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Analyst following of privatized firms around the world: The role of institutions and ownership structure

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Abstract

We examine which factors affect the decision of analysts to follow newly privatized firms as well as the factors that determine the extent of that following. Contrary to traditional private firms, privatized firms harbor particular uncertainties related to the government's commitment toward privatization. The first-stage estimation shows that the decision by analysts to initiate coverage of newly privatized firms is positively influenced by lower political risk, better judicial efficiency, better information disclosure, and effective extra-legal institutions in the country. Conditional on the decision to initiate coverage, the second-stage results indicate that the extent of analyst following is more important: (1) when there is control relinquishment by the government, (2) when there is more participation by foreign investors and employees, and (3) for those larger firms in nonstrategic sectors. Finally, analysts' coverage is negatively related to postprivatization ownership concentration and underpricing. This latter result runs counter to the existing evidence on private firms—that is, that underpricing "buys" coverage.

JEL classification: F21; G38; L33
Keywords: Analyst following; Privatization; Institutional environment; Policy risk

1. Introduction

A growing literature suggests that research coverage has become an essential element of the security issuance process in recent years. Bushman, Piotroski, and Smith (2005, p. 207) argue that: "The availability of information is a key determinant of the efficiency of

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resources allocations decisions in economies and their securities markets." An important role in the firms' information environment is played by financial analysts who "provide potentially important scrutiny over management's actions" (Lang, Lins, & Miller, 2004, p. 3). Thus, their role consists essentially in reducing (1) agency problems (i.e., arising from opportunistic managers' behavior) and (2) information problems (i.e., where investors are not able to distinguish between good and bad investments).

The study of analyst following of newly privatized firms (NPFs) provides us with an interesting research question that involves two contrasting predictions with respect to the demand for analysts' services and their potential role as information providers: on the one hand, the standard argument that financial analysts alleviate asymmetrical information between issuers and investors does not seem as straightforward for NPFs. Indeed, unlike private firms, NPFs are generally large, well known firms, with a long operating history, in highly regulated industries (Dewenter & Malatesta, 1997). Thus, asymmetric information between the issuer (i.e., the government) and investors should be lower in this instance, which suggests that analysts are not likely to be covering privatized firms. On the other hand, NPFs are generally exposed to particular uncertainties embedded with the reform (i.e., switch of ownership from public to private) and that are related to (1) the governments' commitment toward the privatization process and (2) the ability of new owners to make an effective transition. According to Perotti (1995) and Perotti and Guney (1993), NPFs face a policy risk that arises from postprivatization policies that may be undertaken by the government (e.g., deregulation) and that could affect former state-owned enterprises (SOEs). Policy risk is higher when privatization is not credible. In addition, as documented by Boubakri, Cosset, and Guedhami (2005a), the divested government stake is mostly absorbed by foreign investors and local institutions, followed by individuals. The new owners, particularly foreign, that can be considered as sophisticated investors, will require more transparency and a high level of disclosure about the future prospects of firms. For both of these reasons, privatization creates a demand for financial analysts' services that will be more likely, in this case, to cover privatized firms.

To the best of our knowledge, the issue related to analysts' activities surrounding privatized firms has not been explored previously, although we can put forward several reasons to stress the importance of understanding both the information intermediation and information dissemination of these firms. For instance, because foreign, institutional, and individual investors require that NPFs disclose credible information, financial analysts are likely to play a crucial role in helping build such credibility by certifying the firm's quality. In addition, since privatization is generally a gradual process, the government is likely to sell shares (and come back to the market) more often than any individual firm. Thus, analysts' coverage of privatized firms might help the government to send a credible signal to the market about both the positive prospects of these firms and the analysts' commitment to privatization. This, in turn, enhances the chances of success of the offering by maximizing proceeds.[2] Also, privatization provides us with a natural laboratory to assess

[2] Analysts can also raise doubts about the quality of the NPF if they consider it to be overvalued and its business prospective and financial projections to be overstated. In this case, coverage is likely to lead to a decrease in the value of the firm (negative signal). However, this is unlikely to be the case in privatization as it is a politically motivated reform. As such, the costs associated with a loss of credibility will be to lose voters' support. We thank the referee for raising this point.

how policy risk (i.e., the risk associated with future government policies) and government ownership condition the choice of analysts to initiate coverage and follow a firm, thus providing an insight about the potential interplay of political determinants and analysts' choices.

The main goal of this paper is to address this issue and to document the analysts' coverage of NPFs in a large sample of developed and developing countries. Specifically, we examine whether privatization characteristics (e.g., government control relinquishment, underpricing, and postprivatization ownership structure) and country-level institutional variables (legal and extra-legal) can help explain the analysts' decision to follow NPFs and the extent (i.e., the number of analysts) of their coverage.

This study contributes to the literature on at least two grounds. *First*, it focuses on the role of financial analysts as informational intermediaries between privatized firms and investors on the market. By considering the combined role of institutional environments, ownership structure, and the characteristics of the privatization process, our analysis should enhance the understanding of the role of financial analysts in international capital markets, where NPFs are among the largest listed companies (Boutchkova & Megginson, 2000). We also build upon the recent multinational accounting research by Haw, Hu, Hwang, and Wu (2004b) and Lang et al. (2004), who focus on the extent of analyst following of private firms and add to their evidence by considering a particular owner—that is, the State. As suggested by Shleifer and Vishny (1997), state-owned firms are characterized by "extreme agency problems" that lead them to pursue political rather than profit-oriented objectives. *Second*, the literature generally examines the extent of coverage, or the initiation of coverage by analysts, separately. Privatization, because of the dramatic shift in ownership that it involves, provides us with an opportune setting and a natural laboratory to examine both aspects in a unified framework, since we can test both the initiation of analyst coverage, as well as its extent thereafter, simultaneously.

To assess the issues addressed in this paper, we use a multinational sample of 302 privatized firms that operate in as many as 43 countries, institutionally and geographically diverse, over the period from 1980 to 2002. We adopt the two-step, limited maximum likelihood estimation method of Greene (1994, 1997). In the first stage, we examine which factors determine the probability that analysts follow a privatized firm. In the second stage, we focus on the extent of analyst coverage (given that the dependent variable is not missing).

Our first-stage estimation shows that analysts are more likely to follow privatized firms that operate in countries with lower political risk, higher judicial efficiency, and higher transparency. We also show that extra-legal institutions, such as product market competition and press diffusion, positively affect the decision of analysts to follow privatized firms. The importance of legal and extra-legal institutions here echoes the evidence reported by Haw et al. (2004b) and Lang et al. (2004) on the extent of analyst following of privately owned firms. Thus, we show that these institutions are equally important in determining the decision to initiate coverage additionally, we recognize the importance of policy risk in the case of privatized firms. In addition, analyst following is more likely to be initiated for larger privatized firms, which goes along with evidence in Rajan and Servaes (1997) for private IPOs. However, analysts have a preference for firms in nonstrategic sectors (generally considered to be highly regulated) suggesting that analysts perceive their role of information providers on these firms more difficult.

Our second-stage results indicate that the extent of analyst coverage is related to the postprivatization ownership structure. In particular, it is more important when there is a relinquishment of control by the government, more participation by foreign investors and employees, and for those firms in nonstrategic sectors. Similar to the initiation of coverage, the institutional variables affect the extent of coverage. In addition, more analysts cover recently privatized firms (as opposed to those privatized earlier during the process), while fewer analysts actually cover firms with a higher (postprivatization) ownership concentration, confirming evidence in Haw et al. (2004b). Finally, we find that the extent of analyst coverage of NPFs is negatively related to underpricing, which runs counter to previous evidence on privately owned firms that suggests the opposite (Cliff & Denis, 2004; Rajan & Servaes, 1997). In the case of privatization, underpricing does not seem to buy financial analysts' coverage, as has been shown for IPOs, and does not seem to be perceived as a signal of firm quality.

The remainder of the paper is organized as follows. In Section 2, we review the literature and develop our testable hypotheses. Section 3 describes the data and the sample. Section 4 presents our methodology and the empirical results. Section 5 concludes.

2. Prior literature and research hypotheses

The financial literature, so far, has shown that analyst coverage depends primarily on firm level characteristics (Bhushan, 1989; Lang & Lundholm, 1996; Rajan & Servaes, 1997). Recent cross-country studies add to this evidence and suggest that ownership structure and the institutional environment may be equally important determinants of the extent of analyst following (Lang, Lins, & Miller, 2003; Lang et al., 2004; Haw et al., 2004b). Interestingly, Lang et al. (2004) point out that their tests focus only on firms that have *existing* analyst coverage and, therefore, cannot directly address the valuation implications of the initiation of analyst coverage. Our analysis of privatized firms allows us to contribute to the existing literature by studying the coverage initiation decision. We also add to this recent multinational accounting research by considering a particular owner—that is, the State—who is likely to affect postprivatization corporate governance design.

