

WHY DO GOVERNMENTS AWARD MONOPOLY RIGHTS TO PRIVATIZED TELEPHONE FIRMS?

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Abstract

I use an original dataset of 149 privatization sales of telephone firms in 74 countries and find that financially constrained governments are more likely to award monopoly rights, and award longer periods of monopoly than less constrained governments. Special-interest groups are important. As the business usage of telephone services increases, governments are less likely to award monopoly rights and award shorter periods of monopoly. On the other hand, as the residential usage of telephone services increases, governments are more likely to award monopoly rights and award longer periods of monopoly. Political preferences and institutions matter. Countries with a right-wing chief executive whose party also controls the legislature are less likely to award monopoly rights and award shorter periods of monopoly than countries with divided or non market-oriented governments. Long lasting democracies are also less likely to award monopoly rights and award shorter periods of monopoly than unstable democracies or autocratic systems. Awarding monopoly rights increases government revenue from these sales by 52 percent.

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1. INTRODUCTION

The conventional view on what prompted privatization and liberalization of telecommunications in advanced economies is that it was induced by large corporations who were intensive users of long-distance, international, and data communications services (Noam 1987, Noam 1992, Petrazzini 1995). As these corporations expanded in the second half of the 20th century, the demand for long-distance, international telephony, and data communication services grew rapidly and telephone spending ballooned.¹ This problem was compounded because of the wide spread practice of subsidizing residential users (*i.e.*, local telephony) at the expense of business users (*i.e.*, international, long-distance, and data communication services). Managers in large corporations sought to reduce telecommunications related costs by establishing their own private networks or leasing private telephone lines from the telephone monopoly (Noam 1987, Schiller 1982). Soon they stumbled with a slow moving government bureaucracy in the state-owned telephone monopoly.² As telephone usage spread among the population, the required subsidy from businesses to residential users increased.³ This prompted a response from large corporations to eliminate this practice, privatize the

¹ “For instance, for Citicorp, America’s largest bank holding firm, telecommunications are the third largest cost item, after salaries and real estate.” (Noam 1992: 44).

² The statement by the General Manager of Information Systems of the Generale Bank in Brussels gives an idea of the sentiment at the time: “The first difficulty is the presence of solutions that are not market driven. The argument is familiar and should not lead to the usual claims against protective policies of the local [telephone] monopolies. Beyond the moral and philosophical battles around ‘monopoly’ and ‘service to the nation’, there is an urgent need for real cost and pricing transparency... (...)... I dare say that banks are ready to invest more and faster in networks if the rules of the game are better known and reflect economical and industrial reality... (...)... Where, in telecommunications, are the dramatic decreases in costs we are used to in the computer world? Is this a side effect of monopolies?” (Citta 1990:33-34).

³ The burden of subsidies was also concentrated and fell primarily on large corporations. For example in the United States, “the largest 3 percent of [telephone] users typically account for 50 percent of all telephone revenues.” (Noam 1987: 34).

public telephone monopolies and promote competition in that sector (Noam 1987, Noam 1992, Petrazzini 1995).⁴

This conventional view changes when considering less developed countries. In that case privatization emerges as a policy option in the late 1980s and 1990s to finance the payment of expensive foreign debt and budget deficits. Governments in less developed countries saw privatization as an opportunity to raise revenue for the treasury (Ramamurti 1992, Wellenius and Stern 1994, Petrazzini 1995, Ramamurti 1996, Noll 2000). This however does not explain liberalization. If governments only cared about revenues, why did some governments liberalize entry? Moreover, why were monopoly rights to successful bidders typically limited to about 5 years? A more plausible explanation is that governments' decisions were also based on the public's dissatisfaction on the performance of the telephone monopoly (Ramamurti 1996, Noll 2000), and to some degree by a shift in ideology among elected officials towards market-oriented policies (Ramamurti 1996).

There are several excellent case studies about the political economy of privatization and liberalization in telecommunications, but almost no cross country analysis. An exception is that by Li and Xu (2002). They used panel data estimation for 50 countries in the period 1990-98 and found conflicting evidence on the relationship between budget deficits or the burden of foreign debt and the degree of competition in telecommunications.

⁴ For example see the statement of the European Council of Telecommunications Users Association (ECTUA) on June 9, 1988: "The real goal of users is to run their business efficiently; business is more and more dependent on communications and on computers... (...)... It is for these reasons that ECTUA wholeheartedly supports the opening up of markets to free competition where no participant can abuse its dominant position. For the same reason, ECTUA extols the separation of telecommunications regulatory authority from the operational activities." (Kinsoen 1990: 85).

This article advances the current state of inquiry by unifying these disparate views in a single framework of competition among interest groups. I use a unique dataset of 149 sales of equity shares in state-owned telephone firms in 74 countries in the period 1984-2003 to answer the following questions: (1) Why do governments award monopoly rights to privatized telephone firms? and (2) How does this choice affect government revenues from privatization sales?

The results of logit and linear regression models indicate that governments facing financial constraints due to a heavy burden of public debt are significantly more likely to grant monopoly rights and grant longer period of monopoly than less constrained governments. Special-interest groups matter; as the importance of the business users of telephone services (*i.e.*, the taxed group) increases, governments are less likely to award monopoly rights and award shorter period of monopoly to the privatized firm. On the other hand, as the importance of the residential users of telephone services (*i.e.*, the subsidized group) increases, governments are more likely to award monopoly rights and award longer periods of monopoly to the privatized firm. The former state-owned monopolies were not only providers of telephone services; they also redistributed resources to politically important groups at the expense of politically weak ones.⁵

Electoral preferences and political institutions are important. Having a market-oriented chief executive with its party controlling the legislature reduces the likelihood of awarding monopoly rights and the length of monopoly compared to divided or non market-oriented governments. Long lasting democracies are also significantly less likely to award monopoly rights and award shorter years of monopoly than autocratic regimes

⁵ Indeed, this is the main reason why state-owned enterprises are established in the first place (Shleifer and Vishny 1994; Boycko, Shleifer, and Vishny 1996; and Shleifer 1998).

or unstable democracies. Finally, I find that monopoly rights significantly increases the revenues from privatization sales.

2. THE STATUS QUO BEFORE PRIVATIZATION

The pre-reform conditions in the provision of basic telephony (local fixed telephony, long distance, and international telephony) can be characterized by a state-owned monopoly providing residential services (*i.e.*, local fixed telephony) at subsidized rates with business users (heavy users of long-distance, international, and data communications services) providing the subsidy (Noam 1987; Crandall 1989; Nambu, Suzuki, and Honda 1989; Noam 1992; Petrazzini 1995). For simplicity I assume linear pricing and depict the residential and business markets in Figure 1. On the right side, the industry regulator (or the Ministry overseeing this industry) forces the telephone monopoly to price residential services at marginal cost to maximize residential consumer surplus. On the left side of Figure 1 the regulator allows the telephone monopoly to price business services at the profit maximizing level. The loss in economic profits from servicing the residential market (rectangle abcd) has to match the economic profits from the business market (rectangle efgh) for the firm to earn zero economic profits (*i.e.*, the pre-established rate of return on assets). Once competition is allowed this redistribution system breaks down. Competition will depress prices below $0f$ on the market for business telephony (see Figure1), while prices of residential telephony will tend to rise along with wide spread political opposition.

