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Effects of Privatization Transaction Strategy on Performance:
An Examination of Large-Block Shareholding and Hybrid Governance Structures
in Developing Economies

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A Thesis

in

The John Molson School of Business

Presented in Partial Fulfillment of the Requirements
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Abstract

Effects of Privatization Transaction Strategy on Performance:
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by

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Using a microanalytic perspective this dissertation extends the traditional agency theory approach to include a transaction cost framework in examining privatization performance. The basic proposition offered here is that the transaction-specific characteristics of privatization strategies differ in their ability to consolidate (concentrate) ownership and initiate corporate restructuring, and this variance has implications for performance. Hybrid governance is advanced as an organizational implication of trade sale privatization with relevance for subsequent corporate restructuring when transacting under conditions of asset specificity and uncertainty, and is expected to improve privatization performance. This novel hypothesis, along with others, was tested successfully on longitudinal data for a larger sample of developing and emerging economy fixed-line telecommunications operators privatized between 1981 and 1998. Change in telecommunications service provision pre- and post-privatization was used to assess performance in this analysis.

A central finding is that hybrid governance predicts privatization performance and these "firm effects" go beyond pure "ownership effects" in

capturing additional variation hitherto unexplored in the literature. Specifically, performance benefits of privatization transaction strategy depend upon not only large foreign blockholdings but also the introduction by these owners of hybrid structures, such as joint ventures or complex consortia arrangements.

This study is the first to advance a multidimentional construct of privatization implementation, both as an incremental process and comprised of different strategies with unique characteristics, and examine it using a dynamic multilevel model to capture observed yet unexplained performance variance. Also, this research is one of the few statistical studies to examine privatization performance longitudinally, while the sample is one of the largest, to date, drawn from a developing and emerging economy context.

To:

My parents for inspiration and support, all the way through;

and Rick for direction, in this period.

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1. INTRODUCTION

1.1. Corporate Governance Research

Strategy and organization theorists recognize corporate governance as an important area, examining numerous features of governance systems along with a range of important organizational outcomes. However, research has downplayed the role of ownership and organizational performance (Kang & Sorensen, 1999).

This research appears to take "managerialism" for granted, that ownership and management control in the modern corporation are effectively separated. The Berle and Means (1932) thesis, now well established in the literature, though grounded in a U.S. empirical base, maintains that dispersion of ownership among a large number of shareholders in large corporations will result in the separation of ownership and control, allowing managers to pursue their own interests rather than those of shareholders. With numerous 'solutions' for this agency problem advanced[1], research in strategy and organization on corporate governance has focused on various aspects of management compensation and board structure and monitoring.

Sampling larger U.S. firms, research on top team compensation, separation of Chairman and CEO positions, and social networks found across these firms has been used to predict corporate value, stock repurchase, board involvement, and internationalization, with ownership – be it management, director, or institutional – treated primarily as a control or moderating variable in this relationship (Carpenter & Westphal, 2001; Westphal & Zajac, 1998; 2001; Conyon & Peck, 1998; Sanders & Carpenter, 1998).

[1] Other mechanisms for corporate governance include executive labour markets and takeover and bankruptcy threats.

Corporate governance research in financial economics continues to question the role of ownership in understanding control of the firm, though empirical work on corporate ownership and performance continues to produce mixed results. Attention to the role of the controlling shareholder in particular is growing. Evidence suggests that such large-block shareholders are not homogenous, that certain types of owners have a disproportionately large impact on corporate governance. (This perspective is addressed in greater detail in the theoretical section, below.)

Empirically, large-block shareholders are widespread and very substantial where present, in many of the wealthiest economies (La Porta, Lopez-de-Silanes, & Shleifer 1999)[2]; even to some extent as observed in the United States (Shleifer & Vishny, 1986). Largely, this research calls into question the empirical validity, or at least the generalizability, of the Berle and Means' (1932) image of the modern corporation as lacking substantial owners, run by professional managers unaccountable to shareholders (Kang & Sorensen, 1999). Indeed, as research on corporate governance extends beyond a U.S. empirical base more generally the pervasiveness of concentrated ownership structures will likely be recognized further.

[2] La Porta et al (1999) examine the most important (in terms of market capitalization) large- and medium-sized public firms in 27 of the wealthiest economies in 1995-1996. These authors, as well as others in recent years, have begun to question the empirical validity of the Berle and Means (1932) image of the modern corporation as one run by professional managers unaccountable to shareholders. They ask, how common are widely-held firms in different countries, as opposed to firms that have owners with significant voting rights (controlling shareholders)? The authors categorize firms as having ownership structures that are either widely-held or present an ultimate owner, a controlling shareholder. Five ultimate owners are identified: family firms/large individual investors, the state, widely-held financial institutions, widely-held corporations, and miscellaneous. The authors do not examine the ownership structure of wholly privately-held or wholly state-owned firms, foreign affiliates where at least 50% of voting shares are held by a single foreign corporate owner, banks or utilities. Would that the ownership structure of all these companies be examined, along with smaller firms, the general population of firms might show concentrated ownership structures to be by far the rule and not the exception. Certainly, in defining firms as public corporations, with shares listed on the stock exchange, restricts initially any understanding of ownership structure as a general phenomenon, as even the minimal increase in level of atomized shareholdings results in a decrease in ownership concentration directly.

Who are these large shareholders, these "ultimate owners" of large corporations? They are corporate investors (i.e. other firms), institutional investors, family holding companies, large individual investors, and the state. Similar large-block shareholder types have been identified in the empirical literature on privatization and corporate governance in the transition economy context (Claessens, 1997; Djankov, 1999; Makhija & Spiro, 2000).

In focusing on how ownership patterns and variation affect firm performance, it is perhaps not unexpected that perspectives in financial economics contribute so heavily to mainstream research on privatization and performance. After all, privatization in a strict sense implies a change in firm ownership, from state to private (Villalonga, 2000). More importantly, and for our purposes here, the context of privatization offers a suitable unit of action to extend further the research agenda on ownership and corporate governance.

1.1.1. Privatization Debate

The impact of privatization on performance has been both a central policy issue in many countries and an emerging line of inquiry in financial economics. The most recent debate has focused on the failure both of privatization policy to produce the economic outcomes initially predicted and empirical research to produce consistent results on privatization performance. In this way, questions remain for research on corporate ownership and performance as well as privatization and performance.

A consensus of sorts is forming among privatization practitioners that lack of positive outcomes in certain developing economies may be due to an over reliance on large-scale market-driven

mechanisms at the expense of institution-building for governing firm-led restructuring (Nellis, 1999).

Corporate restructuring occurs with a major rearrangement of shareholder claims, possibly including a change in control. Privatization shifts the distribution of equity ownership and presents an opportunity for a major rearrangement of shareholder claims. Yet it is the privatization method or implementation strategy that largely determines whether a change in control takes place, thus, the likelihood of further enterprise restructuring and subsequent performance effects.

Though management scholars tend to lack interest in privatization (De Castro, 1997a) contributions are being made by certain corporate governance scholars to improve research in this area. Key insights may be summarized as follows: Spicer, McDermott and Kogut (2000) find the mismatch between privatization policy and outcome to rest with inappropriate theory; Zahra, Ireland, Gutierrez, and Hitt (2000), identify incomplete conceptual modeling with underdefinition of the privatization construct itself; while Villalonga (2000) recognizes mixed results in the empirical literature on privatization performance and threats to theory validity to lie with unsuitable research design.

Discourse for these scholars center on how privatization can be implemented successfully: how much privatization affects restructuring and what organizational dynamics are involved (Villalonga, 2000) or how new owners actually carry out the restructuring process and which owners are best suited for this (Spicer et al, 2000); and how privatization strategies and their unique characteristics may impact performance differently (Zahra et al, 2000).

Our research joins the ongoing debate in seeking conceptual development and construct refinement as well as improved research design and metrics to provide more evident linkage between privatization strategy, corporate restructuring, and performance. Importantly, we ask three fundamental research questions, which concern scholarship on corporate governance in financial economics and strategy and organization: 1) does privatization strategy matter?, 2) do ownership effects matter?, and 3) do firm effects matter?

We advance a microanalytic perspective from a contractual view of economic organization to shed some light on these questions. Our perspective extends a traditional agency theory approach to include a transaction costs economics (TCE) framework in examining privatization performance. Relevant learning arguments are also put forward to complement the TCE approach. The basic proposition is that the transaction-specific characteristics of privatization strategies differ in their ability to consolidate (i.e., concentrate) ownership and introduce appropriate governance structures, and this variance has implications for performance.

The literature review, conceptual framework, and hypotheses are presented in Chapter 2. Sample, data, measures and models are put forward in Chapter 3 on methods. Chapter 4 presents the results of the empirical tests, and Chapter 5 concludes with a discussion and suggesting for future research.

Before turning to the literature, basic definitions and some description of privatization are provided.

1.1.2. Privatization Definition, Strategies, Trends

Privatization is defined as the partial or full transfer of an equity stake in a state-owned enterprise, to the private sector by the sale of ongoing concerns. As a process, privatization often occurs incrementally, in a series of transactions over time. Two common privatization strategies are recognized (Megginson, Nash, Netter, & Poulsen, 2000): 1) share issue privatization (Jones, Megginson, Nash, and Netter, 1999), the transfer of equity through a public offering; and 2) trade sale privatization, the transfer of equity to another firm or group of investors (i.e., a consortium of investors). A third strategy, limited to certain transition economies, is voucher privatization, the transfer of equity in the form of exchangeable vouchers, distributed to citizens, and convertible into shares in state-owned enterprise.

The modern era of privatization began in the early 1980s, following significant expansion in state ownership during the 1960s and 1970s, and since, has continued worldwide (Ramamurti 1992; Kikeri, Nellis & Shirley, 1994; Megginson & Netter, 1998).[3] To date, more than one hundred countries have privatized an estimated 75,000 state-owned firms (Nellis, 1999). In the last decade (1990-2000) alone, over $930 billion (USD) in proceeds have been generated internationally from sales in a broad range of industries, including manufacturing, banking, defense, energy, transportation and utilities, such as telecommunications (Mahboobi, 2001).

Though privatization is now a global phenomenon, there are important differences in the way privatization is implemented in developed and developing economies (including emerging as well

[3] Modern privatization programmes are associated with initiatives by the Thatcher government in the United Kingdom during the early 1980s, though it was the Federal Republic of Germany that launched the first large-scale 'de-nationalization' programme of the postwar era, with the 1961 public share offering in formerly state-owned enterprise, Volkswagen (Megginson & Netter, 1998).

as transitional economies).[4] According to Organization for Economic Cooperation and Development (OECD) figures, throughout the 1990s, public offerings were the dominant method of sale in OECD (i.e., developed) countries. In marked contrast, in non-OECD (i.e., developing) countries public offerings accounted for only a small portion of proceeds as trade sales continue to be the main method of sale; likewise, foreign direct investment was by far the largest contributor to such proceeds. Some non-OECD (developing) governments have adopted a "mixed" method, a combined trade sale and follow on share issue.

For many developing economies share issue privatization has less relevance. Local capital market conditions along with regulatory and governance (legal) institutions remain weak, thus, the market-based infrastructure (Kikeri, Nellis & Shirley, 1992) associated with efficiency in the market for shares is lacking. Trade sales or the market for firms and partners has more relevance for privatization in these economies.

[4] Henceforth, the term 'developing' economies is used inclusively, and refers to economies specified as 'emerging' or 'transitional' (i.e. in Asia and Central Europe, for instance) as well.

2. LITERATURE REVIEW

In this chapter, core assumptions and specific weaknesses in mainstream privatization research are distinguished, and a conceptual extension offered that identifies cogent linkages with management research on governance in organizational economics and inter-organizational networks.

2.1. Empirical Research in the Privatization Literature

General Perspectives

2.1.1. Comparing Public And Private Ownership Effects

Villalonga (2000) [5] presents a metareview of the privatization literature and from this concludes that a mismatch exists between privatization theory, evidence and research approach. This author defines privatization as the sale of a state owned firm to the private sector and corporate performance as the firm's financial and operating efficiency, and reviews over 150 articles as relevant to the privatization performance relationship.

Two basic approaches to empirical work are distinguished. One large body of research consists of cross-sectional regression studies on ownership effects comparing public (i.e., state or government) versus private owned firms in a given period of time in industries in which they coexist. Frequently cited research with reviews of their own include Borcherding, Pommerehne,

[5] Some discussion details are taken from related arguments in Cuervo and Villalonga (2000).

and Schneider (1982), Millward and Parker (1983), Vickers and Yarrow (1988), Boardman and Vining (1989), Martin and Parker (1997), among others.

