible, the available information leads to the following broad conclusions (roughly in the order they appear):

- 1) By design, capitalization and privatization generated significant transfers of assets to foreign firms. The Bolivian population was not excluded from this benefit, however, since it collectively received a 45 percent share in most of the transferred enterprises. Dividends from this ownership have been used to pay old-age benefits.
- 2) These processes, combined with the introduction of a regulatory framework, seem to have delivered on their central stated goal: to substantially

² The nature of these two processes, privatization and capitalization, is described in detail below. In terms of the amount of assets transferred, the latter was clearly the more important. In part because of this, the discussion often uses the two terms interchangeably.

- increase investment (as well as competition, in some cases) in the sectors affected.
- 3) These investments have been associated with significant increases in capacity and output – from improvements in utility access rates, to a ten-fold rise in proven gas and oil reserves within five years of the reforms.
 - 4) Productivity also increased significantly across all sectors, in part due to employment reductions. We find, however, that these reductions were small relative to the economy as a whole. Unless the indirect effects were very large, therefore, privatization simply cannot account for the increasing unemployment observed in recent years.
 - 5) Tax receipts from regulated firms appear to have increased after reform. In the current recession, however, there is pressure for further increases, particularly from the oil and gas sector.
 - 6) While most capitalized firms do report positive profits, their returns on equity have declined in recent years, again, particularly during the ongoing recession.
 - 7) We find that in the urban areas, capitalization is associated with increases in households' access to utility services. Especially for electricity and water, these expansions have not bypassed the poor. On the contrary, in many cases it is the lower income deciles that seem to have benefited the most. For telephone services, improvements have been greater further up the income distribution. Several of these findings persist when we try to isolate only those effects due to privatization itself.
 - 8) Concerning prices, there are large gaps in the information available. On balance, it seems that price increases have not been large, with the exception of those attempted as part of the water concession in Cochabamba.
 - 9) Taken together, the access improvements seem to dominate the price increases, resulting in welfare gains for many households. Not surprisingly, these gains are largest for those services and income groups for which access grew most. In particular, in electricity there are significant gains for the lower deciles in the income distribution. For phone services, improvements are observed almost across the board. For water, we find that the La Paz/Alto concession seems to have produced welfare gains as well. Not surprisingly, in the case of the failed concession in Cochabamba, we find that welfare effects would—had the concession continued—been rather negative unless substantial improvements in access would have accompanied the proposed tariff increases.
 - 10) The regulatory framework seems to have strengthened the rule of law and promoted competition and transparency in some sectors. Nevertheless, it is clearly still necessary to improve the regulatory and broader institutional framework.
 - 11) As elsewhere, privatization/capitalization and the introduction of regulation were part and parcel of a broader restructuring of the economy. In Bolivia, privatization lagged behind stabilization significantly, but it was still crucial in the shift in the state's focus from productive to social sector activities. Nevertheless, after about seven to eight years of reform and four of recession, private investment has slowed down and a consensus seems to be reemerging for greater state involvement in the economy.

These findings provide a brief and admittedly incomplete evaluation of privatization in Bolivia. We emphasize, further, that it was the combination of *privatization/capitalization*, on the one hand, and *regulation*, on the other, that was substituted for state ownership, although for conciseness we will often refer to the collection of these as “privatization.” Further, we note it is impossible to fully disentangle the effects of these processes from those of associated events, like the introduction of new technologies.

That said, our findings suggest that on the whole these reforms met with relative success. The fact remains, however, that they are not popular, at least to judge by polls and politicians’ pronouncements. In the final part of the paper, we provide some hypotheses to explain this, as well as some detail on the political economy of the reforms.

An aspect we highlight is the popular suspicion that, even if output and productivity have improved, the capitalized enterprises are being run with only the best interests of the majority (foreign) owners in mind, and that the regulatory system has been unable to adequately restrain this natural tendency. The recent worldwide focus on corporate malfeasance has helped bring these concerns to the forefront.

This standard issue has gained salience in Bolivia because, as stated, the population collectively owns a 45 percent share in capitalized firms, and the dividends accruing to this ownership are used to finance old-age benefits. Because these dividends have been declining (partially due to a recession), the amounts collected have been insufficient to adequately fund benefits in the amount promised initially.

Another issue we emphasize is our impression that the government that implemented these reforms “oversold” them, promising more, on the job creation front for instance, than they could reasonably deliver. Finally, the reform’s entire reputation has been hurt by a couple of high profile failures, one regarding the national airline and another a water concession in the city of Cochabamba.

None of these issues might have been salient in a healthy economic environment, but in the economic slowdown Bolivia has been experiencing since 1999, they have significantly contributed to privatization’s bad reputation. Further, the persistence of the economic slowdown is to an important degree due to fiscal rigidities introduced by other reforms, such as decentralization and pension reform. For example, the fiscal deficit created by the transition away from the old “pay as you go” pension system reached five percent of GDP by 2002, and is not expected to decrease for at least a decade. This generates pressures for economy wide tax increases and thus contributes to further questions regarding structural reform as a whole.

Capitalization/privatization: The process and its direct effects

Bolivia initiated significant economic liberalizations in 1985, primarily in an effort to tame hyperinflation and emerge from a deep recession. Despite success with these early market-friendly initiatives, the country did not engage in

significant and sustained privatization until about ten years later. When it finally embarked on this process, the government employed traditional privatization in some instances, but mainly relied on *capitalization* as a mechanism for the transfer of state-owned firms.