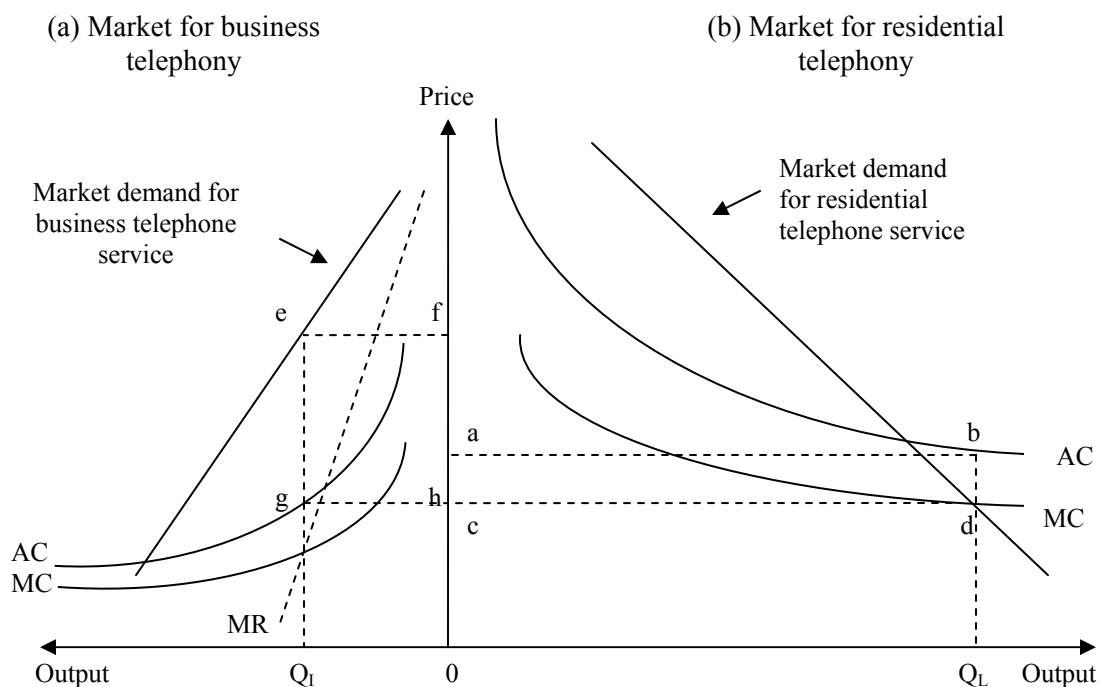


Figure 1: Cross subsidy from business users to residential users under monopoly

If these were the only forces at work, the political feasibility of liberalizing entry in basic telephony would appear limited. This relatively bleak view is however, attenuated by two effects that would follow privatization and liberalization. The first is related to the property rights theory of the firm (Alchian 1965; Alchian 1969; and Furubotn and Pejovich 1972): Privatization changes the system of rewards and incentives in the firm. Private property rights increases the incentive of owners to monitor and discipline management; it reduces a manager's consumption of perquisites, and increases the firm's productive efficiency. A second effect arises from competition acting as an incentive mechanism to discipline managers not to deviate from profit maximizing behavior (Alchian and Kessel 1962; Williamson 1963; Leibenstein 1966; Comanor and

Leibenstein 1969). These two effects will cause a downward shift on the average and marginal cost curves depicted in Figure 1 and ease the transition from a telephone monopoly with cross subsidies to a more competitive industry.

3. MONOPOLY RIGHTS: AN INTEREST GROUP PERSPECTIVE

Special-interest groups bid in a political auction for the right to tax the wealth of everyone else. The successful bidder is typically a small group whose members exhibit high per capita net benefits (Olson 1965, Stigler 1971). Although consumer groups are usually larger than producer groups, the subsidy does not necessarily flow from consumers to producers. Regulated firms are often forced to subsidize certain types of consumers at the expense of other consumers. Posner (1971) termed this practice internal or cross subsidization and rightly identified it as a form of taxation to redistribute resources to politically effective groups.⁶ Later, Peltzman provided a generalization of the interest group theory of economic regulation (Peltzman 1976). In it, a political entrepreneur called “the regulator” maximizes votes by transferring wealth from one group of individuals to another. A political equilibrium is reached when the marginal increase in votes from the beneficiary group equals the marginal reduction in votes from the taxed group.⁷

Peltzman’s theory of economic regulation provides the basic framework to analyze why governments award monopoly rights to privatized firms. I also incorporate

⁶ See also Peltzman (1971) for a model in which politically influential consumers are charged lower prices than less influential consumers.

⁷ Note that conditions portrayed in Figure 1 could not be an equilibrium in Becker’s (1983) theory of pressure groups. In that case pressure groups will compete for subsidies (and oppose taxes) until welfare losses are minimized. Clearly welfare losses are not minimized in the outcome portrayed in Figure 1. Note the large welfare losses in the market for business telephony. In Becker’s model a more likely outcome to

tools from the public choice literature into the analysis. In democratic systems, the decision-making rules in the legislature are designed to induce stable outcomes (Shepsle and Weingast 1981). When a policy change is observed, this indicates that the policy preferences of the chief executive and that of the median voter in the legislature have moved closer together forming a non empty win set (Weingast 1981). For example, a market-oriented Prime Minister such as Margaret Thatcher in the U.K. was successful in advancing privatization and liberalization because the Parliament's preferences had shifted towards market-oriented policies. Before putting the previous discussion in the form of an empirical model let us review the data.

4. THE DATA

I use an original dataset of 149 sale transactions from 74 countries that privatized their public telephone operator in the period 1984-2003. This period covers most of the worldwide privatizations of telephone firms.⁸ For each sale, data were gathered on the firm sold, date of sale, percentage of equity sold, total sales revenue, and the type of sale (*i.e.*, private or public offer). The main sources for these data are Privatisation International (monthly issues), the Privatisation International Yearbook (annual issues), the Multilateral Investment Guarantee Agency's database on privatizations (Privatization Link),⁹ and the Economist Intelligence Unit's Viewswire and Country Information online databases.

that of cross subsidization would be having prices in both markets at the Ramsey price levels or close to average cost. This will certainly reduce welfare losses compare to cross subsidization.

⁸ According to the International Telecommunications Union (ITU) as of October 2003, there are 109 countries whose incumbent telephone operator is privately owned in part or fully. <http://www.itu.int/ITU-D/treg/profiles/MainFixedOps.asp>

⁹ Available at <http://www.privatizationlink.com>

Next, I collected information on the type of basic telephony services the privatized firm provided (*i.e.*, fixed local telephony, national long distance, or international telephony); whether it was also licensed to provide mobile telephony at the time of the sale, and the firm's number of fixed lines in service and mobile telephony subscribers. I also gathered data on whether the winning bidder was granted monopoly rights and the period over which the monopoly rights are guaranteed. These data were mainly collected from the Economist Intelligence Unit Viewswire and Country Information online database, the firm's annual reports, each country regulator's websites, and from the Commission of the European Communities. In addition, country-wide data on the economy and the telephone industry were obtained from the World Bank's World Development Indicators (2003) and the International Telecommunications Union's World Telecommunication Indicators (2002). Finally, data on political institutions are from Beck, Clarke, Groff, Keefer and Walsh (2001), and from the University of Maryland's Polity IV database.¹⁰

5. WHY DO GOVERNMENTS GRANT MONOPOLY RIGHTS?

I use the dataset described above to test the following three hypotheses:

H1: Governments facing financial constraints are more likely to award monopoly rights than less constrained governments.

H2: Countries in which the business usage of telephone services is important are less likely to award monopoly rights than countries in which it is not.

¹⁰ Polity IV Project 2000. Polity IV dataset. [Computer file; version p4v2000] College Park, MD: Center for International Development and Conflict Management. University of Maryland.