Villalonga identifies the limitation of this approach in that what is actually studied is whether private ownership leads to higher performance than state ownership. The fundamental problem being this addresses only part of the research question, whether privatization leads to improved performance. Superior performance of private versus public ownership is only a necessary condition for establishing a positive relationship between privatization and performance, but not a sufficient condition. This is because the public-private ownership distinction is primarily a static approach to investigating privatization, which is by definition dynamic, a change in firm ownership, from state to private. Consequences of a static approach, the author concludes, are ambiguous results with empirical evidence not always supporting theoretical predictions on privatization as a dynamic phenomenon, and flawed conclusions may be drawn. Though no elaboration is given in the author's survey, we identify Boardman and Vining (1989) as a good exemplar of the static public-private ownership approach, along with inherent problems for concluding on privatization.[6]

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[6] A good example of a public-private ownership distinction approach not elaborated in the survey is shown in Boardman and Vining (1989). The authors test property rights theory based on a comparison of efficiency and profitability performance on a cross-section of 57 state owned enterprise, 23 mixed enterprise (where part of stock is in private hands and part in public hands), and 409 private corporations, drawn from a population of 500 largest non-US industrial firms, or manufacturing and mining corporations competing in the international marketplace. Ownership is measured using dummy variables for state owned enterprise and mixed enterprise, with private enterprise as the benchmark; competitive/regulatory environment and firm-specific aspects are controlled for as well. They recognize that little theoretical work or empirical evidence exists on performance of mixed enterprises. They report that large industrial mixed enterprise and state owned enterprise perform substantially worse than private corporations, after controlling for a wide variety of factors. Results based on ordinary least squares regression show that on all profitability measures mixed enterprises perform no better and often worse than state-owned enterprises; and for certain efficiency measures either mixed enterprise do better than state owned enterprise or no difference is found. They conclude performance differences between public and private companies to exist in competitive environments. They extend further: "(T)he results also suggest that partial privatization where government retains some percentage of equity..., may not be the best strategy for governments wishing to move away from reliance on SOEs (state owned enterprise). It is impossible to consider at length here the reasons why the ME (mixed enterprise) form may be so problematic"; though they recognize mixed enterprise to come in many forms, to vary in extent of government ownership and

Villalonga attributes mixed results in the literature, generally, to other factors as well: 1) inadequate control for competitive and regulatory effects when examining privatization performance across industries and countries (see, Vickers and Yarrow, 1988); 2) inappropriate use of profitability measures in less competitive contexts, profitability being an outcome of both productive efficiency and market power (see, Millward and Parker, 1983), along with the general variety of efficiency concepts used, making comparisons of performance outcomes across studies difficult[7]; and 3) lack of generalizable results on privatization performance from developed economies to contexts with inadequate supporting policies and institutions[8].

The author's review of this body of research shows cumulative evidence that privately owned firms outperform state-owned firms, however, given limitations of a comparative ownership approach to privatization. Villalonga judges the evidence inconclusive.

2.1.2. Examining Privatization Effects

Villalonga (2000) distinguishes a second approach, a small body of research on privatization effects within firms (i.e., actual divestiture of state ownership to the private sector, not simply a comparison of state versus private ownership between firms). This work consists of case studies

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dispersal of private share ownership, and certain agency problems in joint ownership; then conclude, that "(i)n summary, partial privatization may be worse, especially in terms of profitability, than complete privatization or continued state ownership". (1989:26). One observation is made here. The public-private ownership distinction is more limiting in this study as the mixed enterprise dummy is paired with inadequate sample representation (MEs as 5% of the sample) on this relevant variable is likely to reduce statistical power for the significance tests, which may have implications for the specific conclusions drawn.

[7] The definition of performance is recognized as contentious for management scholars (Barney, 1996) and problematic in studying state owned firms (Ramamurti, 1996).

[8] In certain privatization contexts, institutional infrastructure may be lacking in the form of stable legal frameworks for property rights and bankruptcy, capital markets with effective control capacity, or efficient input and output markets; this also lessens confidence on the applicability of research approaches to privatization.

(see, Galal, Jones, Tandon and Vogelsang, 1994; Ramamurti, 1996), certain quantitative work on privatization in the United Kingdom, few with samples large enough for statistical analysis, more recent investigations using larger samples and traditional regression to examine privatization effects in transition economies (see, Barberis, Boycko, Shleifer & Tsukanova, 1996), as well as longitudinal studies on firms in developed (Megginson, Nash, and Van Randenborgh, 1994) and developing economies (Boubakri and Cosset, 1998).

The author concludes that as in the case of cross-sectional studies, the evidence from longitudinal research is not totally conclusive either. Lack of generalizable empirical results and paucity of statistical analysis using longitudinal design, are detrimental for this small body of research. Practitioner accounts summarizes results, generally, this way. There is convincing evidence that privatization yields positive results in industrial and middle-income countries, and mixed evidence for positive effects in lower-income and transition countries (Nellis, 1999).

Moreover, Villalonga argues, even once factors attributed to mixed results are taken into account observed variance in the effects of privatization on performance remains substantial, and this unexplained variance, in and of itself, merits investigation. The author proposes organizational factors to be likely intervening variables in the privatization-performance relationship[9], and claims these dynamic considerations must be differentiated from the public-private ownership distinction in order explain additional observed performance variance. Villalonga indicates that only few researchers appreciate the privatization performance relationship to hinge on organizational restructuring (Boycko, Shleifer & Vishny, 1996) and an internal adjustment process (Martin & Parker, 1997).

[9] Villalonga (2000) suggests that political factors may also present as intervening variables.

Add to this more recent attention by strategy and organization scholars that proposes improved understanding of different types of privatization, such as privatization strategies and their unique characteristics, to likely offer additional help in explaining a major source of variation in the observed results of privatization (Zahra, Ireland, Gutierrez, & Hitt, 2000)

The survey by Villalonga is wide-ranging in scope and identifies key weaknesses for empirical work on privatization in terms of research design. However, the author's review is heavily weighted on research from the 1970s and 1980s[10], drawing importantly on research streams in public choice economics as well as industrial and regulatory economics, and includes privatization as defined as deregulation, market-based competition, and contracting-out of public sector services to private providers

The more recent stream of privatization research is grounded in a financial economics perspective on corporate governance and is more singularly focused on the relationship between equity ownership and performance. We review and assess this body of research from the 1980s and 1990s along with implications for examining privatization next.

Financial Economics Approach to Privatization

Generally, the financial economics approach to corporate governance is to examine either actual individual firm performance and relate this to changes in ownership or to examine market-based performance, such as stock price, and relate this to changes in ownership (Claessens, 1997). This general approach has been applied to the privatization performance relationship as well.

[10] Over 80% of articles surveyed are published in this period; the survey might be scaled down to rely more on inclusion criteria such as highly cited articles and peer-reviewed scholarly outlets.

2.1.2.1. Privatization Event Effects on Efficiency

One group of studies considers privatization an event[11] and uses matched-pair design and longitudinal data on performance to test whether differences exist within firms between pre- and post-privatization performance (Megginson, Nash, & Van Randenborgh, 1994; Boubakri & Cosset, 1998; D'Souza & Megginson, 1999)[12].

In the Megginson programme, partial or full privatization is examined using the firm as unit of analysis. Though a sizeable number of firms in these studies privatized incrementally, in a series of transactions over time, only one privatization event per firm is measured, as the year in which the privatization event takes place. Financial and operating efficiency is examined along at least seven different variables over a six-year timeline surrounding the privatization event (years -3 to −1 and years +1 to +3). Univariate analysis is used to test for performance differences on larger multi-industry and multi-national samples drawn over a series of years (collectively, from 1961 to 1996); the study by Boubakri and Cosset (1998) examines firm performance in developing economies, while Megginson and colleagues (Megginson, Nash, & Van Randenborgh, 1994; D'Souza & Megginson, 1999) examine privatization in industrial countries primarily.[13]

Full sample results across these studies show consistent privatization performance improvement. Subsample analysis presents greater improvement for control privatization more generally (as measured using a dummy variable to indicate no state ownership residual), and, in particular, as it

[11] Other privatization research using actual event study methodology also exists (Megginson, Nash, Netter, Schwartz, 2000; Eckel, Eckel, & Singal, 1997).

[12] The study by Dewenter and Malatesta (2001) may be grouped with the research progrmme of Megginson and colleagues as well.

[13] Pre- and postperformance is compared on 61 firms from 18 industrialized countries privatized during 1961 to 1990 (Megginson, Nash, & Van Randenborgh, 1994), on 79 firms from 21 developing countries privatized during 1980 to 1992 (Boubakri & Cosset, 1998), and on 85 firms from 28 industrialized countries privatized during 1990 to 1996 (D'Souza & Megginson, 1999).

occurs in more developed economies. Performance also improves more for companies in non-competitive/highly-regulated industries, such as telecommunications and utilities (competition as measured using an indicator variable, or industry dummy).

Strength of this research programme is empirical generalizability in terms of scope in time, industry and country breadth. In addition, these longitudinal studies on privatization effects are notable for their statistical nature given the paucity of such investigation in the literature.

However, the focus on extensive firm-level financial and operating performance for larger multi-industry and multi-country privatization samples places certain data constraints on the research design, which have implications for sample selection.

To obtain comprehensive firm-level performance data the Megginson programme relies importantly on prospectus documents, as part of disclosure requirements for privatization public offerings, thus, examines share issue privatization only.[14] Though trade sales are by far the predominant method of privatization implementation in developing economies, these initiatives are not studied as the privatized firm may no longer remain independent and *ex post* firm-level performance data may not exist. Clearly, this research strategy results in sample selection bias.

Furthermore, in placing such rigorous data requirements concerning firm-level performance this research approach limits representative sampling further as developing economy privatization observations are unlikely to present reliable and comparable performance data. Often performance data is missing, either *ex ante* or *ex post* transaction, is of relatively poor quality, or is not fully reflecting international accounting standards. Possibly these contexts have

[14] The sample in Boubakri and Cosset (1998) is not entirely comprised of share issue privatization, certain trade sale observations are included.

experienced economic restructuring with dramatic relative price changes, making performance measurement even more difficult. The result is for many developing economy privatization observations to simply fall from the sample.

Overall, research design and sampling strategy limited to share issue privatization exclusively, and firm-level performance narrowly, though multi-national and multi-industry in focus, lacks certain generalizability to developing economy contexts. Restricting empirical investigations in this way also confines the privatization construct to the market for shares, and limits understanding of privatization to public share offerings and secondary trading, though other ownership effects or dynamics may exist.

Other concerns for this research design include inadequate control for temporal effects, inherent in time-series data, and competition and regulatory effects when using industry dummies (i.e. telecommunications and utilities industries to proxy for low competition/high regulation). Improved metrics for these control variables would enhance research design for examining privatization performance longitudinally.

The empirical study by Villalonga (2000) also investigates privatization as an event. The author uses panel design and longitudinal data on performance to test for organizational, political, and dynamic effects of privatization on efficiency, controlling for industry and firm-specific variables, in a sample of 24 Spanish firms privatized between 1985 and 1993.

Pre- and post-privatization performance is measured for a timeline ranging from 7 to 14 years: between 3 and 5 years *ex ante* privatization, and between 3 and 8 *ex post*. Effective privatization is defined as a control event and measured as the year in which the state becomes a minority owner. Two privatization effect variables are used to measure dynamic implications on

performance: a post-privatization dummy variable to capture differences in performance levels pre and post event (taking a value of 1 in the control event year and every year thereafter); and a temporal-privatization interaction variable to capture changes in performance trends over time, with time measured to indicate the year within the pre-post privatization timeline (a discrete variable taking a value increasing by 1 for every year after the control event).

Four separate tests are conducted and three distinct econometric models estimated using two different techniques; only specification issues of interest are discussed here, other details are omitted.[15] The regression analysis shows unusual results: evidence for privatization to have both significantly positive and negative effects on efficiency and for efficiency to be significantly positive and negative both pre- and post-privatization. These results document significant fluctuations in performance over time, despite privatization. From this Villalonga rejects a general proposition in the literature that privatization increases efficiency, and confirms the author's own that efficiency effects are contingent upon the time period considered.

Major contributions are made in Villalonga by examining privatization performance longitudinally and dynamically using panel design and appropriate econometric estimation techniques. To date, this empirical study is likely one of the most advanced statistical investigations of privatization effects on a larger sample of firms.

One shortcoming is lack of generalizability beyond the country context of Spain. Yet, better access to data is the chief benefit for country-specific studies on privatization. The author obtains extensive firm- and industry-level data using publicly available from numerous sources, including

[15] Concepts and measurement for political and organizational variables are not discussed given exploratory nature these specifications and inconsistent results. Replications of Megginson et al. (1994) univariate tests performed in this study are not discussed as well.

information in government reports from industry agencies, corporate registration offices, company annual reports, and central bank publications.