This section first describes how these approaches differ, and how the introduction of regulatory mechanisms served as a key complement to both. For each of the affected sectors, the discussion also covers changes in industrial organization and regulatory arrangements, as well as ownership patterns

Capitalization and privatization: general overview

Under traditional privatization, the government transfers a majority of ownership in a state firm to the private sector, receives the sale proceeds, and has freedom over how to spend them. Under Bolivian capitalization, the state transferred shares (mainly in infrastructure firms) equivalent to 50 percent of the firm to the investor with the winning bid. It also yielded between 45 and 50 percent to private pension fund administrators who represent the general citizenry, and who use the funds derived from this share to pay old-age benefits complementary to those stemming from individual retirement accounts.³ The remainder (about 4 percent, on average) accrued to the company's employees.

By its payment, the investor gains the right to manage the firm, and commits to *investing* its capital contribution, the total amount it offered for its 50 percent share, in the firm's development. It must carry this out within a specified period (typically six to eight years), agree to fulfill obligations that encompass expansion and quality goals, and operate under regulation and a long-term (typically 40 year) contract.⁴

Under this scheme, therefore, investment is given a high priority, and the government gains no disposable income. This reflects the fact that having come relatively late in Bolivia's liberalization, capitalization was not seen as a means to cover deficits, but rather as a way to attract foreign investment and improve management in key areas of the economy.

Taken together, capitalization and privatization raised significant amounts of capital: total commitments add up to about two billion dollars, roughly equivalent to 30 percent of GDP. Capitalization accounted for most of these proceeds, however, 1.7 billion dollars, as opposed to 0.3 billion from traditional privatization.⁵

³ As this suggests, a reform to the pensions system accompanied capitalization in Bolivia. We discuss this in detail below.

⁴ The investor made a bank deposit with this payment, and was instructed to keep records on its use. Government audits of investment, firm management and performance took a long time to be initiated, and are currently under way.

⁵ While privatization started in 1992 with about 50 percent of its proceeds concentrated in 1999, capitalization occurred in the 1994-1997 period.

Regulation as a complementary reform

Capitalization was complemented with reforms to each sector's industrial organization, and with a regulatory framework that has the stated goal of promoting competition and efficiency.⁶ The key legislation was the SIRESE (Sistema de Regulación Sectorial) Law (1994), which created a regulatory system for the infrastructure sector. In essence, it defines the institutional structure, including the role of five regulatory agencies (*Superintendencias*) for the electricity, telecommunications, hydrocarbons (oil and gas), potable water, and transportation industries. Additionally, it sets up an overseeing agency responsible for system-wide coordination, second instance appeals and evaluation; and introduces market competition as one of the guiding principles in the infrastructure sector.

Four more specific laws round out the legal framework: Electricity (1994), Telecommunications (1995), Hydrocarbons (1996) and Potable Water (2000). These introduced changes in each sector's industrial organization, and govern aspects related to tariff regulation, entry, service quality, and sanctions. The sector-specific regulatory agencies created as part of SIRESE administer each law.

Changes in industrial organization and regulatory arrangements

We briefly describe the more important changes implemented in each sector.

Electricity

Prior to reform, the electricity industry was divided into the National Interconnected System (NIS) and other independent networks, a distinction which remains today.⁷ The NIS covers the largest cities, while the other networks serve other urban and some rural areas.⁸ This paper focuses on the NIS, where the state-owned *ENDE*⁹ was active in generation and transmission. Additionally, it had some distribution activities, mainly through *ELFEC*¹⁰ in the city of Cochabamba. *COBEE*¹¹, long a private company, participated in generation and distribution in the cities of La Paz and Oruro. Other distribution firms or cooperatives were, *CRE*¹² in Santa Cruz, *SEPSA*¹³ in Potosí and *CESSA*¹⁴ in

⁶ For more on regulation and regulatory institutions in Bolivia, see Barja (2000) and SIRESE (2000).

⁷ The NIS accounts for close to 90 percent of electricity consumption.

⁸ This distinction will be used extensively. In Bolivia, the main cities are the department capitals. The three largest have populations close to one million and form the so-called central axis: Cochabamba, La Paz/El Alto, and Santa Cruz. This reflects the fact that Bolivia does not have a single dominant urban center, and has one of the lowest urban concentration ratios in the region.

⁹ Empresa Nacional de Electricidad.

¹⁰ Empresa de Luz y Fuerza Eléctrica Cochabamba.

¹¹ Compañía Boliviana de Energía Eléctrica.

¹² Cooperativa Rural Eléctrica.

¹³ Servicios Eléctricos de Potosí, a municipal company.

¹⁴ Compañía Eléctrica Sucre, a municipal company.

Sucre. Competition existed only between *ENDE* and *COBEE*, and was limited to the direct provision of electricity to a few mining and industrial concerns.

The Electricity Law vertically separated generation, transmission, and distribution, with some firms privatized in each of these. In generation, capitalization created three firms: *Corani*, *Guaracachi* and *Valle Hermoso*, with a total value of about 140 million US dollars. Each of these received part of *ENDE*'s generation activities, with the law limiting the market share each can achieve to 35 percent of the NIS. Exclusive rights were initially granted to these companies, but by 1999 entry was liberalized and some smaller firms began operations as well.