H3: Market-oriented governments are less likely to award monopoly rights than non market-oriented or divided governments.

These hypotheses are tested using both logit and linear regression models. In the logit model the dependent variable is a dummy that takes the value of one if the government grants monopoly rights for more than one year in the sale. Otherwise it takes the value of zero. In the linear model, the dependent variable is changed to the natural logarithm of the number of years of guaranteed monopoly in each sale.¹¹

Appendix A provides the definitions of all the exogenous variables and data sources. A discussion of these follows. The burden of public debt as a percentage of government revenues is labeled INTEREST. It is expected that as the burden of public debt increases, the desire to maximize revenues will be stronger and so will the likelihood of governments awarding monopoly rights to the privatized firm. The importance of the business users of telephone services is characterized by two variables: (1) the number of business lines in service (BUSLINES) and (2) the number of business lines in service per 100 inhabitants (BLINES). The first one is used as a proxy for how influential business users are in financial terms.¹² The second is used as a proxy for how influential they are in number or voting terms. A negative relationship is expected between these variables and the likelihood of the government granting monopoly rights. Next I characterize the importance of the residential users of telephone service (*i.e.*, the subsidized group) by means of the number of residential lines in service per 100 inhabitants (RESLINES). I

¹¹ To avoid the problem of taking the natural logarithm of zero (no monopoly), 0.0001 is added to the number of years of guaranteed monopoly.

¹² Ideally I should use a dollar measure (*i.e.*, revenues) of how influential this group may be. This information is not available so I used the number of business lines as a proxy. The reason why this variable is included is that money influences electoral outcomes through political campaign and advertising (Austen-Smith 1987; Baron 1994). This in turn affects the observed policies (Denzau and Munger 1986). For a good summary of the literature see Austen-Smith (1997) and Muller (2003: 472-489).

expect a positive relationship between this variable and the likelihood of the government granting monopoly rights. I preferred to characterize both groups (business and residential users) instead of just one because for most countries they do not exhaust the population. For example, the sample average of the number of business lines per 100 inhabitants is 6.1 and that of residential lines is 17.7. Note also that all the interest group variables and the government's financial constraints correspond to the average of the 3-year period before the sale [t-3 to t-1]. This is because the influence of these variables on political outcomes should typically take more than a year to yield results.

I incorporate several variables to characterize voter's preferences and political institutions. One of these is an index of the durability of democratic systems (DEMDURA). This index reflects two things: (1) the degree of democracy and (2) the length of uninterrupted constitutional regimes. DEMDURA is constructed by interacting two indexes from the Polity IV database: (a) The index of democracy (DEMOC) with a range of [0, 10] and (b) the index of the durability of the political system (DURABLE). DURABLE measures the number of years a certain political system (autocracy or constitutional) has been in place.¹³ Durable democratic systems should have a tendency to produce more efficient outcomes than unstable democracies or autocracies: "It is no accident that the countries that have reached the highest level of economic development and have enjoyed good economic performance across generations are all stable democracies." (Olson 1993: 572-573). This qualification of democracy is important. If we view market transactions with full protection of property rights and enforceable contracts as conducive to efficient outcomes, then, the more political transactions

¹³ See Marshall and Jaggers (2000).

resemble this paradigm, the more efficient the policy outcomes will tend to be. Indeed, when Wittman (1989) forcefully argues that democracies produce efficient outcomes, he has in mind durable democracies. For example, he stresses the importance of candidate's reputation and the function of parties as brand names. This does not hold in unstable democracies where historically coups d'état are common, constitutional rights are routinely violated or changed, and political parties are frequently banned.¹⁴ On the other hand stable autocratic regimes may produce for a certain period of time more efficient outcomes than unstable democracies, but I follow Olson (1993) in his assertion that they will nevertheless tend to produce less efficient outcomes than stable democracies in the long run.¹⁵

The index of durable democracies I created seems better than indexes of democracy as it penalizes seemingly democratic systems that are highly unstable.¹⁶ For instance, using the democracy index from the Polity IV database, countries such as Hungary or the Czech Republic are in the same league as Australia, Switzerland, the U.K., or the U.S. Using the index of democratic durability (DEMDURA) a clear distinction emerges: with few exceptions, Eastern European and Latin American countries fall in the range of [0, 100], while most Western European countries along with Australia, Canada, and New Zealand fall above the mean value of 261. All else equal, I

¹⁴ See also Peltzman (1990) who provides evidence from the U.S. and concludes that the voting mechanism is efficient as it punishes bad macroeconomic policies and rewards good macroeconomic policies. Again, in unstable democracies, mechanisms for punishment and rewarding policies are largely attenuated due to constant constitutional interruptions.

¹⁵ Clearly democratic durability must be correlated with the observance of the rule of law. I did not use a rule of law index because data is only available for few years (unlike data on durability and democracy).

¹⁶ This is further strengthened by using the average index of democracy in the period [t-10 to t-1], where t is the year in which the sale took place. This value is then used to construct the index of democratic durability: DEMDURA=DEMOC*DURABLE.

expect long lasting democracies to be less likely to grant monopoly rights than unstable democracies or autocracies.

As mentioned before, the distance between the policy positions of the chief executive and that of the median voter in the legislature is important. The closer the distance, the more likely the chief executive will be able to advance its preferred policy.¹⁷ It has been noted the influence of Margaret Thatcher's government in shaping the privatization and deregulation of the British economy, but without a majority in the Parliament her efforts may have been fruitless (Heald and Steel 1986). Thus, I used a dummy variable to indicate a market-oriented chief executive whose party also enjoys a majority in both houses of the legislature (RIGHT1). I expect a negative relationship between RIGHT1 and the likelihood of governments awarding monopoly rights.

From the structure-induced equilibrium theory we know that political institutions are biased in favor of the status quo (Shepsle and Weingast 1981). Data is available from Beck et al (2001) on the longest tenure (in years) of a holder of veto power (TENLONG) in each country. I included TENLONG as a proxy for the bias towards the status quo. As the status quo in the telephone industry was that of statutory monopoly, a positive relationship is expected between TENLONG and the likelihood of granting monopoly rights. I also included the year in which the sale took place (YEAR) as an explanatory variable to capture unobservable technical changes that erode the system of cross subsidies and as such may trigger liberalization.¹⁸

¹⁷ In a case study of four privatizations of telephone firms in South America, Molano (1997) found this to be an important factor on determining whether privatization was undertaken. He also concluded that party ideology (left or right) had little effect on the determinants of privatization.

¹⁸ Peltzman (1989) illustrates how technical changes in closely related services (close substitutes) may erode the system of cross subsidization setting the stage for deregulation.

Table 1 presents the results of the logit model. Most of the coefficients have the expected sign. Governments who pay a large amount of interest on public debt are significantly more likely to grant monopoly rights than those that do not. As the importance of the business users increases, governments are significantly less likely to grant monopoly rights. On the other hand, as the importance of the residential users increases, the likelihood of granting monopoly rights increases. As expected, a right-wing chief executive backed by the legislature is significantly less likely to award monopoly rights than divided or non market-oriented governments. The length of the tenure of the longest holder of veto power appears not related to the likelihood of a government granting monopoly rights. Long lasting democracies are significantly less likely to grant monopoly rights than unstable democracies or autocratic governments. Note also the significant negative relation between YEAR and the likelihood of a government awarding monopoly rights. This indicates a trend towards liberalization not attributable to interest groups or political institutions.