A fundamental weakness, however, is that Villalonga did not control for transaction-specific variation inherent in incremental privatization. This is a serious shortcoming as incremental privatization is evident (in table 3) for 29% of sample firms, a large subsample of cases. In measuring privatization as a single change-of-ownership (control) event per firm, though additional transactions exist either before or after this event, introduces aggregation bias (as transaction-level data is aggregated to a firm-level of analysis), which means in this study that for a large number cases at least one year of pre-privatization performance overlaps with that of post-privatization performance, confounding the privatization performance timeline. This problem is compounded further in the author's study as the sample also shows data on post-privatization performance to be lacking. In 37% of cases there exists no performance data for years +5 through +8 (these matters are related, as an eventual control transaction may come later, thus be more recent and likely to lack post-privatization data). In consequence, for many firms not only is performance timeline confounded but also little post-performance data exists for analyzing privatization effects. In this study, most unusual results (see, table 5) are shown for multiple transaction cases and these years.[16]

Inability to control for industry effects in key models and aggregation bias for transaction variation in particular, along with unbalanced panel data may have contributed to weaker and/or

[16] Summary data shows 29% of panel cases (firms) to privatize incrementally with multiple transactions (ranging from 2 to 6) over a series of years, and 37% of cases to have no post-privatization performance data for years 5-6 and beyond; these matters are related, as later series transactions tend to be more recent, thus lacking in post-privatization data. As privatization is measured at firm level as a single transaction, for many of these cases, pre- and post-privatization performance effects are confounded; for certain of these and many others little data exists for post-privatization effects on performance to be analyzed. Many unusual results are on the subsample with multiple transactions or in post-privatization years 5-6 and 7-8 where little data exists.

spurious results, with inappropriate conclusions drawn. Boubakri and Cosset (1998), also measure privatization as a single "change-of-ownership" event though multiple transactions are evident for a large subsample of cases; aggregation bias may have impacted results in this study as well.[17]

Improved research design would rely on neither indirect measures to capture privatization effects (i.e., temporal variables) nor change-of-ownership metrics to adequately differentiate the public-private ownership distinction. To observe the dynamic implications of privatization directly, presents an opportunity for capturing variance in the process of privatization implementation itself, which may contribute to unexplained variance in performance. One important aspect of variance may be observed in examining privatization at the transaction-level. Such that privatization strategy is implemented in an incremental fashion, in a series of transactions over time, a transaction unit of analysis would permit observation of transaction-specific features, along facets of ownership and organization, for instance. This would allow for change and stability over time along these dimensions, disaggregating ownership from organizational effects. Considering multiple levels of analysis and changes in levels of analysis that may occur over time, should serve to improve understanding of dynamically changing organizational phenomena. The transaction level of analysis would also permit a disentangling of pre- and post-privatization performance timelines.

[17] In Boubakri and Cosset (1998), 38% of sample firms, present multiple transactions for which at least one year of the pre-post privatization performance timeline overlaps with that of another transaction for the same firm. Perhaps, market-adjusted performance results (in table I) might have been improved, were incremental privatization effects controlled for along with economy-wide factors, to discern differences in pre- and post-privatization performance.

2.1.2.2. Privatization Ownership Effects on Corporate Value

Another group of privatization studies though more varied is linked to an evolving research agenda on corporate ownership effects and (actual or market) performance. The discourse draws in particular from research by Shleifer and colleagues (Morck, Shleifer & Vishny, 1988; McConnell & Servaes, 1990; Shleifer & Vishny, 1996; 1997) and contrasts with work by Demsetz and colleagues (Demsetz, 1983; Demsetz & Lehn, 1985; Demsetz & Villalonga, forthcoming). These large-sample studies on ownership and performance in U.S. public corporations find mixed results. This work is briefly summarized below.

In Demsetz and Lehn (1985), ownership structure and firm profitability are examined using overall ownership concentration measures, such as the Herfindahl index[18], a measure of dispersion/diffusion, and total ownership for the most important investors[19]. These authors make no distinction amongst largest blockholders and find no ownership concentration effects once controlling for certain firm- and industry-specific variables. Conclusions are drawn that ownership concentration rises to its appropriate level for each industrial context such that it has no measurable effect on performance. In other words, the authors claim that ownership is endogenous and not an independent influence on performance. However, their general approach assumes that ownership structures are in equilibrium and leaves unaddressed the possibility that longitudinal evidence on ownership and performance might show that certain ownership structures may be associated with increased performance (Kang & Sorensen, 1999).

Morck, Shleifer and Vishny (1988) and McConnell and Servaes (1990) examine ownership structure and firm value (market replacement value on assets) and are able to show ownership

[18] The Herfindahl index may be measured as the sum of squared ownership shares.
[19] Most important investors have been defined as the largest or top 5 or top 20 largest shareholders and measured as total shareholdings by these investors.

effects in modeling a curvilinear relationship between ownership and performance (using squared terms and piecewise regression techniques), and in distinguishing corporate insiders from outsiders, and institutional investors. This programme has specified the distribution of ownership beyond a general diffusion concept and a narrow owner-manager agency analytic, and makes a general call for better measurement and classification of large-block shareholding ownership structures.

This research on corporate governance and fragmentation of ownership has shaped subsequent work on privatization and performance in the context transition economies, including the Czech Republic, Russia, and various newly independent states (NIS).

Studies by Claessens (1997) and Makhija and Spiro (2000) examine the relationship of ownership structure and corporate performance on cross-sections of close to 1000 firms (each) that emerge from voucher privatization in 1992 and 1993.

These works relate numerous indicators for overall ownership concentration and large-block shareholders to equity prices (voucher sales prices and secondary trading prices), controlling for firm- and industry-specific variables. Makhija et al (2000) tests for curvilinear effects as well. Identity of large-block shareholders is distinguished by relevant owner classes, including domestic strategic investors, foreign strategic investors, institutional investors, and the State, and measured using continuous variables of total ownership level and majority ownership dummies.

Regression results show consistent evidence for ownership concentration to be significant and positively related to performance; there is evidence for (majority) domestic and foreign strategic investors to be significant and positive as well, though results for foreign strategic investor are mixed. State and institutional ownership is either insignificant and/or negatively related to

performance. Tests for ownership effects using curvilinear modeling show significant (and negative) results for overall ownership concentration, though not for blockholder type, foreign strategic investors.

Strengths of this research design are in larger sample statistical modeling of privatization in a developing economy context, and in obtaining firm- and market-level data to control for non-ownership effects on performance. Comprehensive country-specific data was collected through publicly available investor information published by the Czech Ministry of Finance, Center for Voucher Privatization.

Shortcomings in these studies are cross-sectional design, and a data strategy limited to Czech mass privatization. In this way, the evidence lacks generalizability beyond a single privatization strategy for changing corporate governance important in certain transition economies during the early 1990s. Likewise, limiting the study of privatization to voucher sales fails to extend the privatization construct beyond a market for shares concept (atomized property ownership and secondary trading) though better measurement in blockholder types is used to capture 'ownership effects' in privatized firms.

Improved research design would examine ownership effects for a variety of privatization strategies and use longitudinal data to study dynamic implications of privatization performance.

2.1.2.3. Privatization Ownership Effects on Enterprise Restructuring

A very limited number of studies in this research stream examine ownership effects and enterprise restructuring in privatized firms.

Barberis, Boycko, Shleifer, and Tsukanova (1996) conduct company surveys on a cross-section of 452 Russian (retail) shops privatized between 1992 and 1993 to examine the relationship between new ownership and management and short-run enterprise restructuring. The study relates dummy variables for complete ownership change (new ownership) and management replacement, and traditional measures of management and outside investor ownership to likelihood of renovations, changes in suppliers, layoffs, and extended hours of operation. Regression results show strong evidence for new owners and managers to have positive and significantly effects on restructuring; and little evidence for (simply) outside ownership and management (i.e., inside) ownership effects on restructuring. The Megginson programme also examines management turnover for impact on privatization performance, but finds little (D'Souza & Megginson, 1999; Megginson, Nash, and Van Randenborgh, 1994).

Djankov (1999) conducts surveys on a cross-section of 960 partially privatized industrial (manufacturing) firms sold from 1995 to 1997 in six NIS, including Georgia, Kazakstan, Kyrgyz Republic, Moldova, Russia, and Ukraine to examine ownership structure and active enterprise restructuring. This study relates numerous measures for large-block shareholders to labour productivity, sale of assets, and renovations, controlling for industry; the author also examines the curvilinear relationship between ownership and restructuring using piecewise regression. Percentage of ownership is measured for relevant blockholders including managers, employees, outside local investors, outside foreign investors, individuals, and the state. Regression results show evidence for a significant non-monotonic relationship for management ownership, and for positive and significant foreign ownership effects at high ownership levels only. State and outside local investor ownership are not significant at any level.

Strengths of these research designs are to explore how privatization and privatized ownership promotes firm-level restructuring, and in particular to measure management replacement directly (Barberis et al, 1996). Similar to the privatized ownership and corporate value studies outlined above, these authors contribute in larger sample statistical modeling of privatization performance in a developing economy context.

At the same time, shortcomings include lack of generalizability and cross-sectional design for privatization effects limited to transition economy context in a particular time. In addition, data access is likely too idiosyncratic to offer a general research approach to examine channels through which privatization promotes restructuring. The Russian survey data was obtained from a comprehensive list of firms made available by Russian privatization officials, while NIS survey data was collected through private sector reviews conducted for The World Bank.

Improved research design would examine privatization performance using measures with relevance for new ownership and firm-led restructuring, and access both cross-country and longitudinal data for a larger sample of developing economy privatization observations not limited to a transition economy context.

Strategy and Organization Approach to Privatization

Empirical research on privatization is almost nonexistent outside of financial economics perspectives. Only a few studies by strategy scholars may be identified: Ramamurti (1992) studies economic and country drivers for privatization programmes, while Ulenbruck and De Castro examine country characteristics and privatization 'terms of the deal' (De Castro & Uhlenbruck, 1997) as well as privatization acquisitions and performance (Uhlenbruck & De

Castro, 2000). The brief discussion below is limited to this last study, which examines privatization effects on performance at the firm-level.

2.1.2.4. Privatization Acquisitions and Performance

Uhlenbruck and De Castro (2000) present a mergers approach to privatization and conduct a survey of 170 privatization acquisitions (i.e. trade sales) by Western firms in Central and Eastern Europe (CEE) between 1989 and 1993. The study relates numerous variables on strategic and organizational fit, firm transformation, and state ownership to firm-level performance, controlling for firm-specific variables and premerger performance.

The authors did not measure privatization acquisitions (i.e., trade sale privatization) directly but used these observations as a sample frame; state residual was measured as a percentage ownership remaining. Performance in newly acquired subsidiaries included sales growth, market share, and return on assets and was measured using various Likert-type scales from self-report data provided by high-level management respondents located in the headquarter firms; 'transformation' (i.e. investment intensity) was measured similarly.

Regression results show either no evidence, mixed evidence or conflicting evidence for proposed relationships between strategic fit, organizational fit, transformation, state ownership and performance.

Strength of this research design is in sample selection. Uhlenbruck and De Castro combine two comprehensive and reliable archival datasets on privatization acquisitions, a World Bank privatization database and an Investment Dealers Digest database, to generate a larger sample of developing economy privatization observations. Though the sample is limited to initiatives in

CEE countries, and the population frame draws only on trade sale privatization, the authors extend the empirical literature on privatization to include corporate restructuring and the market for firms.

Major shortcomings in this research are firm-level performance data and measurement. The authors were unable to obtain for this larger developing economy sample secondary data on firm-level performance *ex post* privatization, as these newly privatized firms had become business units of their acquirers. Also, it is possible that turbulence in transition economies more generally may have influenced performance in these privatized firms, and affected measurement reliability. These weaknesses are likely contributors to overall poor results in this study.

Improved research design would extend the data strategy in combining comprehensive privatization acquisition databases to investigate trade sale privatization strategies and corporate restructuring to include objective and reliable data on privatization performance.

2.2. Current Theoretical Perspectives

Property rights/agency theory provide theoretical underpinning for most available studies on privatization (Villalonga, 2000).[20] A theory of privatization has yet to emerge, though recent programmatic initiatives are recognized (Shleifer, & Vishny, 1994; Boycko, Shleifer, & Vishny, 1996).

[20] Application of public choice theory has been used by public administration scholars to examine privatization initiatives including contracting-out of public sector services. This approach conceives privatization as the antipode of government growth, and is most concerned with setting state boundaries. In the research presented here, one aim is to examine privatization in the context of the boundaries of the firm; thus, public choice theory is left unexplored.

In this section, we introduce the logic of privatization as emerging theory then review the mainstream theoretical approach found in the corporate governance literature, which draws, generally, from agency theory as well as from more recent theory-building within this perspective using the large shareholder model. We draw on this mainstream agency approach to introduce five hypotheses on the privatization performance relationship.

In the discussion that follows, a conceptual extension is offered and a novel hypothesis advanced by framing privatization implementation and performance using perspectives from the governance branch of transaction cost theory and complementary developments in strategic management. This framework builds on both strengths and weaknesses in the mainstream agency approach left unaddressed in the privatization literature in theory-building by management scholars.

In our study, by combining the agency view with a transaction costs lens, privatization theory development proceeds along a paradigmatic approach within organizational economics. The advantage here is tractable theory-building in applying conceptual extension along commensurate levels of theory (Klein, Dansereau, Hall, 1994). This is possible as both agency and transaction costs theories are directed at the contractual dimension of economic organization, though with different assumptions as to contract completeness. As a result, theory-building in our study is both practical and appropriate.

2.2.1. Privatization and the Market for Shares

Despite 20 years of privatization initiatives and policy experience worldwide, and a large body of evidence that privatization leads to improved performance, mixed results persist, particularly for

privatization performance in some developing economies (Nellis, 1999). Despite initial enthusiasm by many policymakers, the new debate asks why is that certain privatization policies have not led to the economic outcomes advocates initially expected, and given this mismatch between policy and outcome, is it time to rethink privatization?

Spicer, McDermott and Kogut (2000) argue that to better understand the mismatch between privatization policy and performance a re-examination of privatization theory used to justify and implement important initiatives is needed. The authors assess influential theory-building in financial economics by Shleifer and Vishny (Boycko, Shleifer & Vishny, 1995; Shleifer & Vishny, 1994), and find this approach to privatization to rest upon minimizing the role of the state and maximizing the role of the market.