In transmission, network operation passed from *ENDE* to the private *Transportadora de Electricidad*, without exclusive rights. Additionally, the Electricity Law forbids the participation of transmission firms in purchase or sale activities, and establishes open access and tariff regulation. The privatization transfer was for a value of about 40 million US dollars.

In distribution, several types of firms exist after the reform, all of which operate under tariff regulation and are subject to quality controls. First, there is *CRE*, a pre-existing distribution cooperative that remained as an independent regional monopoly. Second, there are pre-existing municipal distribution firms that also retained their monopolies: *CESSA* and *SEPSA*. *ELFEC*, previously a municipal company, now operates as a private firm transferred for about 50 million US dollars. Finally, as stated, the private *COBEE* operated in both generation and distribution. Its divestiture from distribution produced two private local distributors, *ELECTROPAZ* (La Paz), and *ELFEO* (Oruro). For all of these distribution firms, tariff regulation consists of several average cost caps with productivity factors set using a four-year lag. Tariffs are updated every semester to allow for "pass-through" of energy cost increases.

These reforms, together with the introduction of a load dispatch coordination office, have created a wholesale electricity market that seeks to simulate competitive conditions. Partially as a result, the NIS has experienced excess capacity since 1999.

Oil and gas

Prior to reform, virtually all of the hydrocarbons (oil and natural gas) industry was under the control of state-owned *YPFB*¹⁵, a vertically integrated monopoly. Limited private participation in exploration, as well as in crude oil and natural gas production, took place through joint ventures with this company.

With the capitalization process and the introduction of the Hydrocarbons Law, the priority became to remove *YPFB* from production, and to promote a natural gas export industry directed towards southern Brazil. The state intended this industry to support (through taxes and royalties) the development of other sectors of the economy, and with this goal in mind, reforms and foreign

¹⁵ Yacimientos Petrolíferos Fiscales Bolivianos.

investment were focused on exploration and infrastructure. The inauguration of a pipeline to Brazil in 1999 made this vision a reality.

Further, these reforms were associated with a substantial increase in natural gas reserves. Proven and probable reserves increased from about 5.7 trillion cubic feet in 1997, to 52.3 in 2002, putting Bolivia in first place in Latin America in free reserves. With reserves now exceeding the served Brazilian and domestic market demand, the government is considering new projects, including liquefied natural gas exports to the U.S. and Mexico,¹⁶ petrochemical and thermoelectric plants, and new export pipelines to Brazil, Argentina, Paraguay and Chile.¹⁷ As for the domestic market, a general policy of private control of all phases up to retail commercialization was adopted.

To implement these objectives, the Hydrocarbons Law requires that exploration, production and commercialization (upstream) be executed only by private firms in joint ventures with *YPFB* (which remains as the upstream regulator), while placing few restrictions on the export and import of petroleum products. The most important operators in the upstream, in terms of reserves (based on 2001 data), are: *Petrobras* (34.8 percent), *Maxus* (29 percent), *Total Exploration* (19.8 percent), *Andina* (5.9 percent), and *Chaco* (4.6 percent). Capitalization resulted in the creation of two firms in the upstream sector: *Chaco* and *Andina* with a value of 306 and 265 million US dollars respectively.

The 1996 Hydrocarbons law stipulates that the government is entitled to a share of the value of production which depends on whether the field in question was discovered before or after capitalization: 50 percent of the value of production from old fields (at wellhead), and 18 percent from new fields.¹⁸ In both cases firms are also required to pay a 25 percent profit tax, a 25 percent surtax,¹⁹ and a 12.5 percent remittance tax.

In the downstream area, the gas and oil pipelines owned by *YPFB* were transferred to the capitalized *Transredes*, without exclusive rights and a total value of 264 million US dollars.²⁰ The administration of other pipelines (poliductos) was entrusted to the private *Oil Tanking*, with the remaining still under *YPFB* control. In refinement, most of *YPFB*'s units were transferred to the private *Empresa Boliviana de Refinación (EBR)*.²¹

In commercialization, most of *YPFB*'s storage terminals were transferred to *CLHB*²² of *Oil Tanking* as well, but other private firms are also active. Bottled liquefied gas distribution plants are all private, and about nineteen percent of

¹⁶ Given Bolivia's landlocked condition, at present one of the most debated issues is the choice of an export port in either Chile or Peru.

¹⁷ A regional distributional issue has emerged because most of the new reserves are in the Department of Tarija, which stands to receive significant royalty revenues.

¹⁸ The 1990 Hydrocarbons Law required that all fields pay 50 percent in royalties, plus a profit tax.

¹⁹ The surtax base is equal to the profit tax base minus 33 percent of accumulated investments and minus 45 percent of the value of production at each field, up to a maximum of \$40 million per year.

²⁰ Other operators are *Gas Trans Boliviano*, *Gas Oriente Boliviano*, *Transierra*, and *Petrobras*.

²¹ Owned by the Accidental Association *Petrobras Bolivia S.A.*

²² *Compañía Logística de Hidrocarburos Boliviana*.

bottling capacity continues under YPFB, but is expected to be privatized. Compressed natural gas service stations are all private, and about 15 percent of service stations for liquids continue under the state firm. Airport service stations nationwide were also transferred to the private sector. Except for Transredes, all other transfers in the downstream were privatizations that reached a total amount of 125 million US dollars.