I then checked whether the durability of the political system is important instead of the durability of democracy, I re-estimated the regressions in Table 1 using DURABLE instead of DEMDURA. The conclusions are basically the same (not reported) suggesting that durability or political stability enables more efficient policy outcomes.¹⁹ One should not take this result as suggesting that policy outcomes in long lasting democracies and long lasting autocracies will tend to be equally efficient. The

¹⁹ This result is closely related with previous findings in cross country analysis in that political instability lowers economic growth. For a summary of findings in various studies see Brunetti and Weder (1995). See also Brunetti (1997). This could mean that countries with unstable political systems may: (1) be prone to implement inefficient policies or (2) be harmed by uncertainty on policies which in turn harms investment and therefore economic growth. Most likely both effects are in place.

experience of the Soviet Union, China under Mao, and Cuba under Fidel Castro tells us that they are not. Again, Olson (1993: 572-573) rightly concludes: “experience shows that relatively poor countries can grow extraordinarily rapidly when they have a strong dictator who happens to have unusually good economic policies, such growth lasts only for the ruling span of one or two dictators.” Therefore, I maintain my conclusions as stated before in the form of durable democracies. I also tested an alternative indicator for

Table 1: Determinants of government decision to award monopoly rights. Logit model.

Variables	(1)	(2)	(3)	(4)
INTEREST	0.1106 (2.20)**	0.098 (2.21)**	0.124 (2.16)**	0.087 (1.99)**
BUSLINES	-0.824 (3.29)*	-0.813 (3.22)*	-0.841 (3.11)*	-0.810 (3.09)*
BLINES	-0.301 (1.81)***		-0.326 (1.84)***	
BMLINES		-0.091 (2.06)**		-0.099 (2.09)**
RESLINES	0.132 (1.92)***		0.178 (2.26)**	
RIGHT1	-2.255 (2.43)**	-2.460 (2.59)**	-3.185 (2.82)*	-3.439 (2.82)*
TENLONG	-0.014 (0.315)	-0.004 (0.09)	-0.016 (0.38)	-0.022 (0.48)
DEMDURA	-0.006 (2.73)*	-0.005 (3.36)*	-0.008 (3.03)*	-0.005 (3.40)*
YEAR			-0.254 (1.99)**	-0.204 (1.71)***
Constant	1.547 (1.23)	4.552 (2.68)*	508.96 (2.00)**	413.51 (1.72)***
Observations	90	90	90	90
Chow R-squared	0.532	0.540	0.549	0.545

Logit estimates. Dependent variable is dummy variable indicating whether the government guaranteed more than one year of monopoly rights. Absolute value of t-statistic in parenthesis. * = 99 percent confidence; ** = 95 percent confidence; *** = 90 percent confidence.

right-wing government. I re-estimated the regressions in Table 1 but instead of using the dummy RIGHT1 (right-wing chief executive with control of the legislature), I used a dummy to indicate a right-wing chief executive only (ERIGHT). The results (not reported) show no relationship between a right-wing chief executive (ERIGHT) and the likelihood of awarding monopoly rights. A market-oriented chief executive will be impotent to advance liberalization without the support of the legislature. Therefore, the null of the three hypotheses put to test at the beginning of this section is rejected with 95 percent confidence level.

I also examined the three hypotheses using a linear regression model, redefining the dependent variable as the natural logarithm of the number of years of guaranteed monopoly. The same right-hand side variables as in Table 1 are used. Table 2 shows the results. Most coefficient estimates show the expected sign and for the most part higher level of significance than in the logit model.

As with the logit model, I re-estimated the linear regressions in Table 2 using the index of durable political systems (DURABLE) instead of the index of democratic durability (DEMDURA). Again, DURABLE is significantly and negatively related to the number of years of monopoly awarded. Nonetheless, for the reasons stated before, I retain my conclusions in terms of durable democracies rather than durable political systems. I also re-estimated the regressions in Table 2 using ERIGHT (right-wing chief executive) instead of RIGHT1 (right-wing chief executive with control of legislature). Again I found no relationship between a right-wing chief executive (ERIGHT) and the number of years of monopoly awarded. In summary, using the linear regression model I

Table 2: Determinants of government decision to award monopoly rights. Linear model.

Variables	(1)	(2)	(3)	(4)
INTEREST	0.074 (3.24)*	0.074 (3.52)*	0.060 (2.55)**	0.061 (2.79)*
BUSLINES	-0.830 (6.41)*	-0.838 (7.06)*	-0.946 (7.42)*	-0.913 (8.19)*
BLINES	-0.238 (1.23)		-0.217 (1.17)	
BMLINES		-0.110 (1.82)***		-0.117 (2.19)**
RESLINES	0.092 (1.20)		0.124 (1.65)	
RIGHT1	-2.856 (2.41)**	-3.006 (2.62)**	-3.539 (3.09)*	-3.824 (3.44)*
TENLONG	0.027 (0.76)	0.038 (1.06)	0.023 (0.69)	0.024 (0.77)
DEMDURA	-0.006 (3.20)*	-0.006 (3.81)*	-0.007 (3.56)*	-0.006 (3.96)*
YEAR			-0.283 (2.17)**	-0.245 (2.18)**
Constant	-0.379 (0.36)	2.758 (1.82)***	565.35 (2.17)**	491.62 (2.19)**
Observations	90	90	90	90
R-squared	0.523	0.539	0.553	0.566

Ordinary least squares estimates. Dependent variable is Log [0.0001 + Number of year of guaranteed monopoly]. Absolute value of t-statistic in parenthesis. * = 99 percent confidence; ** = 95 percent confidence; *** = 90 percent confidence. White heteroskedasticity consistent standard errors.

again reject at the 95 percent confidence level the null of the three hypotheses put to test at the beginning of this section.

So far nothing has been said about the magnitude of the effects of each significant variable. I describe these effects using specification 3 in Table 1 (logit model). Thus, we have:

$$\text{Log} \left[\frac{P}{1-P} \right] = 0.124 \text{INTEREST} - 0.841 \text{BUSLINES} - 0.326 \text{BLINES} + \\ 0.178 \text{RESLINES} - 3.185 \text{RIGHT1} - 0.016 \text{TENLONG} - 0.008 \text{DEMDURA} - \\ 0.254 \text{YEAR} + 508.96, \quad (1)$$

where P is the probability that monopoly rights are awarded, and Log stands for the natural logarithm. In all cases I assume a right-wing government is not in control of the legislature ($\text{RIGHT1}=0$) and estimate equation (1) setting all other variables at their mean values and varying only the variable of interest to compute the probability (P). Table 3 shows the results. The number of business lines in service appears to have the largest impact, and the number of residential lines in service per 100 inhabitants comes close to having the same explanatory power but with opposite effect. The impact of interest payments from public debt on the probability of awarding monopoly rights seems less important than others. This result should not be used to play down the importance of this variable. Unlike the other variables which may be determined by the level of income in the country and structural changes in the economy, government institutions may exert a powerful influence on the burden of public debt. Mechanisms to limit the discretion of governments in issuing debt may effectively limit the burden of public debt and indirectly reduce the likelihood of a government awarding monopoly rights.

Table 3: Predicted probability of awarding monopoly rights (P) with changes in selected explanatory variables. Logit model

Explanatory variables	Change in explanatory variable				
	-1 s.d.	-0.5 s.d.	0	+0.5 s.d.	+1 s.d.
INTEREST	35.7 %	58.3 %	77.9 %	89.9 %	95.7 %
BUSLINES	98.6 %	94.0 %	77.9 %	44.4 %	15.3 %
BLINES	95.3 %	89.4 %	77.9 %	59.6 %	38.1 %
RESLINES	20.6 %	58.9 %	77.9 %	92.9 %	98.0 %

Note: Values indicate the probability of awarding monopoly rights (P). Assumed: $\text{RIGHT1}=0$; all other variables set at mean values.