Spicer et al. describe the logic of privatization[21] as follows: Once private property rights are atomized into the form of tradeable securities, and state ownership and control cut off, a depoliticized 'market' emerges with private entrepreneurship quickly filling the void left by state retrenchment. More specifically, atomized property and tradeable shares create market incentives for 'efficient bargains' to be struck (i.e., opportunities for arbitrage in exploiting information that prices convey); this process allocates securities to those who value them most, and to the eventual consolidation of these shares in the hands of controlling shareholders willing to engage in post-privatization restructuring.

This approach guides policymakers and researchers alike to view privatization as a discrete change-of-ownership, from state to private, and to focus on share issue and voucher privatization

[21] Spicer et al consider the logic of voucher privatization, however, their understanding of the underlying argument in nascent privatization theory has direct relevance for other market(for-shares)-mediated privatization strategies, including share issue privatization.

strategies to delineate, securitize, and distribute property rights, then expect secondary market trading in shares to improve corporate governance and incentivize the restructuring process.

Spicer et al finds this mainstream approach to present an incomplete understanding of privatization restructuring as entrepreneurial transformation[22]. This is not surprising as the logic of privatization conceives privatization as it affects the boundary of the state, primary, and models dynamic processes as organized through market mechanisms, only. In this way, nascent theory-building omits a theory of transformation, more generally, as well as an appropriate theory of the firm, more specifically. Clearly, a more complete understanding of privatization implementation is needed in terms of what structures and processes are involved in the 'private sector' to affect restructuring and performance; this is taken up in section 2.3.

The mainstream agency approach to privatization is elaborated next.

Agency/Property Rights Theory and Corporate Governance

According to Villalonga (2000), property rights and agency theory share a rationale that argues private ownership to be superior to state ownership, and expects privatization to lead to improved performance. Generally, this perspective predicts changes in ownership and corporate governance/incentives and goals, respectively, to result, on average, in improved performance for the privatized firm. These constructs, however, are not well elaborated in the privatization literature.

[22] At issue for these authors is a more appropriate theory of entrepreneurship. The authors address this weakness in theory-building from an institutional perspective (North, 1981; 1990) on entrepreneurship (Schumpeter, 1934), and advance microinstitutional explanations from related insights in sociology and economics using a network and social embeddedness approach (Granovetter, 1985).

2.2.2. General Perspectives

A survey of property rights and agency theory conceptions as they relate to ownership and corporate governance in general may be understood from a review in Kang and Sorensen (1999).

In the "atom of property" of the classic firm, the benefit, use, and disposal rights over assets are fused. In other forms of economic organization "fragmentation" or "separation" rather than fusion is the rule. The notion that property rights are rarely absolute and that benefit, use and disposal rights are often fragmented explains why firms often incur agency costs (Jensen & Meckling, 1976) and transaction costs (Williamson, 1985). Both perspectives seek cost minimization when resolving "appropriation" or "expropriation" concerns that result from separation.

The agency approach recognizes how fragmented property rights may significantly affect firm performance. This perspective views the firm as a nexus of contracts where rights are delegated to the various economic actors, and all contracts are treated as formally alike. The separation of ownership and management control (Berle & Means, 1932) is a particular fragmentation of these rights; the central issue: the inability of shareholders with their limited use rights to capture (i.e. appropriate) various benefit rights. Though separation is often considered the best available organizational design, in the absence of strong corporate governance, firms may suffer in performance when self-interested management pursue their own interests rather than that of shareholders (Jensen, 1989). Managers have opportunities for pursuing their own interests because they have been delegated rights through their contracts to control cash flows and information in their firms. The problem of alignment of the agents' interests to those of shareholders' in order to maximize firm performance has generated an important literature in managerial economics.

Agency costs may be considerable. It is expensive and often difficult for shareholders to gather information to assess managerial actions, and any particular shareholder gains only a fraction of financial benefits produced, proportional to the percentage of equity they own. Collective action problems result, with gains available to all shareholders despite whether each incurred the costs of monitoring management or not. Thus, dispersed shareholders are generally unlikely to participate in corporate governance as costs of participating typically exceed benefits, and because of free riding.

Large-block shareholders, however, obtain sufficient returns to make their participation in corporate governance cost effective, and potentially have an important role in reducing agency costs. This is because large-block shareholders align ownership rights with (management) control rights: these owners have 1) enough financial incentive from cash flow rights to monitor management, providing a partial solution to the free-rider problem, and 2) enough voting rights in corporate governance to put pressure on management to have blockholder interests respected. Thus, firms with concentrated owners are thought to enjoy lower agency costs, resulting in superior performance relative to firms with fragmented ownership (Fama & Jensen, 1983; Jensen, 1989; 1993).

2.2.2.1. The Large Shareholder Model

Shleifer and Vishny (1986) advance a formal model to establish the value of a large shareholder, arguing these owners not only serve as a monitoring force but also help facilitate corporate restructuring and management replacement (i.e. takeover). Indeed, large shareholders are considered a necessary condition for value-increasing takeovers to occur at all. From this model

the authors derive a positive relationship between large shareholder equity participation and firm performance.

The large shareholder model is focused on corporate control transactions of a particular type, where cash tender offers (for stock) are made by large shareholders to other investors in order to replace inefficient management and make valuable improvements. The stock price (premium) reflects, in part, the value of these improvements for different shareholders. The starting point is a firm with shares initially held by a single large shareholder and by a fringe of atomistic shareholders.[23] Subsequent modeling shows under what conditions the large shareholder will further increase holdings to the point of takeover in order to replace management.

In this model current management does its best to maximize performance, yet disappoint, and face possible replacement by outsiders led by the large shareholder, who can offer an improved operating strategy. Large shareholders are assumed to have exclusive access to technology for finding valuable improvements to current strategy through monitoring and independent research. Even if many outsiders have access to the propriety monitoring technology, the presence of a large shareholder is still a necessary condition for the beneficial exploitation of this technology.

Informal negotiation by large shareholders (i.e. using "voice" or "jawboning") with current management is considered sufficient to induce less valuable improvements. Yet replacing current management with the large shareholders' own top management team may be necessary in order to get a significant portion of the gains from monitoring technology and independent research. This is because current management may lack the competence to affect the specific improvements or

[23] The "atoms" are conceived at the shareholder level, thus, at the group level, ownership structure is diffused (as well as concentrated with the presence of the large shareholder).

the ability of the large shareholder to oversee proposed changes may be limited without a controlling block of the firm's shares.

Consolidating shares in the hands of large shareholders, however, is neither profitable as modeled nor easy as illustrated once the ownership structure of the firm is sufficiently diffuse; and corporation founders aside, large shareholder positions must be either accumulated secretly or passed from one group of large shareholders to another.

2.2.3. A Failure in the Market for Shares

Important implications may be drawn from the large shareholder model for privatization strategy. Recognizing that once shareholdings are diffuse, large shareholder positions must be accumulated secretly or transacted between one group of large shareholders to another, this model suggests share issue privatization is unlikely to lead to consolidation of shares in the hands of controlling shareholders willing to engage in post-privatization restructuring. Plausibly, trade sale privatization, a direct sale between one group of large shareholders (the state) to another, offers a more likely means of consolidating shares and initiating corporate restructuring.

In this way, the large shareholder model as developed more generally in one stream of research by Shleifer and Vishny (1986) may be used to address a major critique (Spicer, McDermott & Kogut, 2000) in another on privatization (Boycko, Shleifer & Vishny, 1995; Shleifer & Vishny, 1994). We argue theory-building from the large shareholder model to offer more appropriate underpinning for research on privatization than a general agency/property rights approach.

Furthermore, we do not accept the claim that ownership structure varies systematically in ways consistent with value maximization, and that no relationship between ownership structure and firm performance is to be expected (Demsetz, 1983; Demsetz & Lehn, 1985). From an empirical standpoint, where data do not reflect market-mediated ownership structures, this claim cannot be made (Demsetz and Villalonga, forthcoming). The relationship, then, between large shareholding structures and performance remains an important empirical question; perhaps, more so, in the case of privatization in developing economies, where market-mediate ownership structures are less likely as supporting structures and institutions may be lacking.

The following arguments and hypotheses are presented with respect to privatization.

2.2.3.1. Privatization and Large Shareholders

Different shareholders may have different incentives to force restructuring, thus different restructuring effort. Large-block shareholders in particular have strong incentives for active monitoring. It is assumed that active monitoring is important for privatizing firms in need of restructuring, and agency considerations should play an important role in privatization performance.

Hypothesis 1: *Privatization strategy characterized by diffused shareholdings does not improve performance.*

Hypothesis 2: *Privatization strategy characterized by large-block shareholdings improves performance.*

Foreign large-block shareholders are especially useful as active monitors and in changing the way firms are managed for those in need of restructuring. However, it is expected that foreign direct investment will improve performance either through "ownership effects", accessing corporate governance expertise which reduces monitoring costs owing to resource availability and previous experience, or through informational advantages about the quality of a particular firms' assets or management (Makhija & Spiro, 2000; Djankov, 1998; 1998).

Hypothesis 3: *Privatization strategy characterized by foreign blockholdings improves performance.*

2.2.3.2. Privatization and Dominant Owners

Extensions on blockholder theorizing also recognize the private benefits of control, or the negative value of the large shareholder (Shleifer & Vishny, 1997; Morck, Shleifer, & Vishny, 1988). This and related work shifts the traditional principal-agent analytic (the separation of ownership from control) away from matters of perquisite consumption and management entrenchment and toward a principal-principal dilemma, agency concerns arising from expropriation of minority shareholders (Dharwadkar, George, & Brandes, 2000).

Expropriation occurs when firm performance decreases because of individual (entity) equity ownership, reaching a point where large shareholders become "dominant owners" assuming full control and use of the firm to generate private benefits at the expense of minority shareholders

(Morck, Shleifer, & Vishny, 1988).[24] Expropriation in this literature is thought to hinge on limited protection of minority shareholders, as well as shareholder rights in general (LaPorta, Lopez-de-Silanes, Shleifer & Vishny, 1999). Thus, where larger shareholders present an advantage, dominant outside structures also present added expropriation risk for performance. The threat of expropriation from dominant ownership is believed great in the developing economy context, where the problem of inadequate shareholder protection may be acute, and underscores the importance of agency theory issues and their impact on the privatization-performance relationship in these countries (Dharwadkar, George, & Brandes, 2000).

This line of reasoning suggests there exists an inverse U-shaped relation between privatized ownership concentration by any type of owner and performance, in that controlling shareholder(s) as dominant owners may now pursue non-profit maximizing strategies without being accountable to minority shareholders. Therefore, it is necessary to examine both linear and non-monotonic relation between share ownership and performance.

Hypothesis 4: *Privatization strategy characterized by dominant shareholdings worsens performance.*

2.2.3.3. Privatization and Residual State Shareholdings

Though the focus in our study is to examine privatization implementation strategy and new ownership and governance structures introduced as a result of divestiture, the more conventional proposition on State ownership is offered as well. More extensive theory is not pursued here.

[24] For instance, large shareholders may affect minority shareholders adversely such that access to private information permits opportunities for insider trading, adversely affecting smaller shareholders and corporate performance.

Tradition agency reasoning suggests that firms with significant state ownership are inefficient because these owners address the objectives of politicians rather than maximize efficiency. Recent privatization theory extends this logic (Boycko, Shleifer & Vishny, 1996). It is argued that when privatization strategy combines to reallocate control rights from politicians to managers and increase cash flow ownership for large private shareholders, improved performance will result. Yet, should large outside shareholders become politicized (i.e. pressured to bring their objectives in line with those of politicians) these owner will be detrimental to restructuring; these large shareholders include government owned holding companies and mutual funds.

Hypothesis 5: *Privatization strategy characterized by residual state shareholdings worsens performance.*

2.3. Conceptual Extension

Building upon arguments by Shleifer and Vishny (1986) and Spicer, McDermott and Kogut (2000) in previous sections, certain linkages may be identified as providing opportunities for conceptual extension for strategy and organization scholars:

1) In the large shareholder model (Shleifer & Vishny, 1986), the advantage of this owner is in finding and affecting beneficial exploitation of valuable improvements to operating strategy through monitoring technology, independent research, and aligning incentives when benefit, use and disposal rights over specialized assets (property) are fragmented. Absent in this conceptual framework is an understanding of the advantage of the large shareholder as an entity in asserting control by fiat or hierarchy (i.e. authority), through governance form. Transaction costs economics anticipates appropriation concerns over specialized assets in exchange relationships

where pervasive behavioral uncertainty and contracting problems exist, recognizing certain governance structures (as implicit or explicit contractual framework) to have an advantage.

2) The full advantage of the large shareholder is in corporate restructuring and management replacement, yet the presence of the large shareholding structure is only a pre-condition for this process. Though corporate control transactions are theorized, processes and structures are underdefined. To view a larger shareholder entity as a governance form (i.e. as "hierarchy" or "hybrid" structures) may have relevance for distinguishing trade sale privatization strategies and non-market (for shares) mechanisms for corporate restructuring.