The following sections will deepen further our understanding of the determinants of analyst following and will allow us to derive our testable hypotheses on the link between the institutional environment and postprivatization ownership structure.

2.1. Analyst following—the institutional environment and privatization[3]

In this paper, the institutional environment involves the country-specific legal and extra-legal institutions. A well-functioning legal system is one of the most effective mechanisms to limit the incentive and ability of insiders to expropriate (Shleifer & Vishny, 1997) and to reduce their informational advantage (Brockman & Chung, 2003). To the extent that

[3] In order to derive our hypotheses, we use here "analyst following" as a general term that encompasses both the initiation of following and the extent of coverage thereafter. In Section 4, we explain our methodological approach to examine the determinants of each one of these aspects.

minority shareholders are well protected by legal institutions, the scrutiny implied by analysts will be less valuable.

Overall, the existing literature suggests that different aspects of the institutional environment have an impact on analyst following. For example, as shown by Bushman, Piotroski, and Smith (2004), (2005) in a cross-country study, there is a positive correlation between analyst following, disclosure, and investor protection. In the same line of argument, Lang et al. (2003) show that foreign firms that cross list in the United States attract analyst following because the costs of information production by financial analysts are reduced once the firms comply to the stringent U.S. disclosure requirements and commit to higher investor protection standards. Recent evidence by Durnev and Fauver (2008) suggests also that in weak investor protection environments with predatory governments firms are less likely to adopt better disclosure practices, thus reducing the willingness of investors to participate in these firms. As a result, analysts will be less interested in following the firms that belong to institutionally weak environments.[4]

Applied to privatized firms, the earlier discussion suggests that NPFs from countries with better institutional environments are more likely to attract analysts. Inversely, NPFs originating from institutionally weaker environments, where information production is costly, are less likely to attract analysts. Hence, our first hypothesis:

H1. Analyst following of NPFs is affected by the prevailing institutional environment.[5]

Relatively few studies focus on the potential relation between analyst following and extra-legal institutions, such as newspaper circulation and product market competition. The only study we are aware of is Haw et al. (2004b), who document a positive relation between cash flow–control divergence and analyst following, which is significantly less pronounced in countries with higher newspaper circulation and product market competition. Following Haw et al. (2004b), we conjecture that there may be a relation between these extra-legal institutions and analyst following of NPFs on the following grounds. *First*, analysts' services and information production is likely to be less costly in environments where newspaper circulation (diffusion of the press) and intensity of information dissemination are high. This provides analysts with an additional incentive to follow NPFs. *Second*, product market competition may affect analyst following of privatized firms because in competitive markets the prices are more verifiable and more objective, which provides analysts with a credible benchmark that allows a comparison between private and privatized firms.

[4] According to the disclosure literature, there are benefits and costs associated to disclosure. The benefits are related to an increased valuation and a lower cost of capital; the proprietary costs, such as third party concerns, are related to a competitive disadvantage that occurs from disclosing information to the product market and regulators. Cohen (2008) suggests that when the proprietary costs, which the author proxies by realized margins, capital intensity, and industry concentration, are higher, the quality of earnings and thus the ability to accurately predict future cash flows is lower. In addition, Shin (2002) finds that the level of voluntary disclosure depends on the strategic interaction setting in the product market: capacity competition drives firms to disclose more, whereas price competition drives firms to disclose less. As discussed later in the text, we control for product market competition on these grounds.

[5] In our empirical analysis, we consider several aspects of the institutional environment, in addition to disclosure.

Moreover, as argued by Dyck and Zingales (2004), competition is a natural constraint to the extraction of private benefits. Thus, we can state our next hypothesis as follows:

H2. Analyst following of newly privatized firms is positively related to the extent of newspaper circulation and product market competition.

2.2. Analyst following and postprivatization ownership structure

Analysts generally focus on larger firms that are likely to be widely held, in order to stimulate the interest of a large number of investors. Recent studies, such as Lang et al. (2004), indeed bring to light the role of ownership structure/concentration as a determinant of analyst following. Further motivating our interest in the privatization context, there are two competing views about the expected relation between corporate ownership concentration and analyst following. *First*, according to the agency theory argument, there should be a higher demand for analysts' services for firms where ownership structure is concentrated. Jensen and Meckling (1976) suggest that financial analysts play a monitoring role and their monitoring activity is a positive function of the level of potential agency costs in the firm.[6] Previous evidence by Boubakri et al. (2005a) reveals a high level of private ownership concentration after privatization, especially in the hands of local institutions and foreign investors. These new owners, particularly institutional and foreign, are generally considered to be sophisticated investors, and thus are more likely to require a high level of information disclosure. Their willingness to pay for information research provides analysts with an incentive to cover privatized firms. As a result, we expect analyst following to be positively related to postprivatization ownership concentration.

Second, according to the value-added argument, analysts are less likely to follow firms with a more concentrated ownership. Chang, Khanna, and Palepu (2000) address the relation between ownership concentration and analyst following at the country level. The authors find a negative, although insignificant, relation between analyst following and the ownership concentration of the 20 largest firms in the country. In the same vein, Lang et al. (2004) find evidence that analysts are less interested by firms in which concentrated ownership creates potential agency problems. The authors report a negative relation between the number of analysts and the level of family/management control. They argue that analysts are less likely to provide additional scrutiny for firms where insiders can expropriate investors because their benefits from following those firms are lower than the cost of doing so (i.e., less informative public disclosure and lower quality of information increase this cost). As summarized by Ball, Kothari, and Robin (2000), under concentrated ownership, information can be communicated through private channels; thus, the role of analysts is reduced in this case. Collectively, these arguments suggest that the demand for analysts' services is low in the context of privatization since the new private owners (mainly

[6] Fan and Wong (2002), for instance, provide support for this contention by showing that the informativeness of accounting earnings is negatively related to ownership concentration. Similarly, Haw et al. (2004a) report that the cash flow/control divergence is positively related to earnings management. Following this line of reasoning, minority shareholders will require more private information gathering from financial analysts because they do not believe in the quality of reported earnings.

institutional and foreign) have less incentive to expropriate minority shareholders and sufficient incentive to monitor managers.

In light of the previous discussion, we draw the following hypothesis:

H3. Under the agency theory (value-added) argument, analyst following of NPFs is positively (negatively) related to the postprivatization ownership concentration.

Another particularity of postprivatization ownership structure is the presence of the state as a residual owner. Most privatization transactions are, in fact, partial sales implemented in a gradual fashion. The extent of control relinquishment by the government in NPFs might thus influence analyst following. From the theoretical literature on privatization (e.g., Perotti, 1995), we know that NPFs are exposed to particular uncertainties imbedded with the reform (switch of ownership from public to private), and that are related to: (1) the governments' commitment toward the privatization process and (2) the ability of new owners to make an effective transition. According to Perotti (1995) and Perotti and Guney (1993), NPFs face a policy risk that arises from postprivatization policies that may be undertaken by the government (e.g., deregulation) and that could affect former state-owned enterprises. Policy risk is higher when privatization is not credible (i.e., when governments are not committed to market-supporting reforms). Perotti (1995) argues that one credible signal of commitment is the immediate transfer of control rights (i.e., control relinquishment). In this case, analysts are more likely to be interested in those firms where the government actually relinquished control. Therefore, the following hypothesis is predicted:

H4. Analyst following of privatized firms is positively associated to the extent of government control relinquishment.

In sum, the earlier discussion suggests that the decision to follow a privatized firm and the extent of analyst following thereafter will likely be determined by: (1) the institutional environment (i.e., legal and extra-legal institutions) and (2) by postprivatization ownership structure and concentration. To examine this issue, we use an exhaustive approach that takes into account a potential selection bias (described in Section 4.2), while controlling for the determinants of private information production. The following section describes our data, variables, and sample.

3. Sample, data, and descriptive statistics

To examine the determinants of analyst following of privatized firms, we use a sample of 302 privatized firms from 43 countries that covers the period from 1980 through 2002. The initial sample of privatizations comes from Boubakri et al. (2005a). The authors first obtain the list of privatized firms from several sources such as the World Bank privatization database for developing countries, the Privatization Barometer for OECD countries, and list of privatized firms in developed and developing countries compiled by Megginson (2003). For every privatized firm, ownership structure is collected from several data sources, including annual reports, Asian, Brazilian, and Mexican company handbooks, the *Guide to*

Table 1
Basic summary statistics of privatizations in our sample. This table presents some descriptive statistics for the sample of 302 privatized firms from 43 countries. We report the distribution of privatized firms by legal origin, industry, year, region, and analyst coverage.