Mixed ownership continues in network-based natural gas distribution: *SERGAS*²³ in Santa Cruz, *EMCOGAS*²⁴ in Cochabamba, *EMDIGAS*²⁵ in Sucre and *EMTAGAS*²⁶ in Tarija. *YPFB* operates in La Paz, Potosi and Oruro. The expectation is that these companies will also be eventually privatized.²⁷ Despite this activity, the network-based natural gas industry is still underdeveloped: by 2001 it included only 14,435 connections. Nevertheless, current policy is to increase this to up to 250,000 connections in the next five years, as part of an effort to direct energy consumption towards natural gas.

Except for restrictions to vertical integration imposed on firms in gas pipeline transportation, the industry structure is flexible and determined by export market needs, although mergers and acquisitions are subject to approval. This has permitted *Petrobras*, in association with others, to integrate several of the phases directed to the natural gas exports to Brazil, at the same time as this company participates through *EBR* in refinement for the domestic market.

Rate of return regulation (with a four year lag) is used for pipeline transportation, with a tariff structure that differentiates between domestic and export-related transportation. In natural gas network distribution, tariff regulation has not been implemented thus far. Consumer prices for all petroleum derivatives were initially calculated by starting with an international reference price and then adding the costs of processing, transportation and commercialization, plus an oil derivatives tax. In response to price volatility, liquefied gas, diesel oil, and gasoline have been subsidized since 2000. Further, in a decree (January, 2003) the government froze all consumer prices, eliminated the refining margin, and increased the oil derivatives tax -- with the effect of lowering prices for the upstream firms. However, due to fiscal pressures generated by subsidies, in a recent decree (February, 2004) the government is slowly promoting the return to market determined consumer prices.

Telecommunications

Prior to reforms, the telecommunications industry was divided between *ENTEL*,²⁸ which covered national and international long distance services, 15 cooperatives with monopolies in fixed local telephone services, and *Telecel*, a private monopoly in the cellular market. Capitalization created the private *ENTEL* with a value of 610 million US dollars and the Telecommunications Law

²³ Empresa de Servicios de Gas Santa Cruz S.A.M.

²⁴ Empresa Cochabambina de Gas S.A.M.

²⁵ Empresa Distribuidora de Gas Sucre S.A.M.

²⁶ Empresa Tarijeña de Gas.

²⁷ The first privatization attempt failed in April 2002.

²⁸ Empresa Nacional de Telecomunicaciones, the State monopoly.

maintained these separations until entry was liberalized at the end of 2001. Until then, *ENTEL* and the cooperatives retained exclusive rights, but the mobile market was opened gradually by allowing the entry of *ENTEL-Movil*²⁹ in 1996, and *Nuevatel-Viva*³⁰ in 2000.

For the period prior to entry liberalization, legislation mandated tariff regulation for firms that control more than 60 percent of a given market. This scheme had a similar structure in all areas, establishing an initial price cap for different baskets of services, adjusted for inflation and a productivity factor with a three-year lag. Further, the law stipulated annual expansion, quality, and technological goals.

November 2001 marked the end of exclusive rights in all markets.³¹ Entry occurred in the long distance market through *AES Corporation* (in association with *Cotel*), *Teledata*, a division of *COTAS*, *Boliviatel*, a division of *COMTECO*, *Telecel*, *Nuevatel* and *ITS*. Additionally, *Cotas-Movil* has entered the mobile market, while *Entel* has expanded its local network to business clients. Most of these companies are also expanding in the data transmission and internet markets. Up to the end of 2001, registers show 14 firms providing public phone services, 29 in cable TV, 28 in value added services, 217 in television, 496 in radio, 6 in data transmission, and 478 private nets.

Additionally, market liberalization was accompanied by a four-year restriction on mergers, acquisitions and stock swaps that account for 40 percent or more of total local fixed lines in service in the country by one firm (or a group of related firms). Tariff regulation continues where a firm controls more than 60 percent of a given market, although this is expected to change with the introduction of dominant firm regulation rules, and new rules are being implemented to facilitate inter-connection agreements. A Universal Access and Service Fund has also been proposed (not yet implemented), which would be financed by foreign aid and operators' contribution with the broad objective to reach the rural areas and the urban poor.

Transportation

As elsewhere, the Bolivian transportation industry is divided into air, rail, road and water segments. Thus far, capitalization and regulation have only affected the first two. Additionally, the long awaited new Transportation Law has not yet been approved.

In the air market, prior to reform the state-owned *LAB*³² and the private *AEROSUR*³³ competed in the main regular route domestic market. *LAB* also participated in the international market, and the national airport system was administered by the state monopoly *AASANA*.³⁴ *LAB* was capitalized creating a

²⁹ A division of capitalized *ENTEL*.

³⁰ A joint venture between *COMTECO* (the Cochabamba cooperative) and Western Wireless International.

³¹ The so-called *Decretos de la Apertura* were approved by the government a year before.

³² Lloyd Aéreo Boliviano.

³³ Compañía Boliviana de Transporte Aéreo Privado.

³⁴ Administración de Aeropuertos y Servicios Auxiliares a la Navegación Aérea.

new private firm, also *LAB*, with a capital contribution of 47 million US dollars, and the main three airport terminals of Santa Cruz, La Paz/El Alto and Cochabamba, were transferred to the private *SABSA*³⁵ as concessions. *AASANA* retains administrative control of 34 small airports, and *AEROSUR* has entered the international market.