3) Theoretical extensions on the private benefits of control have shifted the agency analytic to a principal-principal dilemma, agency concerns between dominant and minority shareholders. This reconceptualization infers a shift to a higher level of analysis, implying a dynamic relationship between owners (rather than owners and managers). However, this approach posits simple dyadic (dominant-minority) implications and only negative performance outcomes. To conceive shareholder governance as more complex hybrid structures, as comprised by inter-firm network forms more generally, may have relevance for distinguishing consortia (trade) sale privatization as comprise by joint ventures and strategic alliances, more specifically. A governance approach to inter-firm knowledge transfer is one way to understand positive outcomes from these privatization strategies.

2.3.1. Organizational Arrangements

In research presented here, theory-building is advanced using organization theories with relevance for strategy and organization scholars interested in economic organization and network governance. Organization theories are marginal in the privatization literature (Villalonga, 2000). Conceptual extension is advanced largely along the contractual dimension of economic organization, using a TCE framework, and subsequent empirical observation and measurement is applied to this level.

Contractual coordination has been primarily investigated by research concerned with the distribution of rights within a relationship. The nature and characteristics of these rights may vary along some predetermined incentive systems (as in agency theory), as well as along the notions of command structure and authority system used to govern the exchange (as in transaction cost economics) (Sobrero & Schrader, 1998).

In the transaction cost framework the study of markets and of prices, and *ex ante* incentive alignment gives way to the study of transactions and *ex post* governance, with special emphasis on the mechanisms of intertemporal contracting. No attempt is made here to review the TCE literature in depth, instead the discussion places this work in appropriate context, and uses it as an orienting framework.

Broadly consistent organization learning arguments (a knowledge-based theory) are also presented to complement this discussion, however, this line of reasoning is more appropriately addressed at the procedural dimension of the organization. Procedural coordination has been the

focus of work concerned with how firms or organizational units align their joint processes through organizational mechanisms.[25] This additional view is drawn to offer a certain complementary understanding as to underlying processes. Process explanations, however, will not be examined empirically, thus additional theory-building along the knowledge-based perspective (or resource-based view) is not made.[26] Our study is restricted to a structural approach.

2.3.2. General Perspectives on Transaction Costs

Like Coase (1937), Williamson (1975) assumes that in the beginning there were markets. From the TCE perspective the existence of the firm is explained by market failures, with organizational forms having advantage because of the conjunction of bounded rationality, opportunism, and asset specificity.

Transaction cost economics as an approach is an exercise in comparative institutional analysis. One form of organization is always compared with one or more alternative forms for transacting an exchange in supplying a good or service. The transaction is the basic unit of analysis. The discriminating alignment hypothesis predicts transactions, which differ in their attributes, to be aligned with governance structures, the implicit or explicit contractual framework within which a transaction is located. The choice among governance forms is shaped by comparative costs of

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[25] Procedural coordination has been the focus of work concerned with how firms or organizational units align their joint processes through organizational mechanisms: differentiation, integration, and adaptation of actions within organization. Traditionally these two dimensions of the firm relate to different streams of research (Sobrero & Schrader, 1998).

[26] The approach is consistent also with the dynamic capabilities approach in the RBV, which recognize market failure in the face of recombining specialized and complex knowledge assets. Combinative capabilities (Kogut & Zander, 1992) synthesize and acquire knowledge resources, and generate new applications from these resources; firm-level performance lies in re-configuring the resource base (Eisenhardt & Martin, 2000).

devising, monitoring, and carrying out transactions under alternative forms. The firm (or hierarchy) is chosen as a governance structure when the costs of carrying out certain exchange transactions in the open market are greater than organizing these transactions within the firm.

Key behavioural assumptions are made. Economic actors are boundedly rational and some will behave opportunistically. The latter is interpreted as self-interest seeking with guile, while the former implies behaviour is intendedly rational, but only limitedly so (Simon 1976). All complex contracting is unavoidably incomplete because of bounded rationality and hence subject to hazards of opportunism. Generally, an appropriate governance structure would economize on bounded rationality and safeguard transactions against opportunistic behaviour.

Yet, transaction costs chiefly turn on the type and degree of asset specificity involved in the exchange. Asset specificity is "the degree to which an asset can be redeployed to alternative uses and by alternative users without sacrifice of productive value" (Williamson 1988: 70). Numerous types of asset-specificity have been distinguished (Williamson, 1985).[27] When assets are highly specific to the parties of a transaction, a small-numbers exchange condition arises and leads to the potential of serious opportunism. In this case, hierarchy is preferred to the market as a governance form.

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[27] Williamson (1985) distinguishes four types, each of which renders resource mobility and re-deployment value greatly decreased were the transaction specific relationship to dissolve unexpectedly: 1) dedicated assets, or investing in added capacity to accommodate a specific transaction, 2) physical asset specificity, or investing in super-specialized asset features, 3) site specificity, or investing in clustered production facilities to economize on inventory and transportation costs, and 4) human asset specificity. According to the framework the likelihood of internal organisation increases as investment proceeds from type 1 to 4 yet is most likely when human asset specificity is deepened. Where dedicated assets are present expanding the transactional relation so that both parties are equally exposed will likely mitigate the trading hazard, hence common ownership in these circumstances is often not needed. In the case of physical asset specificity concentrated ownership on the asset buyer may be appropriate with competitive bidding amongst suppliers, thus where *ex post* competition is satisfactory (backward) vertical integration is not necessary. Unified ownership may be the likely response to transactions involving site specificity, yet it is almost certain when human asset specificity is important. This condition exists when the personal knowledge and skills in question are so deeply rooted in the experienced workforce that this knowledge can be known or inferred by others only with difficulty. Chronic problems of reallocating human assets in team configurations is considered to deepen human asset specificity as well.

Hierarchy or organizations are important under the TCE framework, but tend to be irrelevant in agency theory precisely because these two approaches differ on the matter of contractual completeness (Williamson, 1996). The agency theory tradition concentrates all of the contracting behaviour in the *ex ante* incentive alignment stage of the contract, while in the transaction costs approach behavioural uncertainty and contract incompleteness is anticipated up front and economized for *ex post* by choice of governance form. *Ex post* governance fills in the details.

The TCE approach, in effect, reduces opportunism by substituting "fiat" for a contractual relationship (i.e., substituting firm for market) (Perrow, 1985). The agency view describes the firm as a "nexus of contracts" (Alchian & Demsetz, 1972; Jensen & Meckling, 1976; Fama, 1980), and no different from the market in contractual respects.[28]

[28] The debate over defining features of the firm may be seen as well in discourse between Coase (1937) and Alchian and Demsetz (1972). Coase (1937) identifies authority, or fiat, and long-term contracting as defining features of the firm. Although the research problem for Alchian and Demsetz is "viewed basically as one of organization among different people" (1972:779), they respond to this seminal transaction argument in the following way: "It is common to see the firm characterized by the power to settle issues by fiat, by authority, or by disciplinary action superior to that available in the conventional market. This is delusion. The firm does not own all its inputs. It has no power of fiat, no authority, no disciplinary action any different in the slightest degree from ordinary contracting between two people...What then is the content of presumed power to manage and assign workers to various tasks?" Alchian and Demsetz assert that It is exactly the same as that wielded by the market: parties negotiate terms according to an agreed upon price. In other words, "To speak of managing, directing, or assigning workers to various tasks is a deceptive way of noting that the employer continually is involved in renegotiation of contracts on terms that must be acceptable to both parties." Just as a consumer has "no contract to continue to purchase from the grocer...neither the employer nor the employee is bound by any contractual obligations to continue their relationship. (Thus) Long-term contracts between employer and employee are not the essence of the organization we call the firm (1972:777)." This stance on long-term contracting is elaborated briefly later in the text: "It is not true that employees are generally employed in the basis of long-term contractual arrangements any more than on a series of short-term or indefinite length contracts (1972: 784).

2.3.2.1. Hybrid Governance Structure

While attention has been directed toward operationalizing transactions, the TCE framework has been criticized for presenting a rather abstract concept of governance. In Williamson (1991) some clarification is offered in going beyond the polar forms of governance, markets and hierarchies, to elaborate intermediate forms, hybrids. Distinctions are made between these forms along coordinating and control mechanisms, and in abilities to adapt to disturbances. Also, each generic governance form is understood as supported and defined by a distinct type of contract law.[29]

In this extension, the hybrid mode of governance occupies a position somewhere between the two ends of the market-hierarchy continuum. Hybrids, such as longterm contracts, joint ventures, franchising, etc. (Williamson, 1996), are said to have stronger incentives and adaptive capabilities than hierarchies, while providing more administrative control than markets. Hybrids are chosen when asset specificity of the transaction concerned is of an intermediate degree, while hierarchies handle extreme degrees of asset specificity.

In a critical review, Kogut (1988) compares TCE and strategic behaviour perspectives in explaining the motivation to joint venture. The author also proposes a theory of joint ventures as an instrument of organizational learning.

Kogut summarizes TCE logic on joint ventures this way: the "situational characteristics best suited to a joint venture are high uncertainty over specifying and monitoring performance, in addition to a high degree of asset specificity" (1988: 320). High degree of asset specificity

[29] Market modes are supported by classical contract law, hierarchy by the contract law of forbearance, and hybrid by neoclassical contract law and the excuse doctrine.

precludes arm's length market transactions, while high uncertainty over performance makes even a longterm contract difficult and costly to stipulate *ex ante* the complex conditions and contingencies for monitoring performance and guarding against opportunism. A joint venture addresses these situational characteristics in providing superior alignment of incentives through the mutual dedication of resources and in sharing residual value of the venture[30].

Beamish and Banks (1987) use TCE logic to extend internalization theory, and argue that in situations where a cross-border joint venture is established in a spirit of mutual trust and commitment to its long-term success, the potential threats posed by opportunism and a small-numbers condition can be reduced.

Transactions costs economics has become a dominant logic not only in the study of joint ventures as hybrid forms, but also for inter-organizational alliances and networks generally (Osborn & Hagedoorn, 1997). Indeed, the perspective is so widely used that multiple interpretations exist, and it may be fast becoming more of a guiding metaphor than a tested set of propositions. In the research presented here, TCE logic on hybrid forms is inferred for inter-firm collaborative structures more generally.

2.3.2.2. Inter-Firm Knowledge Transfer

Kogut (1988) proposes an organizational learning approach to joint ventures as an alternative understanding. From this perspective, a joint venture is a means for firms to exchange and/or imitate organizational knowledge in order to learn or seek to retain capabilities; it is best suited

[30] Transaction hazards pose a problem of appropriability or how an agreement to divide excess profits (rents generated by specialized assets) can be stabilized over time. For a discussion on weak regimes of appropriability, see, Teece (1986) and Anand & Khanna (1997).

for transferring knowledge that is organizationally embedded and to replicate experiential knowledge that is not well understood (i.e. tacit). For transactions that are the product of complex organizational routines, the transfer of such know-how can be severely impaired unless the organization itself is replicated to some degree. Joint structures are encouraged where one or more firms desire to acquire the other's organizational know-how or where one firm wants to maintain an organizational capability while benefiting from another firm's current knowledge or cost advantage in order to retain an option to exploit the capability in the future. This may be the case when neither firm owns the other's technology, nor understands the other's organizational routines, and changes in the market or industry environment demand improvement in know-how, capabilities, or both.

The organizational learning perspective does not exclude transaction cost considerations, rather that transaction cost savings are not as critical as gains in technical capability, tacit knowledge, or understanding of rapidly changing markets (Osborn & Hagedoorn, 1997). Furthermore, it is recognized that both transaction costs and organization learning arguments identify similar antecedents for inter-firm collaborative structures, constructs in critical uncertainty and interdependence, and asymmetry in the resources and information controlled by the various firms (Gandori & Soda, 1995; Gulati & Gargiulo, 1999). Nevertheless, transaction costs explanations are biased somewhat toward considering only the cost aspect of a transaction; the organizational learning perspective compensates for this by understanding the value-creating benefits of a transaction.

Strategy scholars have combined these complementary perspectives successfully in recent empirical work. Mowery, Oxley, and Silverman (1996), for instance, use a joint TCE and organizational learning perspective to examine strategic alliances and knowledge-transfer. They demonstrate using patent data that inter-firm transfer of proprietary knowledge is fostered by

equity- rather than contract-based forms of networking. Generally, this work suggests equity-based hybrid governance structures to have an advantage for building technological organizational capabilities between firms.

The transaction costs approach includes a detailed treatment of opportunism, which may arise under certain circumstances; and despite criticism of this assumption in explaining economic behaviour (see Ghoshal & Moran, 1996), the concept does serve some useful purposes. Transaction cost logic also inherits from neoclassical economics the assumption that any transaction object is perfectly transferable (Conner 1991 in Sobrero & Schrader, 1998). In other words, it investigates primarily the enforceability of a specific transaction, taking its feasibility as given. Thus, where transaction costs are directly related to the type of technical capability and/or knowledge that is to be transferred, the more important advantages of hybrid forms will result from reducing the impacts of bounded rationality and opportunism on the transfer between partners (Tsang, 2000), should the capability and/or knowledge transfer be possible at all.