-1 s.d. = a reduction of 1 standard deviation in the explanatory variable.

-0.5 s.d. = a reduction of 0.5 standard deviations in the explanatory variable.

+0.5 s.d. = an increase of 0.5 standard deviations in the explanatory variable.

+1 s.d. = an increase of 1 standard deviation in the explanatory variable.

Several important conclusions emerge from this analysis. On a general level, it shows that policy outcomes across nations could be successfully explained to a large extent by characterizing how influential interest groups are. Indeed, the use of only three variables to characterize this influence (BUSLINES, BLINES, and RESLINES) explains 35 percent on the variation in policy across countries and 41 percent if we add the burden of public debt (INTEREST). Adding variables to typify electoral preferences and political institutions increases the predictive power of this simple model to 54 percent. This approach has general applicability to other industries and as such is a promising way of modeling policy outcomes across countries as long as there is consistency on which groups are subsidized and which taxed.

At a more narrow level, this analysis explains why governments award monopoly rights and for how long in basic telephony across countries. Specifically, holding all else equal, the more important are business users, the less likely is a government to award monopoly rights to the privatized telephone firm. In addition, financial constraints are important, especially the burden of public debt on current government revenues. As this burden increases, the likelihood of a government awarding monopoly rights significantly increases. These results suggest that there is no contradiction in the conventional view about what triggered privatization and liberalization in advanced and less developed countries. Countries in financial distress and where business users are less influential than residential users privatize and grant monopoly rights to raise revenues. This is the view held mainly for less developed countries (Ramamurti 1992; Wellenius and Stern 1994; Petrazzini 1995; Ramamurti 1996; Noll 2000). On the other hand, countries that are less financially constrained and where business users are influential privatize and do

not award monopoly rights. This is the view held mainly for high income countries (Noam 1987; Noam 1992; Petrazzini 1995). Therefore, this analysis unifies these views in a single framework of interest group competition with political constraints.

6. EFFECT OF MONOPOLY RIGHTS ON REVENUES

This section analyzes the consequences of awarding monopoly rights to the privatized firm on the revenues raised by the government. Specifically, I test the following hypothesis:

H4: Governments that award monopoly rights receive higher revenues than those that do not.

I used a simple valuation model of expected discounted cashflow as the basis for the empirical test. Assuming that monopoly rights are awarded in perpetuity a rational investor will pay an amount not to exceed the present value of the expected future cashflow in the firm. This amount is the revenue raised by a government. Therefore:

$$\text{Rev}_i \leq \frac{s_i \pi_i}{r}, \quad (2)$$

where, Rev_i is the revenue accrued to a government from the sale of s percent of firm i ; π_i is the expected annual net income of firm i ; s_i is the share of firm's equity sold by the government (%); and r is the discount rate. Assuming the firm has constant marginal cost and no fixed costs, the expected net income is:

$$\pi_i = (p_i - c_i)q_i, \quad (3)$$

where, p_i is the expected price of basic telephony, c_i the expected constant marginal cost, and q_i is the firm's expected output in the geographic area specified by the license.

If α is a constant such that $0 < \alpha < 1$, replacing (3) in (2), the revenue raised from the sale of firm i is,

$$\text{Rev}_i = \frac{\alpha_i s_i (p_i - c_i) q_i}{r}, \quad (4)$$

where α denotes the degree by which the government extracts the surplus value of the firm from the bidders.

We know from the standard model of Cournot competition between identical firms that,

$$\frac{p-c}{p} = \frac{1}{N\varepsilon}, \quad (5)$$

where N_i is the number of identical firms competing in the same market and ε is the absolute value of the price elasticity of market demand. As data on prices of basic telephony services are less reliable than output data, the price of telephone service (p_i) could easily be derived from the following constant elasticity of demand equation:

$$Q = N_i q_i = \lambda Y_i^\delta \text{POP}_i^\gamma (p_i)^{-\varepsilon}, \quad (6)$$

where, N_i is the number of identical firm, Y_i is the income level in the license area of firm i , POP_i is the population in the license area of firm i , and λ , δ , and γ are positive constants. Combining equations (6) and (5) in (4) we get:

$$\text{Rev}_i = \frac{\alpha_i \lambda' s_i Y_i^{\delta/\varepsilon} \text{POP}_i^{\gamma/\varepsilon} N_i^{-(1+\varepsilon)/\varepsilon} q_i^{(\varepsilon-1)/\varepsilon}}{\varepsilon r}, \quad (7)$$

where, λ' is a positive constant. The basic model for the regression equation is obtained by taking the natural logarithm in both sides of equation (7). Then I added variables to characterize the property rights transferred at the time of the sale, and other industry and economy wide variables that may affect the value of the firm. Thus, I regressed:

$$\text{Log}[\text{Rev}_i] = X_{ij}\beta_j + \varepsilon_i, \quad (8)$$

where:

Rev_i : Is a vector of observations of the revenue raised by the government in each sale transaction i .

X_{ij} : Is a matrix composed of observations of exogenous variable j corresponding to sale transaction i .

β_j : Is a vector of coefficients for each of the j exogenous variables.

ε_i : Is a vector of error terms of sale transaction i .

A complete list of variables with their definitions and sources appears in Appendix A. I expect both monopoly rights and the amount of equity offered to be positively related to revenues. I include a dummy variable to indicate those sales that produced a change in managerial control of the firm (CONTROL). I expect these transactions to fetch higher revenues than others. In a similar way, as the number of fixed lines and mobile subscribers increase, so should the revenues raised. An important issue is that not all firms have rights to provide all three basic services; some own the local fixed network but others do not. Those firms that do not own the fixed local network need to buy access from the local telephone provider. I expect firms that do not own the fixed local network to be valued at a discount compared to those that own the local network. To control for this I introduce three dummy variables: (1) a dummy for complete vertical integration in basic services (*i.e.*, firms that own the local network and provide long-distance and international service), (2) a dummy for partial vertical integration (*i.e.*, local and long-distance);²⁰ and (3) a dummy for local fixed service only.

²⁰ No firm in the sample provided the other possible category of partial vertical integration (local and international service).

The category left include firms that do not own the local fixed network (*i.e.*, provide international service only, or provide long-distance and international service). I expect a positive relationship between revenues and each of these three dummy variables. I add also a dummy for the free award of third generation mobile telephony license (so-called 3G licenses) in Finland in March of 1999. In other countries, 3G mobile licenses (and mobile telephony licenses in general) are awarded through auctions (or so-called beauty contest) to the highest bidder.²¹ The important thing to stress is that in either case the firms pay an upfront fee for the license. This was not the case for Sonera in Finland. No payment was required for the 3G license and Sonera received a large windfall.²² The implied value of Sonera jumped from \$ 6.3 billion the year before the gift to \$ 18.2 billion few months after it, and to \$ 63.3 billion the following year after investors learned the revealed demand for 3G licenses in the U.K.²³

Additional variables include the degree of digitalization in the fixed telephone network (DIGITAL) and a dummy variable to indicate whether the firm also provides postal services (POST) as was the case in the sale of PTT Netherlands in June 1994. Digitalization increases the capacity of networks to carry bits of information. Previously unfeasible services under the old analog technology suddenly become feasible. I expect a positive relationship between revenues and digitalization and a negative relationship between revenues and POST.