Distribution of privatization					
By year			By legal origin		
Year	Number	Percentage		Number	Percentage
1980	1	0.33	Civil law	231	76.49
1981	1	0.33	Common law	71	23.51
1984	1	0.33	Total	302	100
1985	4	1.32	By industry		
1986	5	1.66	Energy	38	12.58
1987	3	0.99	Financials	72	23.84
1988	4	1.32	Industrials	38	12.58
1989	27	8.94	Materials	37	12.25
1990	20	6.62	Telecommunication	26	8.61
1991	36	11.92	Transportation	18	5.96
1992	32	10.6	Utility	31	10.26
1993	14	4.64	Others	42	13.91
1994	21	6.95	Total	302	100
1995	24	7.95	By region		
1996	38	12.58	North Africa and the Middle East	65	21.52
1997	33	10.93	East and South Asia and the Pacific	51	16.89
1998	12	3.97	Europe and Central Asia	89	29.47
1999	10	3.64	Latin America and the Caribbean	67	22.19
2000	9	2.98	Sub-Saharan Africa	30	9.98
2001	4	1.32	Total	302	100
			By analyst coverage		
			Followed	153	50.66
			Not followed	149	49.33
			Total	302	100
			By analyst coverage over time		
			Followed within one year	124	81
			Followed within two and three years	29	19
			Total	153	100

Asian Companies, and *Kompass Egypt Financial Year Book*. Several samples of financial information are then drawn from the firms' financial statements, their web sites, and from databases such as Moody's International, Mergent Online, Worldscope Disclosure, and Bankscope. We supplement this original sample with data from Omran (2005) for Egyptian firms,[7] and we update this sample by hand collecting information from company prospectuses and annual reports. Analyst forecast data is from I/B/E/S. Table 1 presents a description of the final sample.

[7] The Egyptian firms represent more than 50% of the total firms coming from North Africa and the Middle East region. In order to assess whether this sample composition has an impact on our results, we re-ran our basic specifications excluding Egyptian firms. Our results remained qualitatively the same.

Table 2
Summary statistics on analyst coverage of privatized firms. This table presents the descriptive statistics on analyst coverage of 153 newly privatized firms for the period 1980 through 2002. The number of analysts is reported for the entire sample and for subsamples based on legal origin (i.e., common law and civil law). For each sample, we show the number of observations, the average number of analysts, standard deviation, minimum, median, and maximum.

	N	Mean	S. Dev.	Min	Median	Max
Panel A. All newly privatized firms with coverage						
Analyst coverage	153	7.825	9.219	1	3	46
Panel B. Coverage of newly privatized firms from civil law countries						
Analyst coverage	116	8.319	10.288	1	3	46
Panel C. Coverage of newly privatized firms from common law countries						
Analyst coverage	37	6.270	4.181	1	6	15

As described in Table 1, the sample is diversified across different geographical regions as classified by the World Bank. For example, 21.5% of the sample firms are from North Africa and the Middle East, 29.5% come from Europe and Central Asia, 22% are from Latin America and the Caribbean, and 10% are from sub-Saharan Africa. Finally, firms from East and South Asia and the Pacific represent about 17% of the sample. In addition, from Table 1, we note that about 76.5% of privatized firms come from civil law countries, and 23.5% come from common law countries. Table 1 also shows that our sample is diversified across industries, with about 24% in financial sectors, 10% in utilities, 12.5% in the energy sector, 12.5% in industrials, 8.5% in telecommunication, and 6% in transportation. Furthermore, as reported by Table 1, privatizations are clustered in the 1990s.[8]

More than half of the privatized firms in our sample (50.66%) are covered in the I/B/E/S database at some point after privatization (within three years). From the privatized firms covered by I/B/E/S, about 81% are covered within the first year after privatization and 19% within the second and third year.

Table 2 shows that a firm is followed by an average of 8 analysts, ranging from a minimum of 1 analyst to a maximum of 46 analysts. Dividing the subsample of 153 firms that are followed by financial analysts across civil and common law origin countries, we note that for firms from common law countries, the mean analyst following is lower compared to firms from civil law countries (6 compared to 8, respectively). This result suggests that analysts are more likely to follow firms from civil law countries compared to those from common law countries. This is consistent with evidence in Lang et al. (2004), who find that the median firm in their sample is followed by 6 analysts and that English legal origin (i.e., common law) countries have a lower number of analysts per firm than civil

[8] Our sample compares well with the population of privatized firms identified in the World Bank list of privatization transactions for developing countries and the Privatization Barometer for developed countries. Indeed, the overall population includes 30.48% of the firms from Africa and the Middle East, 17.08% from East and South Asia and the Pacific, 42.35% from Latin America, and 10.09% from Europe and Central Asia. The industry representativeness is also comparable, as 20.52% of the firms are from the financial sector and 15.97% are utilities. Finally, overall, 80% of the privatization transactions occurred in the 1990s.

Table 3
Description of variables and sources. This table describes the variables used to test the factors that determine the initiation of analyst following as well as the extent of analyst coverage of privatized firms during the period from 1980 through 2002.

Variable	Definition	Source
Legal institutions		
LEGAL	Identifies the legal tradition of the country in which the firm is domiciled. Equals 1 if the legal tradition is common law, and 0 if the legal tradition is civil law.	La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998)
EFFICIENCY	Assessment of the efficiency and integrity of the legal environment as it affects business, particularly for foreign firms.	La Porta et al. (1998)
RIGHT	Equals 1 if a right-oriented government, and 0 otherwise.	Database on political institutions
IT ENFORCEMENT	Equals 1 if the country enforced its first insider trading laws in calendar year *t* (privatization year), and 0 otherwise.	Bhattacharya and Daouk (2002)
DISCLOSURE	The ratings for disclosure standards based on inclusion or omission of 90 items in the annual reports.	La Porta et al. (1998)
CORRUPTION	An assessment of corruption within the political system. Corruption in the form of excessive patronage, nepotism, job reservations, favor—for favors, secret party, and suspiciously close ties between politics and business.	International Country Risk Guide (ICRG)
POLRISK	An assessment of the country's political risk. Assigning risk points to a preset group of factors, termed political risk components (government stability, internal conflicts, external conflicts, corruption, socioeconomics conditions, military in politics, and religion in politics). The minimum points that can be assigned to each component is 0, and the maximum is 12. Higher scores imply lower political risk.	International Country Risk Guide (ICRG)
Extra-legal institutions		
COMPETITION	Response to survey question "competition laws prevent unfair competition in your country." It measure the effectiveness of product market competition.	Dyck and Zingales (2004)
NEWSPAPER	Circulation of daily newspapers divided by population.	Dyck and Zingales (2004)

Privatization characteristics and postprivatization ownership structure		
CONTROL	A dummy variable equal to unity if the privatization implies a relinquishment of control by the government (sale of 50% and more), and 0 otherwise.	Company prospectuses and annual reports
FOR	A dummy variable equal to unity if foreign investors are involved for the first time in the ownership structure, and 0 otherwise.	Company prospectus and annual reports
RECENTP	A dummy variable for the timing of privatization equal to unity if recent privatization in the country, and 0 otherwise.	Boubakri et al. (2005a)
EMP	A dummy variable equal to unity if employees are involved in the ownership structure, and 0 otherwise.	Company prospectus and annual reports
UNDERPRICING	Underpricing is computed as: (first aftermarket price-offer price)/offer price	Megginson (2003) Appendix and Datastream
CONC1, *CONC2*	The percentage of shares held by the three largest private investors, and the Herfindahl index, respectively.	Boubakri et al. (2005a)
POLITICAL CONNECTION	Dummy variable that equals 1 if the CEO or the BOD are connected to political power, and 0 otherwise.	Boubakri et al. (2008)
STATE	The percentage of shares held by the government.	Boubakri et al. (2005a)
Country and firm characteristics		
GDPG	Real GDP growth one year before privatization.	World development indicators
ROS, *ROE*, *ROA*	Three-year preprivatization average return on sales, return on equity, return on assets.	Company prospectuses and annual reports
STRATEGIC	A dummy variable equal to unity if the firm belongs to a strategic industry (energy, utilities, telecommunications, financials, transportation), and 0 otherwise.	World Bank group's privatization transaction database
ADR	Dummy variable that equals 1 for NPFs with an ADR or GDR program at the time of privatization, and 0 otherwise.	Thomson Financial Securities Data
LOGSALES	The logarithm of the total sales at the time of privatization in ($).	Company prospectuses and annual reports

law countries (5 compared to 7, respectively). Similarly, Chang et al. (2000) also find that the number of analysts per firm is lower in common law countries.