2.3.3. Privatization and Hybrid Governance of Inter-Firm Knowledge Transfer

2.3.3.1. A Novel Hypothesis

In the privatization literature it has been posited that certain large-block shareholders improve performance either through better ownership or through informational advantages about the quality of a particular firms' assets or management (Djankov, 1998; 1998). Often this distinction is made to tell real ownership effects from artifact or spurious effect (and the latter referred to as an endogeneity problem). Claessens (1997) explains it this way:

"A misspecification can arise if the ownership structure of the firm is endogenous to its value because of informational advantages certain investors have. For example, if certain investors had private or inside information about the quality of a particular firms' assets or management, then they would have been attracted to the better quality firms. As a result, better firms could have ended up with both a more concentrated ownership as well as higher (performance). A simple regression of (performance) on indicators of ownership concentration would then be biased."(:1645)

However, it is possible that shareholder governance structure, the economic organization behind a large-block shareholder, may provide an advantage for minimizing the transaction costs in 'knowing' the firm-specific assets of the privatising enterprise. This understanding is consistent with our reasoning below, when we ask, does large shareholder governance structure also matter?

Our basic argument is summarized in two parts: The uncertain and complex challenge of post-privatization restructuring may depend not only on aligning incentives, but also 1) aligning governance structures, specifically, aligning hybrid structures to privatization transactions where moderate asset specificity is assumed present for at least one of the parties; furthermore, where post-privatization restructuring depends in part on inter-firm transfer of proprietary knowledge, or technological organizational capabilities more generally, this learning process will be fostered by hybrid structures as 2) equity-based inter-firm networking. From this reasoning we advance a novel hypothesis on the privatization performance relationship:

Hypothesis 6: *Privatization strategy characterized by hybrid governance improves performance.*

3. METHODS

3.1. Unit of Analysis

The focus of our study is on privatization strategy and effects on performance. The structure of privatization implementation strategies is understood as an efficient form of governance, with the governance of contractual arrangements examined at the transaction level of analysis. Primary instruments of choice to be observed include the ownership structure and hybrid governance structure of the privatizing firm. Consequently, a central aim of this investigation is to observe privatization transaction governance instruments and examine the impact of transaction variation on performance.

It is recognized that recent empirical research on privatization is limited to examining change-of-ownership effects (Uhlenbruck & De Castro, 2000), and few studies examining longitudinal effects (Villalonga, 2000). Research design has been to use the firm as unit of analysis and investigate privatization effects on longitudinal performance data. Where privatization strategy is implemented in an incremental fashion (in a series of transactions over time), aggregating privatization transaction data to a firm level of analysis likely confounds the pre- and post-privatization performance periods, attenuating the privatization performance relationship, and contributes to weaker and/or perhaps spurious results. Aggregation bias of this sort may be present in studies with sizeable subsamples of firms undergoing multi-transaction privatization (for instance, in Villalonga (2000) and Boubakri and Cosset (1998)).

"Privatization is by definition a *change* (emphasis original), and needs to be addressed dynamically by looking at a given firm's evolution and transition between private and public

stages within a given firm" (Villalonga, 2000: 51). In our study, we use longitudinal design and a transaction unit of analysis to capture the dynamic process of privatization implementation itself and treat pre- and post-privatization performance periods more appropriately. Together, longitudinal design and transaction observation allows for change and stability over time in firm-level ownership and inter-firm hybrid governance, permitting ownership and (inter-) firm effects to be disaggregated, similarly, for pre- and post-privatization performance to be disentangled. Considering multiple levels of analysis and changes in levels of analysis that may occur over time, should serve to improve understanding of dynamically changing organizational phenomena (Dansereau & Yammarino, 1999).

3.2. Population Frame

Developing economy privatization strategies are identified as the population of interest. In many of these countries privatization is implemented using either a mixed transaction, a combination of trade sale strategy and share issue strategy, or straight trade sale (Bel, 1998; Lieberman & Kirkness, 1998).[31] These economies are more likely to have thin capital markets and weaker regulatory and governance (legal) institutions, thus lack the market-based infrastructure associated with efficiency in the market for shares. In this context the market for firms/partners may have more relevance for improving privatization performance.

Research design in prior studies on privatization is limited by sample selection bias in foregoing trade sale privatization for share issue privatization (Megginson et al, 1994; D'Souza & Megginson, 1999) due to very real difficulties in obtaining cross-country, comparable firm-level pre- and post-privatization performance data on target firms that may no longer remain

[31] Voucher privatization strategies are not examined empirically here.

independent after privatization, as may be the case with trade sales. Our study attempts to partially overcome this bias in selecting a developing economy population frame to introduce privatization strategy variation, and foregoing firm-level performance for industry-level performance data.

3.3. Sample Frame

We examine privatization performance using a sample of transactions drawn from the fixed-line telecommunications sector.[32] Privatizing operators are typically industry incumbents providing at minimum nation-wide or key regional basic telephony for the local market and may provide in addition domestic long distance, international long distance as well as value added services to residents and business customers.

Single-industry studies in the privatization literature are not uncommon. Certain infrastructure investigations include airlines (Eckel, Eckel & Singal, 1997), electricity (Newberry & Pollitt, 1997), and railroads (Caves & Christensen, 1980; Ramamurti, 1997). Few studies have examined the telecommunications sector (see, Foreman-Peck & Manning, 1988) though some recent research exists (Ros, 1999; Ros & Banerjee, 2000; Wallsten, 2001) as well as certain preliminary work (Bortolotti, D'Souza, Fantini, Megginson, 2001).

We recognize a trade-off to generalizability of empirical results in selecting this sample frame. However, limiting the analysis in this way presents certain advantages when examining privatization performance in developing economies. First, in selecting telecommunications, our

[32] The sample industry frame represents Standard Industry Classification 4813, telephone communications, except radiotelephone.

study offers an appropriate time scale for observing privatization strategy implementation and performance. According to Zaheer, Albert, and Zaheer (1999), suitable research design presents an observation interval that covers multiple existence intervals of the phenomenon of study. As the modern era of privatization began importantly in the early 1980s, and that for many developing economies telecommunications privatization has served to launch a government's privatization program, from a single industry standpoint, this sector presents numerous instances of actual privatization implementation strategies and offers a sizeable population frame, a longer and/or earlier series of transactions from which to draw a larger sample of observations. A period such as this is conducive to longitudinal research and essential for investigating privatization implementation as an incremental process. Likewise, ability to capture privatization effects where they do exist is enhanced with an earlier series of transactions observations, as a sufficient post privatization period likely exists. In this way, a telecommunications sample frame helps address key challenges in privatization research, notably, the 'small *n*' drawback and the difficulty in capturing 'small population effects'.[33]

Second, though data access and reliability present a serious impediment to privatization research, more so for a developing economy population frame, incumbent telecommunications operators are large, established, well-known companies in a strategic sector, attracting much interest, reporting and scrutiny; a research context such as this offers multiple different data sources allowing cross-validation of data, augmented measurement precision, and stability of findings.

Third, the nature of telecommunications as a strategic factor for economic development affecting growth at country, region, and firm levels (Koski & Majumdar, 2000), suggests telecommunications privatization and related sector reforms to be central policy initiatives in

[33] See, Welch and Molz (1999) for a general discussion on the real challenges for conducting empirical research on privatization performance.

many developing economies. Poor performance and inefficiency by key telecommunications incumbents is likely to threaten competitiveness in computer, software, and information industry markets in particular, perhaps impacting post industrial economic development in transition and emerging economies most notably. With few extant studies to draw upon, how can privatization policy makers, managers of multinational corporations investing in privatizing enterprise or current managers of the target firms themselves evaluate which privatization implementation strategies are likely to be associated with better performance outcomes? These evaluations will benefit from contributions made here to examine differential effects of privatization strategies.

A basic assumption made for this industry context is that changes to regulation, competition and technology have altered the bundle of strategic competencies and assets necessary to compete in various segments of the telecommunications industry. Though asset specificity is not measured directly here it is presumed non-negligible. Taken together, these assumptions suggest hybrid structures and inter-firm networking for resource-based organizational learning to be relevant for this research context, offering a fair test for our study.

Telecommunication infrastructure worldwide shares many of the same investment characteristics. Despite differences in quality that may exist across countries in term of infrastructure, the privatization of fixed-line incumbents presents a classic case of transacting under conditions of high asset specificity due to sunk costs in non-deployable assets (Henisz, 1998 in Levy and Spiller, 1996).[34] Differences exist, however, in terms of international variation in the larger institutional context surrounding telecommunications privatization, thus when specifying performance institutional environment may no longer be considered exogenous. Our study uses the developing economy population frame to limit to some extent the institutional parameters and

[34] Privatization in this industry context presents contractual hazard as well due to politicization associated with domestic consumption and investment in telecommunications services.

fixed factors which will be in play in a cross-country transaction sample, possibly shifting the comparative transaction costs and appropriate mechanisms of governance in an exchange (Williamson, 1993). Nevertheless, where idiosyncrasies exist in the telecommunications industry that have implications for transaction strategy during the privatization implementation process, generalizability of specific findings in our study may be limited further.

The units of investigation are summarized below. (See Table 3.1)

Table 3.1 Units of Investigation

Unit	Investigation
Population	Developing economy privatization implementation strategies
Sample	Incumbent fixed-line telecommunications operators
Unit of analysis	Privatization transaction

3.4. Sample Selection and Data

Privatization implementation strategy was examined as an incremental process using an event-driven data recording strategy suitable for observing change phenomena that occurs infrequently, randomly, or evolves over time (Gersick, 1991, in Zaheer, Albert & Zaheer, 1999). Multiple data sets and records were consulted to augment reliability and validity.

Principal data collection took place during December 1999 and January 2000, with data coding and preparation conducted throughout spring and fall 2000. Sample selection was straightforward, and involved a process of matching a developing economy sample frame to privatization transactions by fixed-line telecommunications incumbents. Once the basic sample

frame was constructed valid performance data was sought for a sample size sufficiently large to allow for statistical analysis.

Data features and sample selection protocol are discussed next.

3.4.1. Economy-Level

Following Boubakri and Cosset (1998), a developing economy sample frame was identified using the World Bank classification of economies, as appears in the 1999 *World Development Indicators* (See Table 3.2) These tables were used to match privatization transactions occurring in developing economies.

Though certain threshold issues are subject to debate among development scholars, this classification defines as developing or emerging a country with a low or middle income, a country that is eligible to borrow from the World Bank. Discrete income categories are based on (1996) gross domestic product (GDP) per capita, a traditional criterion for ranking the state of development of a country as a function of level of income.

Table 3.2 Economy-Level Data

Record	Period	Data Structure
World Bank classification of economies, *World Development Indicators, 1999* CD-ROM, (excel download)	1999 (1996 figures)	Electronic database of income classification for 210 countries (181 members, others with populations > 30,000) based on (1996) GDP per capita Country classification report: Low (<=$785), middle (lower $786-$3,115; upper $3,116-$9,635), high income (>=$9,636) Data source: World Bank, Organisation for Economic Co-operation and Development, United Nations

To address suitability in using a cross-sectional instrument to frame a longitudinal sample, the 1996 tables were compared to earlier classifications to assess the stability of the population frame and identify possible maturation threat, movement across income categories. The review showed no countries maturing between upper-middle and high income, moving in or out of the developing economy sample frame. Though not a comprehensive assessment the appraisal suggested the instrument to be adequate for the purposes here. Boubakri and Cosset (1998) leave maturation risk unaddressed though sample selection is limited in a similar way.

3.4.2. Transaction-Level

Data on privatization transactions was obtained from three archival sources, including The World Bank *Privatization Database*, and the *Mergers and Acquisitions* (M&A) and *Share Ownership* databases, both from Securities Data Corporation. The World Bank database reports actual privatization transactions in developing economies for all sectors for the period 1980-1997. The Securities Data set reports completed (actual) and announced (intended) corporate restructuring transactions identified with privatization initiatives for telecommunication sectors worldwide from January 1, 1984 to October 15, 1999. These datasets document basic transaction attributes only (See Table 3.3).

Actual transactions occurring before 1999 were selected. A 1998 cut off year was chosen to allow a minimally sufficient post-privatization performance timeline for more recent transactions. A preliminary transaction set was assembled by extracting telecom sector transactions from The

World Bank database and combining these with completed transactions from Securities Data sets. Transactions were crosschecked for accuracy along attributes and multiple entries removed.