In the case of rail, before reform the sector was dominated by the state monopoly *ENFE*,³⁶ which administered passenger and freight services in the Andean and Eastern regions. In this case, reform created two separate regional firms, *FCA*³⁷ and *FCO*,³⁸ which were then capitalized generating two firms that received a total capital contribution of 87 million US dollars.

The lack of a sector law has limited the regulatory activities of the Transportation Superintendence. Nevertheless, it was able to advance some actions based on existing norms and a few government decrees. In air transportation, a tariff band was set for the regular domestic market, with the stated objective of discouraging anticompetitive practices. Some airport terminal tariffs are also regulated. In rail transportation, there are regulations concerning economic, technical and security aspects of service.

Water

While the above sectors experienced capitalization and the introduction of regulation, the water industry has undergone limited changes and encountered significant difficulties. Only one municipal firm, *SAMAPA* (La Paz/El Alto), was transferred as a concession in 1997, to *Aguas del Illimani*.³⁹ Under the new model, the concession seeks to improve internal efficiency, coverage, and quality. The characteristics of the *Aguas del Illimani* contract reflect this, and the objectives established for the 1997-2001 period included: i) 100 percent access to potable water or sewerage (excluding public fountains) in the areas of Achachicala and Pampahasi, in the city of La Paz, ii) 82 percent access to potable water in the city of El Alto by 2001, of which 50 percent should be expansion connections, and 41 percent access to sewerage; and iii) compliance with long-term expansion goals. Quality norms cover aspects related to the sources of water, its quality, abundance and pressure; continuity of service, infrastructure efficiency, customer service, and emergency preparedness. Tariff regulation was established under a rate of return mechanism with a five-year regulatory lag and no productivity factors. Additionally, tariffs were set in dollar terms payable in bolivianos.⁴⁰

The expectation was that within a short period, legislation would be in place to incorporate the remaining firms into a similar model. However, the long wait for a Potable Water and Sewerage Law (finally approved in 2000), together

³⁵ Servicios Aeroportuarios Bolivianos.

³⁶ Empresa Nacional de Ferrocarriles.

³⁷ Empresa Ferroviaria Andina.

³⁸ Empresa Ferroviaria Oriental.

³⁹ The main shareholder is *Lyonnaise Des Eaux*, with 35 percent.

⁴⁰ This last feature has generated wide protest from the inhabitants of El Alto.

with significant failure in a second transfer of a municipal firm (*SEMAPA*) to *Agua del Tunari*⁴¹ in Cochabamba, significantly slowed change in this sector.⁴²

Nevertheless, up to 2000 the Water Superintendence was able to incorporate the new regulatory regime and sign concessions with existing municipal water firms in Cochabamba, Oruro, Sucre, and Potosi -- and with existing cooperatives in Santa Cruz, Montero, Trinidad and Guayaramerin. Some features of the new Law are that municipal governments are responsible for the provision of water and sewerage services, a responsibility they can perform through private or municipal firms, cooperatives, civil organizations and any existing organization in rural communities. The Bolivian population is divided between areas subject to concession or not, depending on whether they are financially viable. Concessions are subject to rate of return regulation with a five year regulatory lag, while universal access in non-concession areas should be accomplished with government investment.

Other characteristics of the regulatory system

Thus, the regulatory system (SIRESE) consists of five sector-specific offices (electricity, hydrocarbons, telecommunications, water and sewerage, and transportation), and one General Superintendence. By design, the system is financially and administratively independent, and Superintendents are appointed by congress for five-year periods.⁴³ The functions of each Superintendence vary by sector, although they generally include: granting rights, regulating tariffs, promoting competition, monitoring operator obligations, resolving controversies among firms, imposing sanctions, hearing first instance appeals, and receiving consumer claims. It is important to point out that the regulatory system only administers the law – its design is left to the corresponding government ministries (although the system can propose legislation).

The General Superintendence evaluates each sector Superintendence once a year, considering factors that include compliance with general functions, internal organization, and sector performance relative to regulatory objectives. Aside from its impact on specific regulatory activities, SIRESE has also been successful in improving the availability of transparent information, and in strengthening the rule of law.

In terms of appeals, the system has a first instance where any operator can appeal a decision made by its sector Superintendence. If the decision is upheld, the operator has a second chance to appeal before the General Superintendence. Even after these stages, the operator retains recourse to the judiciary system. Up to 2001, there had been 453 first instance and 148 second instance appeals and 25 cases in the judiciary system.

As for consumer protection, the system sets up a first reclamation instance directly with the operator. If the dispute is not settled, the consumer has a second chance before the sector Superintendence. This set-up has revealed a large

⁴¹ A private firm with the British *International Water* (with 55 percent) as the main shareholder.

⁴² Described in detail below.

⁴³ Seven years in the case of the General Superintendent.

number of consumer complaints in some sectors, particularly telecommunications and electricity.