3.1. Variables

Table 3 provides the definitions and data sources of the variables used in the analysis to explore the determinants of analysts' interest in a privatized firm. We categorize our variables under three broad headings: (1) the institutional environment variables, (2) privatization process characteristics and postprivatization ownership variables, and (3) firm and country-specific control variables suggested by previous studies, including firm size, firm profitability, the industry classification, and real GDP growth.

3.1.1. The institutional environment variables

To explore the relation between analyst following and the institutional environment, we consider legal and extra-legal aspects shown by previous studies to affect firm value, ownership structure, and income management (e.g., Haw, Hu, Hwang, & Wu, 2004a; Dyck and Zingales (2004), among others). Prior research shows that legal protection of investors is a material determinant of postprivatization performance improvements (e.g., Boubakri, Cosset, & Guedhami, 2005b), ownership structure (e.g., Boubakri et al., 2005a; Guedhami & Pittman, 2006), and the choice of privatization method (e.g., Megginson, Nash, Netter, & Poulsen, 2004).

To measure cross-country variation in the extent of legal protection and law enforcement, we use the following aspects of the legal and judicial regime that have been widely used in the literature:

LEGAL is a dummy variable that is equal to 1 for common law countries. Chang et al. (2000) find that public firms in common law countries tend to have less analyst coverage compared to those in civil law countries, supporting the argument that the lower protection of minority shareholders in these countries triggers more demand for analysts' services. We expect analyst following to be related to the legal origin that captures the extent of investor protection in the country.

EFFICIENCY proxies for the efficiency of the judicial and legal system and captures the extent to which the environment is investor-friendly and favorable to conduct business. Thus, we expect it to be positively related to analysts' activities.

Previous research also shows that analyst following tends to be positively related to the degree of information disclosure by a company, probably because better disclosure leads to a decrease in the cost of collecting information about companies (Lang & Lundholm, 1996). We expect analysts' activities to be equally influenced by the quality of disclosure standards at the country level, and we conjecture that there is a positive relation between high-quality accounting standards (*DISCLOSURE*) and analyst following.

Furthermore, we should observe less demand for private information because an environment that is characterized by high political risk discourages local and foreign investors (Boubakri, Cosset, Guedhami, & Omran, 2007). Therefore, we expect a negative relation between political risk and analyst following of NPFs. Note that our political risk

variable (*POLRISK*) is drawn from the International Country Risk Guide (ICRG) and is constructed as follows: higher values of the index imply less political risk. Therefore, we expect the coefficient of *POLRISK* to be positive.

Following a growing body of evidence that indicates that extra-legal institutions can be effective in protecting shareholders and in addressing private benefits of control (Dyck & Zingales, 2004; Haw et al., 2004b), we use, as previously discussed, two extra-legal indicators identified by prior studies: (1) product market competition (*COMPETITION*) and newspaper circulation (*NEWSPAPER*). We expect a positive relation between analyst following and market competition and between analyst following and newspaper circulation.

3.1.2. Privatization process characteristics and postprivatization ownership variables

To control for the characteristics of the privatization process, we include a variable of the residual government ownership (*STATE*). As an alternative, we also use an indicator variable that takes the value of 1 if the government relinquished control in the firm (*CONTROL*). Control is relinquished if the state divests more than 50% of its shares in the firm. Private investors are more likely to be attracted to privatized firms where the government relinquishes control (i.e., with less residual state ownership). Therefore, we postulate that the analyst's advantage to follow a firm is greater when the government relinquishes control (i.e., keeps a lower residual share).[9]

To examine the impact of ownership structure on analysts' coverage, we include the percentage of shares held by the three largest private investors, *CONC1*.[10] As discussed in Section 2.2, the direction of the association between analyst following and ownership concentration is ambiguous and becomes fundamentally an empirical issue. We additionally control for the identity of owners. First, we include a dummy variable that indicates whether foreign investors are involved in the ownership of the firm (*FOR*). Since foreign investors are likely to experience greater information asymmetry than domestic investors, they have a greater demand for analysts' research. Hence, we expect that the involvement of foreign investors in the ownership of privatized firms will draw more analysts. Second, in several privatization issues, the government allows participation by employees to send a positive signal of political commitment. Therefore, employee participation (*EMP*) should signal that the government is ready to bear the residual risk associated with privatization and should lead to less demand for analyst following. However, employees are not informed investors, which may actually create more demand for analysts' services. Thus, we do not have a one-directional expectation, and we leave it to be resolved with empirics.

Also, we control for the underpricing (*UNDERPRICING*) of share-issued privatizations (SIPs). The privatization process is different from the traditional process adopted by private firms preparing IPOs. Private IPO firms[11] are generally perceived as being riskier than the average established state-owned firms. Rajan and Servaes (1997) and Cliff and Denis (2004) provide evidence that private IPO underpricing is positively related to analyst

[9] These variables also capture whether the firm is totally privatized through an IPO or partially privatized.

[10] Alternatively, we use the Herfindahl index as a proxy for ownership concentration, *CONC2*. However, we only report and discuss our results with *CONC1* because the inferences remain the same if we use *CONC2*.

[11] References on private IPOs include Allen and Faulhaber (1989), Ritter and Welch (2002), Brau and Fawcett (2006), Kerins, Kutsuna, and Smith (2007), Ghicas et al. (2008), and Hsu, Reed, and Rocholl (2010).

coverage by the lead underwriter, which is consistent with the hypothesis that firms compensate investment banks for high-quality analyst coverage by using underpricing. In a more recent study, Ghicas, Papadaki, Siougle, and Sougiannis (2008) show that financial analysts and underwriters appear to incorporate the quantitative information contained in audit qualification in the earnings forecast and in the offer prices of private IPO. However, there is a negative association between audit qualification and the first-day post-IPO stock returns.

The uncertainty about political objectives is also an important risk factor for privatized firms. That is why, according to Perotti (1995), governments heavily underprice SIPs as a strategy to signal their commitment to market economy reforms and to build investors' confidence. Underpricing of SIPs has also been widely documented. For instance, by comparing initial offer prices in privatizations to initial returns of public offerings of private companies, Dewenter and Malatesta (1997) find that the underpricing of privatized firms in the United Kingdom is significantly higher than that of private firms, whereas in Canada and Malaysia, the opposite relation is true. Lam, Tan, and Wee (2007) also find that SIPs have a mean underpricing of 16.3%. They contend that this level of underpricing is aimed at convincing investors that the government will not appropriate firm value by changing regulations that alter shareholders' income rights. This supports the earlier results in Perotti and Guney (1993), who document a larger underpricing for SIPs compared to private IPOs. Another study of privatization IPOs was conducted by Da Craca (2008) in the specific context of Brazilian SIPs that are shown to be heavily underpriced. If underpricing SIPs is a credible signal in the sense of Perotti (1995), investors do not need analyst scrutiny to alleviate the uncertainty related to privatization. Thus, we conjecture that analyst following is negatively related to underpricing.

We finally consider the timing of privatization, which we measure with a binary variable that takes the value of 1 if the firm has been privatized recently in the privatization process (*RECENTP*), compared to earlier ones in the country. Lam et al. (2007) argue that recent privatizations should exhibit less policy risk, because as privatization is progressing the government has the opportunity to signal that they are a committed government that will not reverse policies. In this case, we expect analyst following to be higher for recent privatizations.

3.1.3. Firm and country-specific control variables

Bhushan (1989) finds that the number of analysts following private firms is increasing in firm size. Indeed, since larger firms are more likely to have more analysts covering them and more forthcoming disclosure policies, we conjecture that this is also the case for privatized firms, which are typically old, large, and well known. Firm size has been found to be related to analyst following in several studies (e.g., Rajan & Servaes, 1997). It usually captures a host of factors, including the potential for greater fees from trading and corporate finance activities (and hence greater potential analyst revenues, as larger firms are more visible and more prestigious). Size is also often included as a partial control for the extent of firm disclosure through channels other than annual reports (Hope, 2002, p. 13). Therefore, firm size, which is measured by the log of sales at the time of privatization, is included in all specifications (*LOGSALES*). We include other control variables suggested in the literature,

such as profitability. Following Lang and Lundholm (1996), we control for profitability by using the return-on-sales ratio (*ROS*).[12,13]

The capital market conditions are also important considerations for assessing analyst following. Uncertainty about the value of the offers of privatized firms is greater in developing markets than in developed ones (Dewenter & Malatesta, 1997). In developing capital markets, there are few public firms comparable to privatized firms, and the disclosure requirements are less important. Thus, in developing capital markets, the production and the dissemination of information are more difficult, which could lessen analysts' incentives to follow a firm. To capture the level of capital market development and overall domestic economic factors, we control for economic growth by using *GDPG* and expect it to be positively related to analyst following.