Table 3.3 Transaction Data

Record	Period	Data Structure
World Bank *Privatization Database*	1980-1 997	Electronic database of privatization transactions Developing economies, all industry sectors Transaction report: Target company, sector and country, transaction date (year), percentage equity share sold, purchaser, financial notes Data source: Privatization agencies, government sources, economic reports, financial press, World Bank databases, staff reports, documents
Thomson Financial Securities Data Corporation, *Mergers and Acquisitions, Share Ownership* databases	January 1, 1984 to October 15, 1999	Electronic database extraction of M&A and share transactions identified with privatization Worldwide, telecommunications sector Transaction report: Target name, target business, target nation; acquirer name, acquirer business, acquirer nation; percentage shares acquired, percentage shares owned after transaction, transaction status (completed, announced, etc.) transaction date (day/month/year) effective Data source: Privatization agencies, government sources, economic reports, financial press

World Bank surveys on privatization are recognized as reliable and have been used in numerous broad-based empirical studies on privatization performance. Our study draws on the more comprehensive and up-to-date *Privatization Database*.[35] Similar to Uhlenbruck and DeCastro

[35] A listing of privatized firms provided in Candoy-Sekse and Palmer (1988), Techniques of Privatizayion of State-Owned Enterprises: Inventory of Country Experience and reference Materials (The World Bank, Washington, D.C.), has been a standard data source for broad-based research on privatization performance, see Megginson et. al. (1994) and Boubakri & Cosset (1998), for instance; though the latter study has also drawn on data collection by Sader (i.e. Sader (1993). Privatization and Foreign Investment in the Developing World, 1988-1992, Policy Research Working Paper 1202 (The World Bank, Washington, D.C.), who contributed to a precursor database to the World Bank electronic archival source, *Privatization Database*. D'Souza & Megginson (1999) do not make explicit the initial data source for their privatization frame, though the authors do indicate using the same methodology as the two prior studies. Preliminary research in Megginson, Nash, Netter & Poulsen (2000) does use the World Bank Privatization Database

(2000), we combined archival data on privatization with data on mergers and acquisitions to examine privatization acquisitions in developing economies.[36] Recent work by organization and strategy scholars on corporate ownership as 'networks of corporate control' also benefits from M&A transaction data (Kogut & Walker, 2001).[37] Most important, augmenting privatization data with corporate restructuring records improved the likelihood that sample observations were drawn from the market for firms/partners and not restricted to the market for shares. Prior studies limited to share issue privatization strategy likely suffer restriction of range along transaction characteristics, and, perhaps, performance outcomes.

3.4.3. Industry- and Firm-level

Fine-grained data on telecommunication privatization, ownership, and corporate restructuring was obtained from a large quantity of specialized published material, including the International Telecommunication Union (ITU) occasional series, *General Trends in Telecommunication Reform (1998)*, and the Economist Intelligence Unit (EIU) monthly series, *Telecoms & Wireless (1994-1999)*. (See Table 3.4)

General Trends provides country profiles on sector reform based on qualitative and quantitative data collected from a survey of national administrations, including telecommunication ministries, regulators, and operators, in 189 member states conducted in 1996-1997 (country responses verified in 1998). (See Appendix 3.A for the survey instrument used by the ITU to construct the *General Trends* report.) Updates from abridged editions for 1999 and 2000 were solicited directly from the ITU Development Bureau in Geneva, Switzerland and used to supplement

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(1990-1998) as a key data source. Uhlenbruck & DeCastro (2000) cite a World Bank archival database, but do not specify.

[36]Data in both DeCastro and Uhlenbruck (1997) and Uhlenbruck and DeCastro (2000) are collected from the New-York-based investment information firm Investment Dealers' Digest, Inc. Mergers and Acquisition database. The earlier study uses only M&A data.

[37] Kogut and Walker (2001) also use the Securities Data Corporation, Merger and Acquisition database.

missing data and clarify qualitative reporting. Information on regulation and competition was collected from this series as well. *Telecoms & Wireless* provides market intelligence for strategic sector activity worldwide.

Wallsten (2001) also draws on *General Trends in Telecommunication Reform (1998)*, and Economist Intelligence Unit (EIU) publications to investigate telecommunications competition, privatization and regulation but restricts data collection to limited qualitative material.[38]

[38] Wallsten (2001) examines telecommunications competition, privatization, and regulation in Africa and Latin America, and, understandably, collects regional data from *General Trends* (1998) Volumes II (Africa) and III (Americas) only, yet limits additional data to a 1997 survey issue by (EIU) *Pyramid Research*.

Table 3.4 Industry- and Firm-Level Data

Record	Period	Data Structure
International Telecommunication Union (ITU), *General Trends in Telecommunication Reform Volumes I-VI (1998)*	1996/97 (1998 verification; 1999 & 2000 abridged updates)	Occasional series on telecommunications sector reform in 189 ITU member states. Series volumes organized into 5 regions: Africa, Americas, Arab States, Asia Pacific, Europe Sector report: 1- to 3-page summary presents contact information for regulatory and policy making bodies; legal instruments; institutional profile (postal and telecom separation; structure of the separate regulator); regulatory issues; ownership (incumbent, others, foreign ownership); market status (degree of liberalization in various segments); future regulatory plans Data source: Occasional questionnaire by Telecommunication Development Bureau, ITU to member state national administrations The ITU is a specialized agency of the United Nations within which governments and the private sector coordinate global telecom networks and services.
Economist Intelligence Unit (EIU), Pyramid Research, *Telecom & Wireless*	190 issues; February 1996 to December 1999	Monthly series market intelligence on strategic sector activity Series issues organized into 5 regions: Latin America, Eastern Europe/CIS, Asia, Africa/Middle East Sector report: 12- to 15-page publication with feature articles and Market Alerts. Market Alerts: 1- to 3-page collection of alerts; privatization or firm-specific notices often reports transacting parties, information on ownership, line of business, and corporate form for investment Data source: government sources, economic and regional reports, financial press, internal databases, EIU consulting reports, documents

The 1998 volumes and 1999-2000 updates for *General Trends* and Market Alerts in 190 issues of *Telecom & Wireless* for the period 1994 to 1999 were content-analyzed for fixed-line incumbent privatization in the developing economy sample frame. This micro-data analysis was used to crosscheck transaction records, identify omitted observations, confirm appropriate unit of analysis, and detail transaction characteristics, including complex trade sale transactions.

Sample selection coding procedures applied the following decision rules. Where conflicting or ambiguous records existed across data sets, coding preference was given to ITU *General Trends*, or national administration sector expertise as reported by international sector specialists. To ensure coding reliability the operator set was initially dichotomized to exclude non-privatizing cases, incumbents that were: 1) state-owned, planning or not planning to privatize[39]; 2) corporatized, planning or not planning to corporatize, 3) exclusive ministry (or other government office) providers, or not separate in terms of post and telecommunications functions[40]. In all cases, *General Trends* records either confirmed exactly or broadly *Telecom & Wireless* data, or provided the only record. In no case did these records present contradictory data.

This content analysis augmented the transaction set, increasing sample size. Additional observations showed the following characteristics: where transactions occurred early on during the recognized trend in privatization[41] or in certain geographic areas [42]; or where it was likely that privatized ownership was not reported as privatization policy *per se*[43] or that private owners were

[39] Explicit statements of state ownership were considered as definitive, indicating the incumbent operator as entirely state owned. Explicit statements of plans to privatize implied privatization strategy intention or formulation, not privatization strategy implementation or an actual transaction.

[40] It was assumed that privatization implementation could not proceed were the incumbent's share structure not to exist or not be divisible in order to facilitate an equity transfer. Divisibility at the share structure level suggests corporatization, or creating a legal corporate form, to be a likely antecedent to privatization. Similarly, the incumbent operator should be a separate entity, distinct from the government ministry or office, in order to facilitate a (non-government) transfer to the private sector. Likewise, the operator should be separable as a telecommunications entity, distinct from other sector operators, such as those providing postal functions, for instance, in order to facilitate a telecommunications sector (only) transfer.

[41] For instance, the Bahrain 1981 transaction.

[42] ITU and EIU sources provided additional transaction data for transactions in Africa, Pacific Islands, and Caribbean.

[43] For example, when a joint venture between the state and a telecom operator is used to establish a national operator, thus, no discrete transfer is explicit though a transaction is implied. The Soloman Islands (1988) and Madagascar (1995) transactions are cases in point, both as "joint ventures" with government and occurring in the Pacific and Africa.

not identified.[44] Observations such as these may have fallen, either explicitly or implicitly, outside World Bank or Securities Data recording range.

These records also helped distinguish fixed-line incumbent transactions from those of other telecommunications operators. For most transactions unit of analysis was confirmed. However, six countries had more than one privatizing incumbent over the 18-year observation period: Argentina, Brazil, Chile, Peru, Russia, and Federal Republic of Yugoslavia. The following decision rules were used to select the appropriate incumbent unit of analysis.

For countries with alternative (i.e., several) 'national' incumbents due to political secession, or with multiple incumbents due to regional operator mergers or national operator breakups and all incumbents provided a combination of domestic and long distance services and none was identified as the fixed-line operator, multiple units of analysis were collapsed into single country-sector observations and incumbent transaction observation values averaged. In collapsing the units of analysis the assumption was that transaction values on ownership and hybrid governance were similar across incumbent observations; this assumption was more accurate for observations in Argentina, Brazil, and Peru, and less so for Chile and Yugoslavia. For countries with a national incumbent with numerous distinct regional business units and none identified as the fixed-line operator, the corporate level incumbent served as unit of analysis and corporate transaction observation values used instead. In shifting the unit of analysis higher the assumption was that transaction values on ownership and hybrid governance at the corporate level were similar to those at the operator level. Records showed this not to be inaccurate for the only case, Russia.

[44] For example, when equity is transferred to unidentified investors, perhaps as part of a "private placement", private sale of (equity) securities to institutional investors, individuals or corporations, that neither includes a bidding process nor a public offering.

Aggregating data in this way, along with implications for measurement on key independent variables, was judged not too inappropriate given that data for the dependent variable is also aggregated (at industry/country-levels). Nevertheless, these decision rules represent certain imperfect solutions albeit on only a limited number of observations.

All transaction dates were annualized. For most observations transaction year was confirmed. For the following four countries there was uncertain, conflicting, or missing transaction years, and sector expertise was not discriminating: Argentina, Chile, Bahrain, Belize, Czech Republic, Georgia, Guinea, Guyana, Jamaica, Pakistan, and Sudan. For these observations, event year was identified as the most frequently reported year, or the year in which the largest ownership or hybrid governance change was reported.

3.4.3.1. Performance

The final criteria for sample selection relate to performance data. Three studies have focused on trade sale strategies, two investigated antecedent conditions and not performance outcomes (De Castroi & Uhlenbruck, 1997; Megginson, Nash, Netter, Poulsen, 2000), and one relied on self-report performance data (Uhlenabruck & De Castro, 2000). In our study, we used objective, industry-level data, universally available and comparable across a larger sample of developing economies.

Industry-level performance data was obtained from the ITU *World Telecommunications Indicators Database* (1999), considered the best cross-country data available for this sector (Wallsten, 2001). This source presents annual time series data on telephone network, service quality, tariffs, revenue, and capital expenditure for over 200 economies for the period 1975-1999

(year end). Updates from January 2001 adjustments were sought directly from the ITU Development Bureau to ensure reliability on the most recent figures. (See Table 3.5)

Table 3.5 Performance Data

Record	Period	Data Structure
International Telecommunication Union, *World Telecommunications Indicators Database, 5th edition* (1999)	Annually, 1975-1999 (year-end) (January 2001 adjustments); and every five years 1960-1970	Electronic database covers over 80 communications statistics Annual time series data for over 200 economies Indicator report: telephone network size and dimension, mobile services, quality of service, traffic, staff, tariffs, revenue and capital investment; selected demographic, macro-economic, broadcasting and information technology statistics Data source: Annual questionnaire by Telecommunication Development Bureau, ITU to member state national administrations. Additional data obtained from reports by telecommunication ministries, regulators, operators, ITU staff reports

It is not inappropriate to examine trade sale privatization performance effects using industry data. Inter-firm hybrid structures (and notions of strategic collaboration, knowledge sharing, and pooling of resources) are recognized as group level entities viewed at an industry level of analysis (Dansereau and Yammarino, 1999), and, normally, data should conform to the level of theory (i.e. entity to depict or explain) (Klein, Dansereau & Hall (1994). Furthermore, industry-level performance is suitable for examining telecommunications privatization in a context of concentrated industry structures, and like inter-firm hybrid structure, industry structure is also a meso-level concept (Andersson, 2000). Also, we would expect dominant operator privatization in developing economies to affect industry performance to a greater degree, with effects of fixed-line incumbent privatization felt strongest for performance on broader-based systems of technological and physical infrastructure.

Wallsten (2001) and Ros and colleagues (Ros & Banerjee, 2000; Ros, 1999) also have used industry-level *Indicators* data to examine telecommunications privatization performance, though drew from smaller samples or a regional focus (i.e. Africa and/or Latin America). Other cross-country research has been limited to telecommunication privatization (Boylaud & Nicoletti, 2000) or telecommunications infrastructure provision (Koski & Majumdar, 2000) in OECD (developed) countries only.

Despite extant research on telecommunications reform, key questions on sector efficiency remain empirically unaddressed (Saunders, Warford, Wellenius, 1995 in Koski and Majumdar, 2000). Also, interest in telecommunications performance now extends to organization theorists concerned with shifts from public to private sector organization and innovation, with calls to study large-scale technical systems important to post-industrial economies (Hage, 1999). This discourse will benefit from contributions made here to examine differential effects of privatization at the industry level.

Table 3.6 Sample Selection Process

N	Data Matching and Extraction
157	Developing economies
149	Partially or fully state-owned and privately-owned developing economy operators
50	Partially or fully privatized developing economy operators
76	Privatization transactions for developing economy fixed-line incumbent operators
64	Privatization transactions with valid performance data

Using the criteria above the sample selection process offered an initial sample list of 76 transactions for 50 incumbent fixed-line operators. Twelve transactions in 11 countries were dropped because of missing performance data. [45] This last matching procedure presented a final sample of 64 privatization transactions by 41 incumbents in 41 developing economies over an 18-year period, spanning 1981 to 1998. See Table 3.6 for a summary of selection outcomes and Table 3.7 for the sample list.