The cost of the entire regulatory system was estimated at 0.2 percent of GDP in 2001, and is fully financed by operators from a levy on gross income (usually less than 1 percent). This investment has brought important advances, but its effectiveness has been hampered by various factors: instances of instability and lack of continuity of Superintendents due to political pressures, lack of a sector law in the cases of water (until 2000) and transportation (until today), and slow approval of detailed regulations in most sectors. Additionally, at times operators have successfully lobbied the executive and legislative branches to bypass the regulatory system. Consumers often feel they do not have enough representation, participation or protection. Some Superintendencies have also been slow to produce transparent information, and/or lacked specialized human resources in their earlier stages. In recent years the system has also had to reduce its costs in response to similar initiatives in the rest of the government.

Pension reform and further ownership effects

To summarize, Capitalization transferred 50 percent of state enterprises (and their control) to foreign firms. Additionally, 45-50 percent of shares in the capitalized firms were given to the *Collective Capitalization Fund* (CCF), to be held for the benefit of the population at large (we discuss the creation of the CCF and the associated pension reform in greater detail below). Table 4.1 lists the enterprises capitalized in the utilities and hydrocarbons sectors, the number of shares issued, and their distribution between the capitalizing firm (always 50 percent), the CCF (46.4 percent on average), and the employees of each enterprise (3.6 percent on average). It bears repeating that in the second case the shares are made out to the CCF and are represented by the private pension fund administrators. These are not owned by the administrators, the state, or any individual citizen.

Table 4.1.

Distribution of share ownership for the capitalized firms

Firm (Sector)	Total number of shares	Percent owned by the capitalizing firm	Percent owned by the CCF and represented by the fund administrators	Percent owned by the firms' workers
<i>Ferrovial</i> <i>Oriental</i> (Transportation)	2,296,982	50	49.91	0.09
<i>Ferrovial</i> <i>Andina</i> (Transportation)	1,322,448	50	49.93	0.07
<i>Valle Hermoso</i> (Electricity)	2,927,322	50	49.87	0.13
<i>Guaracachi</i> (Electricity)	3,358,284	50	49.83	0.17
<i>Corani</i> (Electricity)	3,144,486	50	47.23	2.77
<i>Transredes</i> (Oil and gas)	10,048,120	50	33.55	16.45
<i>Petrolera Chaco</i> (Oil and gas)	16,099,320	50	48.94	1.06
<i>Petrolera Andina</i> (Oil and gas)	13,439,520	50	48.92	1.08
<i>ENTEL</i> (Telecommunications)	12,808,988	50	47.47	2.53
<i>LAB</i> (Transportation)	2,293,764	50	48.64	0.99
Mean		50	46.42	3.57

Source: Boletín de Pensiones 1999, Superintendencia de Pensiones, Valores y seguros.

The CCF receives the dividends due to it from its shares in the capitalized firms. Between 1997 and 2000, these represented between 0.39 and 0.55 percent of GDP per year, with the most important contribution coming from the telecommunications sector. In 2001 dividends grew to 0.65 percent of GDP with the most important contributions coming from the energy sector, however, in 2002 they dropped to 0.45 percent of GDP.

The fund has a significant social impact as a source of transfers to private citizens. These include the *Bonosol* (an old-age benefit), funeral expenses, investment in *Individual Capitalization Funds* (pension plans actually owned by individual citizens), and subsequently, the *Bolivida*. The *Bonosol* was a cash payment equivalent to 248 US dollars in 1997, directed at all citizens 65 or older – a substantial transfer given that Bolivia's GDP per capita is about 1,000 dollars.⁴⁴ In total, 56.5 million dollars were paid to about 320,000 people.

The *Bonosol* was only paid once before the administration that implemented the capitalization process left government. Immediately a debate began on whether the CCF in fact had enough funds to continue payments at that pace. The next administration did not make payments for a period and then switched to the *Bolivida*, which it began disbursing in December of 2000. It consists of 60 US dollars for every citizen above the age of 65. Retroactive payments for 1998 and 1999 (\$60 per year) were also made, and by March of 2001 had benefited 150,000 individuals.

The year 2002 witnessed the return to government of the administration that originally implemented capitalization, and hence a desire to return to the original (roughly \$240) *Bonosol*. Because of further reductions in the flow of dividends, however, the CCF now clearly does not have sufficient funds to make payments at this level. We return to this issue, including how the government plans to make up the shortfall, below.

Effects: Firms' performance

Capitalization and privatization entailed major changes to the industrial organization of the sectors they affected, and to the conditions under which the firms in each of them operate. In this section, we study these reforms' effects on several aspects of firm performance.

Investment

Investment is a key parameter in any evaluation of the capitalization process, since increasing it was an explicit objective. Table 4.2 summarizes the sector-specific information presented earlier, but complements it with the investment activity observed in each case. The privatization values presented correspond only to the oil and gas, electricity, telecommunications and transportation sectors.

⁴⁴ By December 31, 1999, the CCF had also been used to acquire shares of the ICF for approximately 14.7 million dollars, and for the payment of funeral expenses worth 2.3 million dollars.

Table 4.2.