²¹ Distinctions between beauty contests and auctions become blurred once one look at the details. The key difference is that in a beauty contest the winner is not necessary the highest bidder. Rather the bidders submit proposals that may include proposed prices for telephone services, proposed targets for network expansion, proposed technology, services, and a proposed upfront payment. Each part of the proposal is assigned points or weights and the winner is the one with the highest weighted average score.

²² See Selian (2001: 50).

²³ Sonera's implied value is estimated based on the public offers held in November 1998, October 1999, and March 2000. In the auction celebrated in the U.K between March and April of 2000, bidders paid a total of U.S. \$ 35.6 billion for five 3G mobile telephony licenses.

Variables to control for country characteristics are also included; for instance I expect a higher degree of urbanization to lower investment costs and thus increase expected revenues. A high income and a large population in the license area²⁴ should be associated with high revenues (see equation 7). I also included a dummy variable for high inflation (INFLA50). Prices of basic telephony are regulated and typically cannot adjust as fast as inflation because the telephone firm needs approval from the industry regulator. In a highly inflationary environment, delays on the approval process would harm the firm's profits as output prices would fall in real terms. I expect high inflation to be negatively correlated with revenues.²⁵

Other exogenous variables include the Fraser Institute index of a country's restrictions on international capital mobility (CAPMKT), and the level of the NASDAQ market index. The freedom to repatriate profits, the availability of hard currency, and the free transfer of funds across countries are some of the characteristics valued by foreign investors when deciding whether or not to invest in a country.²⁶ I expect this index (CAPMKT) to be positively related to revenues. I included the NASDAQ index level as a proxy for the opportunity cost of capital. A high value in the NASDAQ level indicates a high net worth of firms in the period under study. As the net worth increases, the cost of capital should decline.²⁷ Thus, a low cost of capital (high NASDAQ) should be related with high revenues all else equal.

²⁴ Note that I use the population in the license area and not in the country. This becomes important for countries such as Argentina, Canada, Brazil or India where the government award regional telephony licenses instead of national licenses.

²⁵ See Viani (2004) for empirical evidence of the negative effect of inflation on the profitability of telephone firms.

²⁶ See for example O'Neill (1994: 386) and Wellenius and Stern (1994: 21).

²⁷ See Hubbard (1998).

I also added two dummy variables to control for the type of sale. IPO controls for those sales through initial public offer, and PRIVATE controls for sales through private tenders. The category left out is “seasoned public offers.” Much has been written about the fact that initial public offers (IPOs) generally raise less revenue than seasoned public offers (Ibbotson 1975, Rock 1986, Tinic 1988, Benveniste and Spindt 1989). In recent years, cross country studies of public offers in privatization sales also indicate that IPOs raise less revenue than seasoned public offers (Dewenter and Malatesta 1997, Jones, *et al* 1999). Thus, I expect a negative relationship between IPO and revenues. I also control for private sales (PRIVATE) because they usually attract less competitors than pure auctions (Bulow and Klemperer 1996). Because of this I expect a negative relationship between private sales and revenues.²⁸ Appendix A lists these variable’s definitions and sources.

I estimate separate versions of equation (8) using two measures of monopoly rights: (1) an indicator equal to one if monopoly rights are awarded for more than one year (DMONOP) and (2) a continuous variable reflecting the number of years of monopoly awarded by the government (MONOP). The results are shown in Tables 4 and 5. White heteroskedasticity consistent standard errors are used in those regressions where heteroskedasticity was detected.

Table 4: Revenue raised by governments. Using a dichotomous variable to control for monopoly rights

	(1)	(2)	(3)	(4)	(5)
DMONOP	0.362 (1.89)***	0.383 (1.97)***	0.416 (2.13)**	0.406 (2.04)**	0.342 (1.68)***
Log [SHARE]	0.951	0.943	0.964	0.976	0.931

²⁸ See also Ernst & Young (1994: 109): “A negotiated sale usually results in the lowest price paid, because of the lack of competition.”

	(9.58)*	(9.39)*	(9.49)*	(8.84)*	(7.84)*
Log [INCOME]	0.714	0.663	0.647	0.645	0.651
	(3.14)*	(2.72)*	(2.66)*	(2.63)**	(2.62)**
Log [POP]	0.560	0.561	0.562	0.562	0.552
	(4.27)*	(4.06)*	(4.07)*	(4.06)*	(3.99)*
Log [FIXLINES]	0.434	0.425	0.427	0.422	0.389
	(3.30)*	(2.95)*	(2.97)*	(2.90)*	(2.63)**
Log [MOBSUBS]	0.010	0.010	0.010	0.009	0.012
	(0.96)	(0.88)	(0.89)	(0.86)	(1.11)
3G GIFT	2.160	2.185	2.255	2.241	2.146
	(3.45)*	(3.41)*	(3.52)*	(3.47)*	(3.27)*
ALLBASIC	2.038	1.966	1.965	1.955	1.893
	(5.98)*	(5.67)*	(5.68)*	(5.60)*	(5.40)*
LOCAL&LD	2.233	2.285	2.336	2.320	2.304
	(6.12)*	(6.20)*	(6.31)*	(6.17)*	(6.10)*
LOCAL	2.787	2.737	2.684	2.702	2.628
	(5.61)*	(5.44)*	(5.33)*	(5.30)*	(5.16)*
Log [YEAR]	-237.31	-205.59	-191.00	-191.88	-160.44
	(1.94)***	(1.64)	(1.52)	(1.52)	(1.26)
Log [NASDAQ]	0.547	0.453	0.450	0.455	0.363
	(1.77)***	(1.41)	(1.41)	(1.41)	(1.12)
URBAN	0.013	0.013	0.014	0.014	0.016
	(2.06)**	(2.00)**	(2.21)**	(2.19)**	(2.40)**
DIGITAL	0.010	0.010	0.008	0.008	0.007
	(2.55)**	(2.49)**	(2.11)**	(2.01)**	(1.70)**
POST	-0.359	-0.449	-0.491	-0.472	-0.554
	(0.65)	(0.80)	(0.88)	(0.83)	(0.94)
CAPMKT		0.041	0.036	0.036	0.024
		(1.26)	(1.10)	(1.09)	(0.73)
INFLA50			-0.450	-0.450	-0.539
			(1.23)	(1.22)	(1.46)
CONTROL				-0.058	0.067
				(0.30)	(0.18)
IPO					0.044
					(0.20)
PRIVATE					-0.170
					(0.42)
Constant	1788.1	1548.2	1437.4	1444.2	1206.4
	(1.93)***	(1.63)	(1.51)	(1.51)	(1.25)
Observations	118	115	115	115	113
R-squared	0.847	0.836	0.839	0.839	0.842

Ordinary least squares estimates. Dependent variable is Log [Revenue]. Revenues are in million U.S. dollars of December of 2003. Absolute value of t-statistic in parenthesis. * = 99 percent confidence; ** = 95 percent confidence; *** = 90 percent confidence.