The pair-wise correlations between the earlier-described variables are reported in Table 4.

4. Empirical results

To explore the determinants of analysts' interest in privatized firms, we conduct an analysis in two parts. First, we perform a univariate analysis by comparing two subsamples based on whether firms are covered by analysts or not; second, we perform a multivariate analysis.

4.1. Univariate analysis

Using the sample of 302 NPFs, we create two subsamples based on whether the privatized firm is covered by analysts or not. We then examine if there is a difference in firms' characteristics and home country institutional attributes between the two subsamples. This first step of the analysis allows us to identify the incentives that lead analysts to initiate coverage of newly privatized firms.

Panel A of Table 5 reports the univariate tests for institutional variables and shows some interesting associations. For instance, privatized firms are more likely to be covered in common law countries (*LEGAL*), which contrasts with evidence in Chang et al. (2000) for public firms. Analyst following is also positively and significantly related to the quality of disclosure standards (*DISCLOSURE*), suggesting that analysts are more likely to follow privatized firms in countries with higher disclosure ratings. The efficiency index (*EFFICIENCY*) is not significantly different across both subsamples, but we find that higher values of *POLRISK* (i.e., less political risky environments) are significantly associated with analyst coverage (at the 1% level) and, similarly, that higher values of *CORRUPTION* (less political corruption in the country) are significantly associated with

[12] We further include additional variables from published financial statements such as market-to-book ratio, earnings growth, and other proxies for profitability such as *ROA* and *ROE*. These additional controls allow us to test further the role of analysts as information providers in the privatization environment and will be discussed later in the text.

[13] Note that the firms in our sample continue to follow local accounting standards rather than adopting International Accounting Standards. We thank the referee for raising this point.

Table 4
Pair-wise correlations of variables. This table provides the correlation coefficients of variables. The *p*-value is reported below each correlation coefficient.

	ANALYST	*POLRISK*	*EFFICIENCY*	*CORRUPTION*	*CONTROL*	*LOGSALES*	*CONC1*	*STATE*	*STRATEGIC*	*ROE*	*ROA*	*ROS*
ANALYST												
POLRISK	0.313	1										
	(0.000)											
EFFICIENCY	0.085	0.413	1									
	(0.156)	(0.000)										
CORRUPTION	0.264	0.701	0.460	1								
	(0.000)	(0.000)	(0.000)									
CONTROL	−0.090	0.079	−0.077	−0.025	1							
	(0.207)	(0.270)	(0.315)	(0.726)								
LOGSALES	0.403	0.381	0.155	0.293	−0.188	1						
	(0.000)	(0.000)	(0.010)	(0.000)	(0.010)							
CONC1	−0.129	−0.144	−0.187	−0.165	0.459	−0.230	1					
	(0.110)	(0.074)	(0.024)	(0.040)	(0.000)	(0.004)						
STATE	0.049	0.064	0.105	0.125	−0.752	0.241	−0.551	1				
	(0.431)	(0.302)	(0.103)	(0.046)	(0.000)	(0.000)	(0.000)					
STRATEGIC	0.200	0.130	0.008	0.051	−0.050	0.250	0.052	0.040	1			
	(0.000)	(0.024)	(0.895)	(0.377)	(0.494)	(0.000)	(0.515)	(0.516)				
ROE	−0.070	−0.090	0.041	−0.067	0.042	−0.090	0.218	0.011	−0.091	1		
	(0.260)	(0.143)	(0.530)	(0.282)	(0.584)	(0.133)	(0.007)	(0.852)	(0.140)			
ROA	−0.082	−0.168	−0.022	−0.102	−0.106	−0.136	0.000	0.077	−0.228	0.607	1	
	(0.187)	(0.006)	(0.729)	(0.099)	(0.172)	(0.028)	(0.991)	(0.228)	(0.000)	(0.000)		
ROS	0.052	0.083	0.018	0.041	−0.040	0.055	0.123	0.077	0.012	0.527	0.535	1
	(0.401)	(0.181)	(0.774)	(0.506)	(0.606)	(0.370)	(0.131)	(0.225)	(0.845)	(0.000)	(0.000)	

Table 5
Institutional environment, firm characteristics and ownership structure. This table provides a comparison of institutional factors, firm characteristics, and ownership structure for those privatized firms with analyst coverage and those without. Panel A presents institutional variables; panel B includes firm characteristics; and panel C includes ownership structure variables. A description of variables is provided in Table 3. The two last columns report the *t*-test for the difference in means and the *p*-value of the Mann–Whitney test, respectively.

	Covered			Not covered				
Variable	*N*	Mean	Median	*N*	Mean	Median	*T*-test	Mann–Whitney test
Panel A. Institutional (legal and extra-legal) and macro economic variables								
EFFICIENCY	151	6.859	6.750	125	6.563	6.5	−1.42	0.457
LEGAL	151	4.086	4	147	3.463	4	−3.686***	0.000***
POLRISK	151	67.625	68.5	147	58.864	62.080	−5.677***	0.000***
DISCLOSURE	132	59.890	61	93	40.279	36	−9.787***	0.000***
COMPETITION	134	5.106	5.070	96	4.805	4.605	−6.4***	0.000***
NEWSPAPER	134	1.597	1.100	96	0.888	0.400	−4.681***	0.000***
CORRUPTION	151	3.698	3.083	147	3.087	3	−4.723***	0.000***
Panel B. Firm performance characteristics								
ROS	131	0.175	0.093	128	0.148	0.106	−0.839	0.565
LOGSALES	148	5.673	5.821	145	4.769	4.679	−7.5166***	0.000***
Panel C. Firm postprivatization ownership structure								
CONC1	94	0.135	0.026	60	0.199	0.1	1.6055*	0.025**
CONC2	94	0.295	0.195	61	0.383	0.4	1.70*	0.078*
STATE	120	0.380	0.384	128	0.403	0.39	0.412	0.80

*, **, *** refer to significance at the 10%, 5%, and 1% levels, respectively.

Table 6
Privatization characteristics. This table compares analyst following for the different subsamples based on privatization characteristics. The first subsample separates NPFs in strategic industries from those that are not. The second subsample separates control privatizations (where the government relinquished control) and revenue privatizations (where a minority stake is sold). *Foreign* refers to NPFs where foreign owners are involved, and *Employee* refers to NPFs that involved a stake sold to employees. *High* (*Low*) *Underp* refers to issues with above (under) the median underpricing. *Recent Priv* refers to recent privatization transactions in the country (which occurred after the median privatization date), while *Early Priv* refers to the firms privatized before the median privatization date in the country.

Subsample	Mean number of analysts	Median number of analysts	*N*	*p*-value of difference
	Privatization characteristics			
Strategic	7.617	3.5	115	0.847
Nonstrategic	8.942	3	35	
Control	9.890	5	56	0.70
Revenue	6.750	3.5	56	
Foreign	8.450	6	59	0.001***
Non foreign	4.068	3	44	
Employee	10.830	7.5	54	0.022**
Non employee	5.440	3	34	
High Underp	7.510	6	33	0.81
Low Underp	12.690	7	33	
Recent Priv	11.220	6	67	0.000***
Early Priv	4.600	2	69	

*, **, and *** refer to significance at the 10%, 5%, and 1% levels, respectively.

analyst coverage. Thus, analysts are more likely to cover NPFs in less corrupted and less political risky environments.

The extra-legal institution variables, *COMPETITION* and *NEWSPAPER*, are significantly and positively associated with analyst coverage, suggesting that countries with more effective extra-legal institutions are more attractive to analysts. This result is consistent with the argument that in competitive markets, the prices are more verifiable and objective, which helps analysts to find firms comparable to those that are privatized. Additionally, the level of diffusion of the press is positively related to analyst following.

Panel B of Table 5 provides univariate correlations between analyst following and firms' characteristics. The number of analysts making forecasts is positively and significantly related to firm size. No significant differences are reported for profitability (*ROS*).

Panel C of Table 5 reports the results on postprivatization ownership variables. The postprivatization ownership concentration that is proxied by *CONC1* is negatively associated with analyst interest, implying that analyst coverage is less likely for NPFs where postprivatization ownership is more concentrated.[14] There is no significant difference between covered and non-covered firms with respect to residual state ownership (*STATE*), suggesting that the extent of government divestiture is immaterial to the decision of whether to initiate coverage.