Resources/investment generated by privatization and capitalization

Firms created by the reform	Year	Privatization value (Millions of \$US)	Capitalization value (Millions of \$US)	Investment as of 2002 (as percent of commitment)(1)	Company / institution in charge of investment
Oil and gas					
<i>Chaco S.A.</i>	1997		306.66	89.2	Chaco S.A.
<i>Andina S.A.</i>	1997		264.77	108.9	Andina S.A.
<i>Transredes S.A.</i>	1997		263.50	102.5	Transredes S.A.
<i>EBR S.A.</i>	2000	102.00			TGN- Investment
<i>CLHB S.A.</i>	2000	12.05			TGN- Investment
<i>Airport Service Stations</i>	2000	11.10			TGN- Investment
Electricity					
<i>Corani S.A.</i>	1995		58.79	74.7	Corani S.A.
<i>Guaracachi S.A.</i>	1995		47.13	150.0	Guaracachi S.A.
<i>Valle Hermoso S.A.</i>	1995		33.92	111.9	Valle Hermoso S.A.
<i>TDE S.A.</i>	1997	39.90			TGN- Investment
<i>Elfec S.A.</i>	1995	50.30			ENDE Residual
Telecommunications					
<i>ENTEL S.A.</i>	1995		610.00	21.4	ENTEL S.A.
Transportation					
<i>LAB S.A.</i>	1997		47.47	100.0	LAB S.A.
<i>FCO S.A.</i>	1996		25.85	241.6	FCO S.A.
<i>FCA S.A.</i>	1996		13.25	167.6	FCA S.A.
Total		215.35	1,671.34		

(1) Based only on the amounts accepted by the regulatory system, Delegado para la Capitalización

As this table illustrates, most firms have exceeded their investment commitments, and from this perspective the process seems to have delivered. Firms under concession agreements (*Aguas del Illimani*, and *SABSA*), furthermore, have also made investments in order to comply with specific contractual goals that are not registered in the table.

Employment and labor productivity

A frequent critique of privatization is that it leads to unemployment. In this section, we use administrative information to explore the extent to which this is true for Bolivia. As context, the economy-wide unemployment rate went up significantly after 1997, more than doubling (to about 8 percent) by 2002. Naturally, external or other macroeconomic shocks may account for this; we postpone a discussion of these until later. The focus in this section is simply to

see if the employment changes brought about by privatization and capitalization could account for this change. Due to data restrictions, in this section we arrive only at a partial answer. Additionally, we include information on the evolution of labor productivity, and once again we proceed through the analysis by sector. Due to space restrictions, we omit a fair amount of quantitative data from the following discussion; for interested readers, this is available in Barja, McKenzie and Urquiola (2004).

Electricity

In generation the number of employees in each firm remained more or less constant between 1995 and 1998, with some declines by 1999. Associated with increases in output, these trends have resulted in increases in labor productivity, which for the 1995-1999 period, range between 14 and 100 percent.

In distribution enterprises can be split into two groups: *ELECTROPAZ*, *CRE* and *ELFEC*, which operate in the three largest cities (La Paz/Elto, Santa Cruz, and Cochabamba, respectively), and *CESSA*, *SEPSA* and *ELFEO*, which operate in smaller markets. Overall there was a downward trend in employment and a more consistent, increasing trend for labor productivity. In La Paz/El Alto, for instance *ELECTROPAZ* consistently reduced its employment level between 1996 and 1999, and increased its productivity by 59 percent in the same period. In Santa Cruz, *CRE* reduced personnel up to 1997 and raised its productivity by 43 percent (it increased employment in 1998, but this did not reverse the productivity increases). In Cochabamba, *ELFEC* reduced employment up to 1998, and increased its productivity by 105 percent in the same period. Two firms, *CRE* and *SEPSA*, actually increased their employment levels between 1995 and the most recent observation.

To summarize, both generation and distribution firms seem to, on average, have experienced relatively moderate decreases in employment levels, particularly two or three years after they initiated operations (in the case of capitalized firms), while at the same time enjoying significant and consistent increases in labor productivity.

Telecommunications

In *ENTEL*, employment peaked in 1997. *ENTEL-Movil* initiated its operations in 1996 and possibly completed hiring in 1997, which may account for an increase in the number of workers between 1996 and 1997. In the subsequent years, there is a continuous decline at relatively large and increasing annual rates, 15 percent in 1998, and 19 and 30 percent in 1999 and 2000, respectively. Labor productivity, as measured by long distance minutes per employee continued to grow until 1998, but a decline took place in 1999 despite falling employment levels. This reflects weakening demand for long distance services, induced by the recession and perhaps by growing internet use.

In the case of cellular services, the data record is incomplete, but one might venture that the experience of *Telecel* reflects that of both operators. *Telecel* increased its employment levels continuously up to 1996, but then reduced

them in 1997, partially reacting to *ENTEL-Movil*'s entry and the onset of price competition. Increases in labor productivity also display an upward trend during this period, reaching 152 percent by 1996. *Telecel* resumed its employment increases after 1997, and its personnel count in 2000 was practically double that of 1996. In spite of this, labor productivity continued to increase, by 57 percent in 1997 and 172 percent in 1998. These positive results reflect expansion due to price competition and quality-related improvements.

For local telephony, in all cases there is consistent growth in labor productivity, reflecting increases in the number of connections. Nevertheless, some operators reduced personnel in some years, such as *COTEL* in 1995, *COTAS* in 1993-96 and 1998-99, and *COMTECO* during 1998-99.

So far, we have reviewed the electricity and telecommunications sectors, concluding that employment peaked around 1997, so that one cannot rule out that capitalization might have caused some reductions in personnel. The employment levels in these sectors are quite small, however – they account for less than six thousand jobs out of more than 1.3 million people working in the capital cities alone. Nonetheless, the job losses in the previous tables can account for about 3 percent of the aggregate job losses in capital cities between 1995 and 2000, so the effect, while small, is not negligible.