These results provide strong evidence that awarding monopoly rights significantly increases revenues. The null of hypothesis 4 (H4) stated at the beginning of this section is rejected with 95 percent confidence level. This result agrees with Wallsten's (2003) findings in a sample of 28 countries. Using specification 3 in Table 4, monopoly rights increases government revenues by 52 percent.²⁹ As expected the coefficient of the economic and demographic variables such as income level, population, and urbanization have the expected sign, and each is highly significant. The results also underscore the importance of the property rights transferred in the sale. As mentioned before, monopoly rights increase the value of the firm. Whether the firm holds licenses in all three basic services or some of them will also have a considerable impact on the value of the firm. Particularly, ownership of the local fixed network significantly increases the value of the firm. In a similar way the extent of the fixed network and the degree of digitalization are significantly and positively related to revenues. As expected the amount of equity sold (SHARE) and a free 3G license are also positively and significantly related to revenues. The NASDAQ index, as expected, exerts a positive and significant effect on revenues. A general trend is observed towards significantly less revenues with time (adjusted for inflation). This may just be picking up the increasingly competitive environment in which these firms operate. The erosion of their monopoly power comes not only from cellular telephony, but increasingly from the internet, private data communication networks, and cable television. The coefficients of the other variables for

Table 5: Revenue raised by governments. Using the years of monopoly to control for monopoly rights

²⁹ The impact of monopoly rights (DMONOP) on revenues in percentage terms is estimated by: $100 [e^{0.416} - 1]$. See Halvorsen and Palmquist (1980).

	(1)	(2)	(3)	(4)	(5)
MONOP	0.115	0.122	0.130	0.128	0.124
	(2.26)**	(2.40)**	(2.53)**	(2.52)**	(2.45)**
[MONOP] ²	-0.005	-0.005	-0.005	-0.005	-0.005
	(2.30)**	(2.32)**	(2.43)**	(2.44)**	(2.42)**
Log [SHARE]	0.927	0.917	0.936	0.948	0.909
	(9.17)*	(9.31)*	(9.31)*	(8.78)*	(7.68)*
Log [INCOME]	0.694	0.677	0.660	0.658	0.685
	(3.82)*	(3.40)*	(3.35)*	(3.38)*	(3.36)*
Log [POP]	0.492	0.511	0.508	0.509	0.503
	(4.54)*	(4.34)*	(4.45)*	(4.45)*	(4.55)*
Log [FIXLINES]	0.480	0.453	0.458	0.453	0.411
	(4.59)*	(3.72)*	(3.82)*	(3.69)*	(3.42)*
Log [MOBSUBS]	0.007	0.007	0.007	0.006	0.009
	(0.78)	(0.72)	(0.73)	(0.69)	(1.00)
3G GIFT	2.115	2.097	2.162	2.152	2.049
	(4.64)*	(4.43)*	(4.47)*	(4.39)*	(4.20)*
ALLBASIC	2.040	1.961	1.957	1.949	1.903
	(4.70)*	(4.38)*	(4.51)*	(4.52)*	(4.55)*
LOCAL&LD	2.184	2.236	2.285	2.272	2.247
	(4.83)*	(4.80)*	(4.95)*	(4.95)*	(5.03)*
LOCAL	2.880	2.823	2.767	2.783	2.742
	(5.71)*	(5.37)*	(5.41)*	(5.32)*	(5.27)*
Log [YEAR]	-304.40	-262.87	-248.03	-248.89	-229.73
	(2.76)*	(2.23)**	(2.16)**	(2.17)**	(1.95)***
Log [NASDAQ]	0.647	0.555	0.552	0.557	0.481
	(2.56)**	(2.01)**	(2.07)**	(2.08)**	(1.77)***
URBAN	0.011	0.010	0.012	0.012	0.013
	(1.73)***	(1.62)	(1.81)***	(1.82)***	(2.13)**
DIGITAL	0.012	0.012	0.010	0.010	0.009
	(2.94)*	(2.81)*	(2.74)*	(2.68)*	(2.61)**
POST	-0.185	-0.262	-0.289	-0.276	-0.415
	(1.10)	(1.54)	(1.72)***	(1.53)	(1.70)***
CAPMKT		0.040	0.035	0.035	0.019
		(1.13)	(0.96)	(0.95)	(0.48)
INFLA50			-0.471	-0.471	-0.570
			(1.35)	(1.34)	(1.63)
CONTROL				-0.051	0.121
				(0.33)	(0.36)
IPO					0.014
					(0.06)
PRIVATE					-0.236
					(0.61)
Constant	2297.3	1982.6	1870.0	1876.5	1731.8
	(2.75)*	(2.22)**	(2.14)**	(2.16)**	(1.94)***
Observations	118	115	115	115	113

R-squared	0.851	0.841	0.843	0.843	0.848
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Ordinary least squares estimates. Dependent variable is Log [Revenue]. Revenues are in million U.S. dollars of December 2003. Absolute value of t-statistic in parenthesis. * = 99 percent confidence; ** = 95 percent confidence; *** = 90 percent confidence. White heteroskedasticity consistent standard errors.

the most part have the expected sign, but lack significance. These results strongly suggest that governments pursue and obtain higher revenues by granting monopoly rights to the privatized telephone firm.

Finally, I check for the explanatory power of selected exogenous variables. I use specification 3 from Table 5 and report the results in Table 6. Additional years of monopoly have an important impact on revenues; an increase of one standard deviation in the years of guaranteed monopoly increases revenues by about 32 percent. The size of the share offer has a larger explanatory power than the years of monopoly. This suggests that a government with a revenue target in mind could make society better off by increasing the amount of equity shares offered and not awarding monopoly rights.³⁰ This proposal however, may encounter difficulties if investors perceive a high risk of expropriation. In this case, further increases in the block of shares offered may produce a larger discount in the price per share causing an excess supply of shares in public offers.³¹ This however, may be less of a problem in private sales as the price per share may fall as much as the bidders want as long as there is no reservation price. The private sale of 100

³⁰ This strategy will be most suitable when governments still have a significant amount of equity in the firm (well above 50 percent). Once the government had divested more than 50 percent of total equity, further sales of equity may be less valuable to large shareholders that already control the board of directors.

³¹ This problem has been addressed in the literature along with possible solutions. For example, Perotti (1995) develops a model in which the government signals its commitment not to expropriate at a later date by: (1) retaining a substantial amount of equity shares in the privatized firms, and (2) spreading ownership among the population by freely distributing shares or by selling shares at discounted prices. This reduces the expropriation risk to the buyers preventing large discounts on the price per share. Schmidt (2000) show that this strategy may maximize revenues when the risk of expropriation is high.

percent of the state-owned equity in New Zealand Telecom in June 1990 illustrates a feasible case: a politically stable country, with low expropriation risk, and a relatively small fixed telephone network (about 1.5 million fixed lines at that time). In addition, the winning bidder was allowed to reduce its risk by divesting a substantial part of its equity shortly after.

Table 6: Predicted revenues with changes in selected explanatory variables

Explanatory variables	Change in explanatory variable				
	-1 s.d.	-0.5 s.d.	0	+0.5 s.d.	+1 s.d.
MONOP	3,764	5,818	7,984	9,728	10,523
SHARE	2,484	5,286	7,984	10,620	13,212
INCOME	3,315	5,899	7,984	9,818	11,489
URBAN	6,304	7,095	7,984	8,986	10,113
DIGITAL	5,878	6,850	7,984	9,306	10,847

Note: values indicate predicted revenue in million of 2003 U.S. dollars. All variables set at mean values.

-1 s.d. = a reduction of 1 standard deviation in the explanatory variable.

-0.5 s.d. = a reduction of 0.5 standard deviations in the explanatory variable.

+0.5 s.d. = an increase of 0.5 standard deviations in the explanatory variable.

+1 s.d. = an increase of 1 standard deviation in the explanatory variable.