Table 6 presents additional results of additional subsamples based on privatization characteristics, such as industry affiliation, control versus revenue divestitures, foreign

[14] The Herfindahl index of ownership concentration *CONC2* leads to the same conclusions.

participation, employees' participation, underpricing, and the timing of privatization. The results show that control relinquishment by the government in privatized firms is not related to more coverage after privatization. With respect to industry, there appears to be no significant difference between strategic and nonstrategic sectors in terms of analyst following. However, the number of analysts making forecasts is associated with more foreign participation and more employees' participation. In addition, we find no significant difference between highly underpriced issues and lower underpriced issues. Finally, the mean (median) number of analysts is significantly higher in those firms that were privatized more recently, 11.22 (6) compared to 4.6 (2) for earlier privatizations. This result suggests that the demand for analysts' services is higher for recent privatizations, which often involve more firms with a larger size. This finding is particularly important for our purposes because earlier privatizations are associated with more uncertainty and informational asymmetries regarding the nature of the government and its level of commitment to market-supporting reforms.

These relations, although informative, are only univariate, and do not control for other potential determinants of analysts' initiation of coverage and extent of coverage thereafter. In the following section, we run a multivariate analysis that tackles this issue.

4.2. Multivariate analysis

In this section, we investigate the factors that determine the extent of analyst following, assuming the decision has been made to initiate coverage. As previously argued, the privatization context allows us to provide a full picture of how analyst following is associated with NPFs. We are able to examine: (1) what determines the initiation of coverage decision around the change in ownership from public to private and (2) to the factors that explain the extent of subsequent coverage.

Before we explore these issues, we need to stipulate that our data may suffer from a selection bias, because I/B/E/S collects forecast information from financial analysts who agree to provide the information in return for free use of the I/B/E/S database. Thus, the process through which I/B/E/S contacts analysts is not random. In particular, firms that are not included in the I/B/E/S database are not necessarily "not followed" by analysts. These firms may be followed by analysts who are not considered by I/B/E/S (usually firms trading in small brokerage houses). In summary, as Rajan and Servaes (1997, p. 511) argue "there are two reasons why firms may not be followed: either analysts do not deem the firm worthy of following, or I/B/E/S does not get forecast [information] from the analyst most likely to follow [such] firms." To control for selection bias and following Rajan and Servaes (1997), we include industry variables and firm size.[15]

We need to correct for the potential selection bias of privatized firms for which we have no data on analyst following. To consider the count nature of the data, we use the two-step, limited maximum likelihood estimation method of Greene (1994;1997). This method is

[15] Firm size and industry dummies are used to explain the possible selection bias based on the argument that I/B/E/S may prefer contracting major brokerage companies whose analysts are more likely to ignore small firms (size is used as a proxy for firm visibility). In addition, I/B/E/S's choice of analysts may be also biased toward those following or interested in particular industries (hence, the industry variable).

similar to the two-step procedure of Heckman (1979). First, we run a probit model as a first stage (as specified in Eq. (1)), and we analyze the decision of analysts to follow the firm (i.e., we explain why the dependent variable is not missing). In the second stage (as described in Eq. (2)), which we refer to as the *analyst coverage equation*, we estimate a negative binomial model[16] adapted to count data. This model includes the correction factor for potential selection bias (Mills[17]) as predicted from the first stage (probit model).

$$ANALYST = \beta_0 + \beta_1 INST + \ + \beta_2 Country + \beta_3 Firm + \varepsilon_1 \quad (1)$$

ANALYST is a dummy variable that equals 1 if the firm is covered over the three-year window after privatization, and 0 otherwise. *INST* refers to the different aspects of the institutional environment including, as discussed in the previous section, *POLRISK*, *EFFICIENCY*, *CORRUPTION*, *DISCLOSURE*, *COMPETITION*, and *NEWSPAPER*. These are included one by one due to their high correlation with each other. We also control for various firm and country-specific factors that are likely to affect analyst following, as described in Table 3. ε_1 is the normally distributed error term.

$$ANALYST\ FOLLOWING = \alpha_0 + \alpha_1 PRIVAT + \alpha_2 INST + \alpha_3 Firm + \alpha_4 Mills + \varepsilon_2 \quad (2)$$

In the second stage, the dependent variable is the number of analysts making earnings forecasts reported in I/B/E/S within one to three years after privatization (since we are interested in the behavior of analysts shortly after privatization). *PRIVAT* includes variables related to the privatization process (e.g., *CONTROL*, *FOR*, *EMP*, *UNDERPRICING*, and *CONC1*, *CONC2*). *Mills* is the inverse of the Mills' ratio derived from Eq. (1), and ε_2 is the term of error.

Tables 7a[17] and 7b reports the estimates of the coefficients that are associated to the variables that affect the decision of analysts to initiate coverage, using the two-step, limited maximum likelihood estimation method of Greene (1994, 1997). It is important to control for various firm and country-specific factors that are likely to affect analysts' incentives to gather information. For this reason, we estimate several specifications. Additionally, due to the high correlation between some explanatory variables, we do not include them simultaneously (e.g., postprivatization ownership concentration and *CONTROL* or *STATE*).

The results reported in Tables 7a and 7b show that the coefficients related to the institutional environment (*POLRISK*, *EFFICIENCY*, *CORRUPTION*, *DISCLOSURE*, *COMPETITION*, and *NEWSPAPER*) are positive and significant (all at the 1% level except for *EFFICIENCY*, which is significant at the 10% level) across their respective model specifications. Thus, analysts' willingness to follow privatized firms is positively influenced by the quality of the institutional environment. More specifically, analysts are more interested in privatized firms that operate in countries with lower political risk, more judicial efficiency, more information disclosure, and better extra-legal institutions. These results are consistent with evidence in

[16] Count data are often significantly overdispersed relative to Poisson distribution. At first glance, the data may seriously be suspected of overdispersion, since the variance of analyst coverage is more than twice its mean (variance − mean ratio is 85/7.825 = 10.86). In addition, the likelihood ratio tests (κ^2 LR TEST) reject the Poisson model in favor of the negative binomial model.

[17] Mills is the correction term computed from the probit model in the first stage.

Table 7a
Determinants of analyst coverage of privatized firms: First-stage results for the initiation of coverage. This table presents the first-stage model (using Heckman's (1979) two-step procedure) of the determinants of analyst following, which is a probit model that determines when the dependent variable in the second stage is not missing. The dependent variable is a dummy that equals 1 if the firm is followed during the three-year period after privatization, and 0 otherwise. *Z* values are reported in parentheses. The definitions of the variables are described in Table 3.

Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)
POLRISK	0.066 (4.8)***						
CORRUPTION		0.572 (4.52)***					
EFFICIENCY			0.146 (2.09)**				
DISCLOSURE				0.038 (4.77)***			
COMPETITION					0.607 (1.80)*		
NEWSPAPER						0.379 (3.03)***	
LEGAL							0.206 (0.94)
STRATEGIC	−0.077 (−0.28)	0.179 (0.65)	0.152 (0.54)	0.213 (0.77)	0.485 (1.95)**	0.241 (0.96)	0.457 (2.39)**
LOGSALES	0.570 (4.00)***	0.683 (4.70)***	0.783 (5.22)***	0.340 (2.52)**	0.391 (3.36)***	0.482 (3.78)***	0.541 (6.26)***
GDPG	0.1045 (2.31)**	0.104 (2.30)**	0.039 (0.87)	−0.001 (−0.04)	0.004 (0.10)	0.005 (0.13)	−0.013 (−0.49)
INTERCEPT	−8.53 (−7.29)	−7.06 (−6.75)***	−6.077 (−6.02)***	−3.99 (−5.37)***	−5.52 (−3.35)***	−3.35 (−4.99)***	−3.28 (−6.48)***
N(*Total*)	187	182	162	160	160	156	249
N with positive analyst coverage	140	140	120	88	91	91	140
%	92%	92%	78%	58%	59%	59%	92%
Log likelihood	−66.29	−64.419	−67.8	−77.022	−92.036	−82.69	−141.10

*, **, and *** refer to significance at the 10%, 5%, and 1% levels, respectively.

Healy, Hutton, and Palepu (1999) that analysts are less likely to be attracted by firms in countries with poor disclosure standards. They also stress the importance of political risk going beyond previous studies that underscore the impact of the legal and extra-legal environment on the extent of analyst following (Haw et al., 2004b).

The coefficients associated with extra-legal factors (*COMPETITION* and *NEWSPAPER*) are significantly positive, indicating that extra-legal institutions play a critical role in analyst following of privatized firms. This is consistent with the existing evidence that extra-legal institutions perform as important a role as legal institutions in restraining private benefits of control (Dyck & Zingales, 2004).