Oil and gas

YPFB did display employment decreases after the 1997 reforms, but it is important to distinguish between the upstream (exploration and production) and downstream (transportation and commercialization) activities. Before reform, the number of employees in the upstream sector fluctuated around 25 percent of the total. These were substituted by the capitalized *ANDINA* and *CHACO*, which in 1998 operated with about 40 percent of the total upstream personnel *YPFB* had in 1996. The continuing decrease in employment for *YPFB*, even beyond 1999, happened as one by one all of the activities in the downstream sector were being privatized.

Although the number of employees in oil and gas transportation (represented by *TRANREDES*) is known, there is no available information for the rest of the downstream activities (industrialization, storage, distribution and commercialization).

Taken together, the evidence on employment levels suggests that capitalization was indeed associated with reductions in employment, amid increasing output and labor productivity. In the context of the broader Bolivian employment picture, however, there is (incomplete) evidence that the *direct* employment losses do not account for more than a small proportion of the unemployment increases that started in 1998.

Profitability and flows of funds

Financial results are another relevant firm-level outcome. In this section we cover issues related to the performance of state and private enterprises in the

industries of interest. Table 4.3 presents descriptive statistics for the main state firms for 1990-2001. One has to keep in mind that part of *YPFB* was capitalized in 1997, *ENDE* and *ENTEL* in 1995 and *ENFE* in 1996. However, except for *ENTEL* and *LAB*, residuals of these firms remained, with privatization of parts of them occurring at a later time. If one looks at *current* expenditures over revenues up to the capitalization year, the data show that except for *ENDE* and *ENFE* in 1995,⁴⁵ the firms considered did cover their operating expenses and were capable of making short term transfers to the state, although some, like *ENDE* and *ENTEL*, were in a more comfortable position. When one considers total (which includes capital) expenditures over revenues, however, in most cases the state firms were in deficit, except for *YPFB* in 1995-97, *ENDE* in 1991 and 1993-94, and *ENTEL* in 1992 and 1994-95. Thus, most of the time state firms had to finance their investments through debt,⁴⁶ and in many years there were investment shortfalls.

Table 4.3.
Cash flow statistics for government firms, 1990-01

Firms	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
YPFB												
Exp /C. Rev.												
T. Exp./T. Rev.	0.90	0.89	0.90	0.95	0.90	0.88	0.90	0.95	1.05	0.97	0.95	0.97
I/GDP percent	1.08	1.05	1.06	1.08	1.07	0.99	0.97	0.96	1.06	0.98	0.95	0.97
T/GDP percent	2.17	2.16	1.86	1.65	1.67	0.98	0.63	0.10	0.05	0.08	0.00	0.01
	7.92	8.85	7.21	6.47	5.93	5.52	5.79	3.34	3.41	3.09	-0.18	-0.30
ENDE												
Exp /C. Rev.												
T. Exp./T. Rev.	0.65	0.63	0.63	0.58	0.62	1.31	0.87	0.55	1.12	1.02	2.05	2.15
I/GDP percent	0.94	1.14	1.43	0.95	0.82	1.16	1.64	0.82	1.35	0.69	1.39	1.54
T/GDP percent	0.32	0.55	1.01	0.53	0.33	0.52	0.32	0.09	0.03	0.01	0.00	0.01
	0.06	0.07	0.02	0.15	0.19	0.73	0.16	0.04	0.00	-0.02	0.00	-0.01
ENTEL												
Exp /C. Rev.												
T. Exp./T. Rev.	0.72	0.70	0.72	0.84	0.88	0.87						
I/GDP percent	1.23	1.04	0.89	1.15	0.98	0.93						
T/GDP percent	0.57	0.40	0.24	0.45	0.14	0.09						
	0.41	0.49	0.44	0.63	0.80	0.71						
ENFE												
Exp /C. Rev.												
T. Exp./T. Rev.	0.97	0.84	0.77	0.95	0.88	1.03	0.97	2.68	2.33	6.91	1.88	4.26
I/GDP percent	1.44	1.05	1.07	1.12	1.05	1.11	0.86	1.33	1.39	1.42	1.33	1.49
T/GDP percent	0.39	0.28	0.32	0.24	0.18	0.09	0.00	0.01	0.00	0.00	0.00	0.00
	0.06	-0.10	0.12	-0.09	0.07	0.06	-0.20	-0.02	-0.01	0.00	0.00	0.00
ALL												
I/GDP percent	3.87	3.75	4.08	3.29	2.63	2.15	1.69	0.66	0.33	0.22	0.17	0.17
T/GDP percent	8.65	9.50	8.00	7.44	6.57	7.75	6.14	3.46	3.34	3.13	-0.22	-0.33

Note: C. Exp. = Current expenditures including current transfers; C. Rev = Current revenues including current transfers and operational revenues; T. Exp. = Total expenditures including current and capital expenditures; T. Rev. = Total revenues including current and capital revenues; I = Investment; T = Taxes, royalties and net transfers to government.

Source: Unidad de iscal ación iscal.

⁴⁵ *ENDE* was capitalized in 1995.

⁴⁶ In general state firms could not obtain commercial credit, and their debt consisted mainly of concessionary credits from bilateral or multilateral agencies, with government guarantees.