7. CONCLUSIONS

Monopoly rights awarded to privatized telephone firms are the result of competition between special-interest groups, the government financial constraints, electoral preferences, and political institutions. Countries in which the use of telephone services by businesses is relatively small are more likely to grant monopoly rights and award longer periods of monopoly than those in which this is large. When business users are important, they will defeat attempts to prolong the statutory monopoly conditions that prevailed on basic telephony in the pre-privatization years. In a similar way, as the importance of residential users increases, governments are more likely to grant monopoly

rights and award longer periods of monopoly to the privatized firm. Again, this is because residential users will be effective in opposing attempts to liberalize entry in basic telephony to prolong the system of cross subsidies they enjoy from business users.

The chief executive is also a major player in the privatization process. Its desire to maximize current revenue from privatization sales is strong. Revenues could be used to retire expensive public debt, finance budget deficits, and help populist governments increase spending to boost short term support. I find that governments facing financial constraints are more likely to award monopoly rights and grant longer periods of monopoly than less financially constrained governments. Electoral preferences and political institutions are also important. When the party of a market-oriented chief executive also controls the legislature, liberalization becomes feasible. Countries with a right-wing chief executive whose party also controls the legislature are less likely to grant monopoly rights and award shorter periods of monopoly than countries with divided or non market-oriented governments. In addition, the durability of democratic systems matters. Long lasting democracies are less likely to grant monopoly rights and grant shorter periods of monopoly than autocratic systems or unstable democracies. Finally, there is a trend (at least in the period covered in my analysis) towards liberalization of entry on basic telephony. I then assess the consequences of awarding monopoly rights to the privatized firms on the government revenues from these sales. I find that awarding monopoly rights to the privatized firm increases government revenues by 52 percent.

APPENDIX A: Definition of exogenous variables and sources

Variable	Definition	Source
<i>Variables in regressions to determine why do governments award monopoly rights</i>		
INTEREST	Interest payment on government debt as a share on current government revenues (%government revenues). Mean interest payment on debt service in the 3 years prior to the sale transaction [t-3, t-1], where t is the year in which the sale transaction took place.	The World Bank. World Development Indicators 2003.
BUSLINES	Number of business lines in service (millions). Mean annual number of business lines in operation in the three years prior to the sale transaction [t-3, t-1], where t is the year in which the sale transaction took place.	International Telecommunications Union. World Telecommunication Indicators 2002.
BMLINES	Share of business lines in service in total main lines in service (% of main lines). Mean annual share of business lines in main lines in service in the three years prior to the sale transaction [t-3, t-1], where t is the year in which the sale transaction took place.	International Telecommunications Union. World Telecommunication Indicators 2002.
BLINES	Business lines in service per 100 inhabitants. Mean annual number of business lines in service per 100 inhabitants in the three years prior to the sale transaction [t-3, t-1], where t is the year in which the sale transaction took place.	International Telecommunications Union. World Telecommunication Indicators 2002.
RESLINES	Residential telephone lines in service per 100 inhabitants. Mean annual number of residential lines in service per 100 inhabitants in the three years prior to the sale transaction [t-3, t-1], where t is the year in which the sale transaction took place.	International Telecommunications Union. World Telecommunication Indicators 2002.
RIGHT1	Dummy variable indicating that chief executive's party is market oriented and also controls Congress. It is constructed by multiplying a dummy variable of right wing chief executive (ERIGHT) and a dummy variable to indicate that chief executive's	Beck et al (2001). The World Bank. Database of Political Institutions. DPI2000.

party has control of both houses in Congress (ALLHOUSE). ERIHGT takes the value of one if the chief executive's party is classified as right wing in year $t-1$ where t is the year in which the sale took place. This dummy is formed based on Beck et al (2001) classification of the chief executive's party as left, centre, or right. ALLHOUSE takes the value of one if the chief executive's party has majority in both houses of Congress at time $t-1$ where t is the year in which the sale took place. In case of autocratic regimes such as that of Pinochet in Chile, RIGHT1=1 if the chief executive is classified as right-wing.

DEMDURA	Index of durable democracy. It is constructed by multiplying a democracy index (DEMOC) with a range [0,10], and an index of the durability of political regimes (DURABILITY) with a range [0, 99]. The first term; DEMOC; is the mean index of democracy in the 10-year period before the sale transaction [t-10 to t-1] where t is the year in which the sale took place. The second term; DURABILITY; is the number of years the political regime existing at time t has been in place.	Center for International Development and Conflict Management, University of Maryland. Polity IV database.
TENLONG	Longest tenure (in years) of a veto player at time $t-1$, where t is the year in which the sale took place.	Beck et al (2001). The World Bank. Database of Political Institutions. DPI2000.

Variables in revenue regressions

DMONOP	Dummy that takes the value of one if the government awarded more than one year of guaranteed monopoly in sales transaction i ; zero otherwise.	Own database
MONOP	Number of years of guaranteed monopoly awarded to the firm in sales transaction i . In case the firm received different lengths of monopoly in different basic services, this value is the average for all basic services that the firm provides.	Own database
SHARE	Percentage share of firm's equity sold (%) in sales transaction i .	Own database

CONTROL	Dummy variable that takes the value of one in either of the following cases: (a) As a result of the sale transaction the government remaining share on total firm's equity has fallen below 50 percent; (b) The government announced the sale of equity share to a (private) "strategic partner"; or (c) The information about the sale transaction explicitly says that it includes a transfer of managerial control to the buyers. Otherwise, the dummy takes the value of zero.	Own database
FIXLINES	The firm's number of fixed lines in service (thousand) in the year in which sale transaction i took place.	Own database
MOBSUBS	The firm's (or a wholly owned subsidiary) number of mobile telephone subscribers (thousand) in the year in which sale transaction i took place.	Own database
3G GIFT	Dummy variable that takes the value of one if the firm was awarded a 3G license for mobile telephony free of charge; zero otherwise.	Own database
ALLBASIC	Dummy variable that takes the value of one if the firm provides all three basic services: local fixed telephony, long-distance and international; zero otherwise.	Own database
LOCAL&LD	Dummy variable that takes the value of one if the firm provides local fixed service and national long-distance; zero otherwise.	Own database
LOCAL	Dummy variable that takes the value of one if the firm provides only local fixed telephony; zero otherwise.	Own database
POST	Dummy variable that takes the value of one if at the time of sale transaction i, the firm sold also provided postal services; zero otherwise.	Own database
DIGITAL	Percentage of country's fixed network with digital technology (%) in the year in which transaction i took place.	International Telecommunications Union. World Telecommunication

URBAN	The country's degree of urbanization in the year in which sale transaction i took place.	Indicators 2002. The World Bank. World Development Indicators 2003.
INCOME	Country's per capita income level (2003 U.S. \$) in the year in which sale transaction I took place.	The World Bank. World Development Indicators 2003.
POP	Population (millions) in the license area in the year in which sale transaction i took place.	Own database and The World Bank. World Development Indicators 2003.
INFLA50	Dummy variable that takes the value of one if the country's annual inflation rate is above 50 percent in the year in which sale transaction i took place.	The World Bank. World Development Indicators 2003.
CAPMKT	Fraser Institute index of the degree of international capital market controls in the country in which sales transaction i took place. Range [0,10]; a higher value means more freedom. The Fraser Institute provides an index every five years: 1980, 1985, 1990, 1995, and 2000. Thus, index values for year 2000 are assigned to all transactions in the period: July 1997 to June 2002. Index values for year 1995 are assigned to all transactions in the period: July 1992 to June 1997. Index values for year 1990 are assigned to all transactions in the period: July 1987 to June 1992. Index values for year 1985 are assigned to all transactions in the period: July 1982 to June 1987.	Fraser Institute. Economic Freedom of the World 2002 dataset.
NASDAQ	NASDAQ closing market index in the month in which sales transaction I took place.	Yahoo Finance!

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