The coefficient related to real GDP growth (*GDPG*) is always positive and occasionally significant. As for our firm control variables, analyst following appears to be positively related to firm size (*LOGSALES*), which is similar to prior evidence related to public firms

Table 7b
Determinants of analyst coverage of privatized firms: First-stage results for the initiation of coverage after excluding financial firms This table presents the first-stage model (using Heckman's (1979) two-step procedure) of the determinants of analyst following, which is a probit model that determines when the dependent variable in the second stage is not missing. The dependent variable is a dummy that equals 1 if the firm is followed during the three-year period after privatization, and 0 otherwise. *Z* values are reported in parentheses. The definitions of the variables are described in Table 3.

Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)
POLRISK	0.079 (4.54)***						
CORRUPTION		0.61 (4.06)***					
EFFICIENCY			0.168 (2.25)**				
DISCLOSURE				0.043 (4.67)***			
COMPETITION					1.17 (3.09)***		
NEWSPAPER						0.423 (3.09)***	
LEGAL							0.269 (1.05)
STRATEGIC	−0.095 (3.52)***	0.246 (0.81)	0.203 (0.64)	0.22 (0.72)	0.302 (1.15)	0.292 (1.06)	0.60 (2.91)***
LOGSALES	0.596 (3.52)***	0.674 (3.90)***	0.823 (4.37)***	0.368 (2.29)**	0.358 (2.78)***	0.497 (3.47)***	0.477 (4.85)***
GDPG	0.155 (2.73)***	0.138 (2.57)***	0.067 (1.29)	0.0018 (0.19)	−0.021 (−0.52)	−0.004 (−0.01)	0.001 (0.06)
INTERCEPT	−9.73 (−6.56)***	−7.32 (−5.91)***	−6.58 (−5.43)***	−4.43 (−5.09)***	−7.75 (−4.10)***	−3.39 (−4.65)***	−3.01 (−5.46)
N(*Total*)	139	134	118	128	136	128	190
N with positive analyst coverage	103	103	87	71	74	74	103
Log likelihood	−46.26788	−46.53	−48.152	−54.27	−75.96	−64.82	−108.69

*, **, and *** refer to significance at the 10%, 5%, and 1% levels, respectively.

(Lang & Lundholm, 1996; Lang et al., 2004). The coefficient associated with *STRATEGIC* is marginally significant in two out of seven regressions.

Overall, these results indicate that the institutional environment is indeed related to the likelihood that analysts initiate coverage of privatized firms and that political risk is a material determinant of such decisions. These results enrich the cross-country literature on the factors that determine the extent of analyst following of privately owned firms by examining the decision to initiate coverage.

Tables 8a and 8b reports the results of the second-stage equation. The legal and extra-legal variables all load positive and significant, as in the first stage, except for *LEGAL*. This suggests that the quality of the institutional environment is a determinant of both the decision to initiate following and the extent of following thereafter. The coefficient associated with *CONTROL* is positive and significant, indicating that once analysts decide to initiate coverage they are more likely to cover privatized firms whose control has been

Table 8a
Determinants of analyst coverage of privatized firms: Second-stage results for the extent of coverage. This table presents the second-stage (using negative binomial model) procedure of the determinants of analyst following. The dependent variable is the number of analysts following the firms during the three years after privatization. *P*-values are reported in parentheses. Mills is the correction term computed from the probit model in the first stage. κ^2(LR TEST) is the likelihood ratio test that alpha (the overdispersion factor) equals 0. For all models, the associated chi-squared value strongly suggests that the negative binomial model is better than the Poisson. The definitions of the variables are described in Table 3. The *Z* statistics are reported in parentheses.

Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)
POLRISK	0.0182 (1.00)						
EFFICIENCY			0.30 (1.66)*				
DISCLOSURE				0.083 (2.28)**			
CORRUPTION					0.162 (2.26)**		
LEGAL						0.062 (0.22)	
IT ENFORCEMENT							1.35 (4.49)***
RIGHT							0.507 (2.43)**
POLITICAL CONNECTION							0.018 (0.10)
AUDITOR							−0.378 (−1.72)*
STRATEGIC	−0.334 (−1.72)*	−0.89 (−2.70)***	−0.46 (1.72)*	−0.007 (−0.02)	−0.77 (−4.53)***	−0.381 (−1.61)*	−1.23 (−1.74)*
LOGSALES	0.3065 (1.92)**	−0.020 (−0.15)	1.027 (1.21)	0.852 (2.49)**		0.050 (0.32)	−0.46 (−0.50)
ROA		−1.69 (−0.98)					3.59 (4.14)***
ROE	−0.0527 (−0.22)			−0.527 (−1.40)			
SROE			−0.269 (−1.21)				
ROS					0.074 (0.21)		
ADR	0.1595 (0.64)	0.192 (0.51)			0.234 (0.50)	−0.10 (−0.37)	
RECENTP		0.52 (1.94)**	0.065 (0.24)	0.82 (4.1)***	0.857 (4.36)***	0.846 (3.31)***	0.38 (1.77)*
CONTROL	0.354 (−1.85)*						
CONC1		−1.15 (−3.16)***	−1.304 (−2.7)***				−1.39 (−2.09)**
EMP						0.53 (2.09)**	
FOR					0.513 (2.33)**		

(continued on next page)

Table 8a (*continued*)

Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)
STATE				−0.133			
				(−0.39)			
UNDERPRICING		−0.127	−0.102				
		(−2.19)**	(−1.85)*				
κ^2(LR TEST)	327.444***	132.06***	97.42***	326.96***	128.19***	137.59***	127.17***
MILLS	−0.205	−0.52	1.65	2.33	−1.21	−1.004	−2.17
	(0.57)	(−1.84)*	(1.05)	(1.51)	(−4.28)***	(−3.05)**	(−0.79)
INTERCEPT	−0.69	3.39	−7.09	−9.56	1.96	2.06	6.19
	(−0.3)	(2.62)***	(−0.92)	(1.83)*	(4.21)*	(1.85)*	(0.79)
LOG LIKELIHOOD	−311,252	−136.28	−117.92	−281.53	−191.089	−174.93	−184.707
Prob>chi^2	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Pseudo R^2	6%	5%	7%	9%	10%	10%	13.66%

*, **, and *** refer to significance at the 10%, 5%, and 1% levels, respectively.

relinquished by the government. This result suggests that the policy uncertainties surrounding privatization plans play a crucial role in the analysts' decisions to follow privatized firms, which contrasts with evidence in Lang et al. (2004) that government control is unrelated to analyst coverage of public firms.

Tables 8a and 8b also shows that the extent of coverage (i.e., the number of analysts) of privatized firms increases when there is more participation by foreign investors (*FOR*) in Model 5, and employees (*EMP*) in Model 6, suggesting (1) that higher inflows of foreign capital draw more attention from analysts and (2) that more participation of employees implies they agree with the privatization process and, hence, will not oppose the necessary restructuring. The coefficient associated with *CONC1* is systematically negative 1 and significant (at the 1% level mostly). This is consistent with our discussion of the value-added argument where postprivatization ownership will substitute for analyst monitoring, as foreign and institutional investors have incentives to closely monitor managers.

Among additional variables, we control for whether the firm is cross-listed (*ADR*). Lang et al. (2004) suggest that cross-listed firms enjoy greater analyst coverage. We use a dummy variable to identify those privatized firms that put in place an ADR or GDR program at the time of privatization (based on information in Thomson Financial Securities Data). Tables 8a and 8b shows that the extent of analyst following is positively but insignificantly related to cross-listing. *RECENTP*, another variable of interest, seems to matter to financial analysts' coverage of privatized firms, as the coefficient is consistently positive and significant in most models.

The coefficient related to *STRATEGIC* is negative and significant, indicating that privatized firms in nonstrategic sectors attract more analysts than those in strategic sectors. This evidence is consistent with the argument that nonstrategic sectors are less regulated and less exposed to the risk of policy reversal, thus the demand from potential investors in these sectors is high, offering a higher potential for analysts.

Across all models, analyst coverage is negatively related to private ownership concentration, suggesting that the cost of gathering information is higher when ownership is more concentrated. This result is consistent with the findings of Lang et al. (2004) for public firms. The authors document an inverse correlation between concentration of control

Table 8b
Determinants of analyst coverage of privatized firms: Second-stage results for the extent of coverage after excluding financial firms. This table presents the second-stage (using negative binomial model) procedure of the determinants of analyst following. The dependent variable is the number of analysts following the firms during the three years after privatization. *P*-values are reported in parentheses. Mills is the correction term computed from the probit model in the first stage. κ^2(LR TEST) is the likelihood ratio test that alpha (the overdispersion factor) equals 0. For all models, the associated chi-squared value strongly suggests that the negative binomial model is better than the Poisson. The definitions of the variables are described in Table 3. The *Z* statistics are reported in parentheses.

Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)
POLRISK	0.015 (1.08)						
EFFICIENCY			0.245 (1.64)*				
DISCLOSURE				0.057 (1.97)*			
CORRUPTION					0.131 (1.93)**		
LEGAL						0.0365 (0.12)	
IT ENFORCEMENT							0.83 (1.77)*
RIGHT							0.78 (3.29)***
POLITICAL CONNECTION							0.239 (1.40)
AUDITOR							−0.45 (−1.87)*
STRATEGIC	−0.145 (−0.63)	−0.758 (−2.53)**	−0.552 (−1.90)*	−0.089 (−0.28)	−0.415 (−2.69)***	−0.317 (−1.43)	−0.93 (−1.10)
LOGSALES	0.242 (1.76)*	−0.052 (−0.26)	0.533 (0.87)	0.631 (2.12)**		0.235 (1.33)	0.042 (0.06)
ROA							2.10 (1.71)*
ROE	−0.282 (0.90)			−0.33 (−1.06)			
SROE			0.067 (1.79)*				
ROS					0.277 (0.94)		
ADR	−0.079 (−0.3)	0.177 (0.43)			0.142 (0.28)	−0.349 (−1.19)	
RECENTP		0.426 (1.31)	0.213 (0.79)	0.90 (4.12)***	0.849 (4.34)***	0.869 (3.73)***	0.483 (1.89)*
CONTROL	0.444 (2.04)**						
CONC1		−2.33 (−1.91)**	−2.66 (−3.18)***				−0.83 (−0.68)
EMP						0.558 (2.27)**	
FOR					0.565 (2.42)**		

(continued on next page)

Table 8b (*continued*)

Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)
STATE				−0.059			
				(−0.14)			
UNDERPRICING		−0.379	−0.361				
		(−1.72)*	(−1.81)*				
κ^2(LR TEST)	239.49***	98.98***	66.27***	239.14***	89.82***	100.02***	87.55***
MILLS	−0.281	−0.176	1.29	1.31	−1.12	−0.52	−0.65
	(−1.15)	(−0.52)	(1.15)	(1.11)	(−4.73)***	(−1.56)	(−0.27)
INTERCEPT	−0.16	3.23	−3.40	−6.07	1.71	0.585	2.047
	(−0.10)	(2.40)**	−0.62	(−1.39)	(4.33)***	(0.47)	(0.34)
LOG LIKELIHOOD	−243.54	−104.67	−92.68	−235.24	−160.135	−163.056	−136.54
Prob>chi^2	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Pseudo R^2	5.4%	4%	7%	8.5%	10.5%	11%	11.27%

*, **, and *** refer to significance at the 10%, 5%, and 1% levels, respectively.

by family/management groups and the extent of analyst coverage. Profitability (*ROS*) is positively related to analyst following, although generally insignificant. Alternative measures of profitability, *ROA* and *ROE*, are also insignificant. Controlling for the variability of earnings through *SROE* (Model 3) does not add to the explanatory power of the model either.

Dewenter and Malatesta (1997) show that privatizations are, in general, more underpriced than privately owned issuing firms (IPOs). Thus, we include, in Models 2 and 3, the level of underpricing as an explanatory variable. The coefficient associated with *UNDERPRICING* is negative and significant, which runs against the evidence about IPOs in Rajan and Servaes (1997), who document that more underpriced private IPOs attract more analysts. However, this result can be rationalized on the grounds that governments' objectives from underpricing SIPs are different from those pursued by private issuers in IPOs. More precisely, as discussed previously, governments underprice shares to build political support rather than to signal that the firm is of a higher quality type (Biais & Perotti, 2002; Jones, Megginson, Nash, & Netter, 1999; Lam et al., 2007; Perotti, 1995).

In Model 7 of Tables 8a and 8b, we add new control variables that represent alternative proxies for the political risk embedded in privatization, namely political connections and the political orientation of the government. We also control for insider trading enforcement that captures one aspect of the enforcement law system and, finally, for the quality of auditors that may proxy for the quality of the firm. These additional controls are measured and introduced later.

Following Boubakri, Cosset, and Saffar (2008), we determine the presence of political connections in NPFs by examining the composition of their respective board of directors and supervisory boards (when they exist), and we trace the political background of these directors. We then construct a dummy variable, *POLITICAL CONNECTION*, that is equal to 1 if the CEO is connected to political power, and 0 otherwise. The results reported in Model 7 of Tables 8a and 8b show no significant impact of political connections on analyst following.

The political orientation of the government, also introduced in Model 7 of Tables 8a and 8b, can be seen as a proxy for policy risk, since left-oriented governments are more likely to

intervene in the economy and to affect the postprivatization valuation of NPFs. We find that analyst following is positively and significantly related to the right-oriented governments (proxied by a dummy, *RIGHT*, that is equal to 1 if the government is right-oriented and left otherwise). This confirms that, under left-oriented governments, firm valuation and future forecasts are more difficult than under right-wing governments. The negative sign associated with left governments (i.e., positive effect of right governments on analyst following) suggests that analysts' extraction of information is more costly under left-wing governments. This result is new to the literature and suggests that analysts' decisions are also impacted by the prevailing political environment.

Additionally, following Bushman et al. (2005) and Bhattacharya and Daouk (2002), we measure the enforcement of insider trading laws with an indicator variable as follows: *IT ENFORCEMENT* is equal to 1 if the country enforced its first insider trading laws in calendar year *t* (privatization year), and 0 otherwise. Consistent with the evidence in Bushman et al. (2005), we find in Tables 8a and 8b that the decision of analysts to follow privatized firms is positively and significantly related to the initial enforcement of insider trading laws.

Finally, we introduce a dummy variable, *AUDITOR*, that is equal to unity for firms with Big Four auditors, and 0 otherwise. On the basis that audit quality relates positively to unobservable financial reporting reliability (e.g., Behn, Choi, & Kang, 2008, and others), we expect the variable to be positively correlated to the extent of coverage of NPFs. We find a negative coefficient, but it is only marginally significant (at 10%).

5. Conclusion

Over the last 25 years, privatization has become an important economic phenomenon worldwide. A large body of empirical studies emerged to determine the financial and operating performance of firms after privatization, but little has been done to assess the valuation of these firms. While many studies investigate the determinants of privatization on stock market development, for instance, little is known about how these firms are perceived by investors or financial analysts. To the extent that financial analysts play a significant role in capital markets as information providers to investors, the study of the initiation of their coverage of privatized firms is both timely and necessary. To examine this issue, we conduct an analysis to determine what factors affect the decision of financial analysts to follow privatized firms and what determines the extent of analyst following across firms in the particular context of privatization.

We document several interesting findings. First, we show that the quality of the institutional environment plays an important role in the analysts' decisions to follow a privatized firm. Analysts are more likely to initiate coverage of privatized firms that operate in countries with less political risk, more efficient judicial systems, and better information disclosure. This result suggests that analysts are attracted by privatized firms located in environments that favor foreign investors as documented in Boubakri et al. (2007). Hence, this finding supports the fact that the behavior of analysts provides insight into the activities and beliefs of investors. We also find that extra-legal institutions, such as product market competition and press diffusion, affect positively the decision of analysts to follow privatized firms. In addition, analysts are more likely to follow larger privatized firms.

Our results from the second-stage estimation indicate that the extent of analyst following is more important when the government is less involved in privatized firms, when there is more participation by foreign investors and employees, and for firms in nonstrategic sectors. This finding, new to the literature, suggests that although privatized firms are well known, the risk related to uncertainties about government commitment is an important factor that determines the extent of analyst following.

Furthermore, the extent of analysts' coverage is negatively related to ownership concentration in recently privatized firms (which are often larger) compared to those privatized earlier in the process. In contrast to evidence on private issuers during IPOs, we document that analyst following is negatively related to underpricing. Another new insight from our study is that the political environment and the government political ideology play important roles in financial analysts' choices. For instance, when we control for the ideology of the government, left-oriented versus right-oriented, we find a negative sign associated with left-wing governments (i.e., positive effect of right-wing governments on analyst following), which suggests that analysts' extraction of information on firm valuation and future earnings forecasts is more costly under left-wing governments. This result is new to the literature and suggests that analysts' decisions are also impacted by the prevailing political environment, which opens an avenue of future research.

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