[45] Transactions were dropped for Bolivia, Cuba, El Salvador, Equatorial Guinea, Ghana, Guatemala, Indonesia (2), Panama, and South Africa; these countries are not represented in the final sample. Transaction observation for Belize and Brazil were also dropped, yet other transactions from these countries had valid performance data and remain in the sample.

Table 3.7 Final Sample of Incumbent Privatization Transactions

Year	Country/Economy	Incumbent Operator
1981	Bahrain	Bahrain Telecommunications Company (BATELCO)
1987	Chile	CTC/Entel
1988	Jamaica	Telecommunications of Jamaica (TOJ)
1988	Maldives	DHIRAAGU
1988	Solomon Islands	Solomon Telekom Company Ltd.
1989	Chile	CTC/Entel
1989	Jamaica	Telecommunications of Jamaica (TOJ)
1990	Argentina	Telecom Argentina/Telefonica de Argentina
1990	Belize	Belize Telecommunications Ltd.
1990	Malaysia	Telecom Malaysia
1990	Mexico	Telefonos de Mexico (TelMex)
1990	Trinidad and Tobago	Telecom Services of Trinidad and Tobago (TSTT)
1991	Barbados	Barbados Telephone Company Ltd.
1991	Belize	Belize Telecommunications Ltd.
1991	Guyana	Guyana Telephone and Telegraph Ltd. (GT&T)
1991	India	Mahanagar Telephone Nigam Ltd. (MTNL)
1991	Jamaica	Telecommunications of Jamaica (TOJ)
1991	Mexico	Telefonos de Mexico (TelMex)
1991	Peru	CPT
1991	Venezuela	Compania Anonima Nacional Telefonos de Venezuela (CANTV)
1992	Argentina	Telecom Argentina/Telefonica de Argentina
1992	Malaysia	Telecom Malaysia
1993	Brazil	Telebras
1993	Estonia	Eesti Telefon
1993	Hungary	Hungarian Telecommunication Co. (MATAV)
1993	Sudan	Sudan Telecommunications Company Ltd. (Sudatel)
1994	Czech Republic	SPT Telecom
1994	India	Mahanagar Telephone Nigam Ltd. (MTNL)
1994	Iran	Telecommunciations Company of Iran
1994	Latvia	Lattelekom
1994	Pakistan	Pakistan Telecommunication Company Ltd. (PTCL)
1994	Peru	CPT/Entel
1995	Armenia	Armentel
1995	Cape Verde	Cabo Verde Telecom Sarl
1995	Chile	CTC/Entel
1995	Czech Republic	SPT Telecom
1995	India	Mahanagar Telephone Nigam Ltd. (MTNL)
1995	Iran	Telecommunciations Company of Iran

1995	Madagascar	Telecom Malagasy (TELMA)
1995	Mongolia	Mongolia Telecommunications Company (MTC)
1995	Tajikistan	Tajiktelecom
1996	Georgia	Georgia Telecom
1996	Guinea	Société des Télécommunications de Guinée (SOTELGUI)
1996	Hungary	Hungarian Telecommunication Co. (MATAV)
1996	Iran	Telecommunciations Company of Iran
1996	Peru	Telefonica del Peru
1996	Venezuela	Compania Anonima Nacional Telefonos de Venezuela (CANTV)
1997	Cote d'Ivoire	Société Côte d'Ivoire-TELECOM (CI-TELECOM)
1997	Hungary	Hungarian Telecommunication Co. (MATAV)
1997	India	Mahanagar Telephone Nigam Ltd. (MTNL)
1997	Kazakhstan	Kazakhtelecom
1997	Kyrgyzstan	Kyrgyztelecom
1997	Pakistan	Pakistan Telecommunication Company Ltd. (PTCL)
1997	Russia	Svyazinvest
1997	Senegal	Société Nationale des Télécommunications du Sénégal (SONATEL)
1997	Sri Lanka	Sri Lanka Telecom Limited (SLTL)
1997	Yugoslavia, Fed. Republic of	Serbija Telecom/PTT Montenegro
1998	Armenia	Armentel
1998	Czech Republic	SPT Telecom
1998	Kazakhstan	Kazakhtelecom
1998	Lithuania	Lietuvos Telekom (Lithuanian Telecom)
1998	Malta	Maltacom p.l.c
1998	Poland	Telekomunikacja Polska S.A. (TP SA)
1998	Romania	Romtelecom

The sample showed privatizing operators to represent 28% of all developing economy incumbents[46]; for fifteen incumbents (37%) on 38 observations (59%) privatization involved multiple transactions.[47] Though a single industry study, this international sample is one of the

[46] This study identified forty-one privatizing operators of a total 149 fixed-line incumbents, either partially or fully state-owned and privately-owned.

[47] In the following countries, incumbents privatized incrementally using a series of multiple transactions: Argentina (2), Armenia (2), Belize (2), Chile (3), Czech republic (3), Hungary (3), India (4), Iran (3), Jamaica (3), Kazakhstan (2), Malaysia (2), Mexico (2), Pakistan (2), Peru (3), Venezuela (2).

largest to date to investigate privatization in developing economies[48], and the only to examine privatization incrementally. Overall, sample size is adequate for regression purposes, for the general telecom population, and realistic compared to prior studies on privatization.

The average transaction year was 1994, and is indicative of a shift towards privatization in highly regulated industries, in both developed and developing economies, during the 1990s (D'Souza & Megginson, 1999). Incumbents were drawn from countries across a broad range of regions, though observations were fewer in Asia and Africa and more heavily weighted for both Latin America and the Caribbean (LAC) (32%) and East Europe and Central Asia (ECA) (31%) regions. (See table 3.8) This regional distribution is consistent with historical patterns and reflects more extensive privatization initiatives in LAC and ECA regions during the 1980s and 1990s, respectively (Megginson & Netter, 1999)

To evaluate the potential regional bias the models presented here were reestimated with region dummies for LAC and ECA to ensure that results were not sensitive to regional distribution. The dummies added little explanatory power to the main models but did reduce degrees of freedom, thus are not included in subsequent analysis. Once a temporal variable was specified regional differences became less important (as earlier LAC and later ECA transactions were controlled for in the statistical modelling).

[48] Boubakri and Cosset (1998) examine privatization performance for 79 companies operating in numerous sectors yet in only 21 developing economies, while Wallsten (2001) investigates telecom privatization performance in only 30 African and Latin American countries. Other larger developing economy samples test for privatization and ownership performance effects in a small number of transition countries (i.e. Makhija & Spiro, 2000; Djankov, 1999; Barberis, Boycko, Shleifer, & Tsukanova, 1996; Claessens, 1997)

Table 3.8 Final Sample Regional Distribution

Region	Frequency	Percent
East Asia and Pacific	4	6.3%
East Europe and Central Asia	20	31.3%
Middle East and North Africa	5	7.8%
South Asia	8	12.5%
Sub Saharan Africa	6	9.4%
Latin America and the Caribbean	21	32.8%
	64	100.0%

3.5. Measures

Independent Variables: The explanatory variables of interest were ownership structure and hybrid structure. Numerous control variables were used to isolate non-ownership and non-hybrid governance influences on performance; the most important limit variation across time for a longitudinal sample and across institutional context and fixed factors for a cross-country sample.

3.5.1. Ownership Structure

Though privatization by definition implies a change, earlier empirical research has taken a static approach, examining a public-private distinction with cross-sectional data on public versus private ownership (Villalonga, 2000). However, even recent work using longitudinal or panel design fails to go beyond the public-private distinction, limiting change-of-ownership effects to state ownership divestiture, whether measured along continuous, dichotomous or ordinal variables. Privatization events have been measured as either partial or full state divestiture (as change-of-ownership) (Boubakri & Cosset, 1998; Dewenter & Malatesta, 1997; Megginson et al, 1994), or as either minority or majority state ownership (D'Souza & Megginson, 1999; Villalonga, 2000). Similar measures have been used in studies on telecommunications

privatization (Bortolotti, D'Souza, Fantini, & Megginson, 2001; Wallsten, 2001; Ros & Banerjee, 2000; Ros, 1999; Durant, Legge, Moussios, 1998), with some research measuring privatization as not only actual but also prospective state divestiture (Boylau & Nicoletti, 2000). Limiting privatization measures to change-of-(state) ownership or state ownership thresholds and omitting more direct measurement of the distribution of privatized ownership itself as a result of this change, overlooks a major source of variation in the observed results of privatization.

We use more refined measures on ownership. Similar to cross-sectional research on privatization transitional economies (Makhija & Spiro, 2000; Djankov, 1999; Claessens, 1997), a more complete distribution of ownership structure was examined using shareholding by blockholder type. This approach extends research on ownership and performance more generally (McConnell & Servaes, 1990; Morck, Shleifer & Vishny, 1988; Demsetz & Lehn, 1985). Potential large-block shareholders include managers, employees, strategic investors (local or foreign), institutional investors, individual investors, and the state. We drew on the identity of these owner classes to generate an informed set of keywords used for content analysis on the incumbent ownership data.

Six ownership types of interest were distinguished in the sample, including State, Telco (telecommunications operator), Institutional (financial institutions), Other Company, Employees/management, and Investors. (See Table 3.9) Initial private ownership categories did not distinguish between foreign and domestic ownership.

Table 3.9 Informed Set of Keywords for the Telecommunications Sector

Shareholder Identity	Shareholding Entities
State	Ministry, office, department; central or privatization agency; privatization, property, pension or social fund
Telco	Telecommunications operator parent corporation, subsidiary, international holding or investment company
Financial/Institutional	Bank, bank holding company; mutual funds, asset or portfolio management; Finance or investment company, and where no telecommunications operator is identified
Other Company	Manufacturing or industrial company; company, holding company; investment or investor group, business group; and where no telecommunications operator or financial institution is identified
Employees/Management	Employees, union, employee stock ownership plan (ESOP); management
Investors	Private or public investors; local or international investors; individuals, citizens, others; or (ownership sale dispersed by) share issue, *tranche*, public offering, American or Global Depository Receipts (ADR, GDR), coupon auction; trading on stock exchange; and where no state entity, telecommunications operator, financial institution, employee/management, or other company owner is identified

The numerous sources and details provided on each transaction increased confidence in the data used to develop the ownership measures. The following procedures were applied to the data to construct the metrics. To ensure reliability coding rules were kept simple and straightforward, and were clarified as coding progressed.

For each transaction ownership was measured on continuous variables as percentage of total equity shareholding by owner class (ownership structure across types summed 100 %).

Particular attention was directed to distinguishing amongst new privatized ownership, discerning non-state large-block shareholdings from diffused shareholdings. In our study, Investors were, by definition, diffused and represented the atomized private ownership category, where reporting indicated no consolidation of shares. In addition, Investors served as the 'residual' private

ownership category, where left over private ownership was allocated during the coding process. Generally, where fractions of total equity were unaccounted for and left unaddressed, these amounts were allotted to one of two residual categories. State blockholdings represented the non-private residual ownership category.

Possibly, residual privatized ownership may be consolidated in the hands of institutional investors such as mutual funds and not reported; this would bias coding downward for Institutional ownership and upward for diffused shareholdings, Investors. Underdeveloped capital markets and weak secondary trading are likely conditions in our research context; this would reduce such measurement error, though it is recognized here. Likewise, Other Company ownership may not receive adequate reporting in comparison to well-known global Telco(s) or the State, and undercounting would result; this would likely bias coding downward for Other Company and upward for Telco and residual categories, State and Investors.

Where owner identity was explicit and fractions of equity shareholdings reported summed 100, coding was most straightforward. The following decision rules were used to quantify more qualitative reporting. State residuals were coded when reports indicated incumbents to be "partially privatized" and Investor residuals when "fully privatized", or other synonymous terms were present. Where distinct owner classes were identified yet only combined percentage shareholdings reported, the amount was allocated evenly. Where the privatizing incumbent's name was a known global telecommunications operator and no ownership data was reported, ownership structure was coded as 100% Telco. Where the incumbent name was nonspecific, identifying telecommunications operations and/or country location only, and reported as "private", ownership structure was coded 100% Investors.

Subsequent descriptive statistics showed negligible data and inappropriate distributions for Institutional, Employee/management, and Other Company variables. As a result, these minor blockholder types are dropped as separate ownership variables. Instead, an additional variable was defined, Foreign blockholder, where all or at least one blockholder was known to be foreign-based, and constructed by re-coding non-foreign Telco, Institutional, and Other Company ownership as 0, then summing percentage shareholding across these categories. As defined, all ownership for original blockholders was identified as "foreign", except on 2 transactions for Other Company.[49] With Foreign and Telco now measured as distinct variables, we recognize Telco to be a measure of privatized ownership held by various multinational telecommunications operators.

In sum, ownership structure was measured using continuous variables of total shareholding on four owner classes: three variables measuring potential large-block shareholdings, State, Telco, and Foreign; and one variable measuring diffused shareholdings, Investors.

Similar to Morck et al (1988) and following Djankov (1999), curvilinear effects and blockholder thresholds were examined using piecewise regression techniques. Using the piecewise regression functional form allows the linear equation to change slope for different values of the quantitative independent variable (Studenmund, 1997). To estimate the piecewise linear regression each blockholder ownership variable was re-coded as three sets of variables with the following breakpoints: 1) below 5%, between 5% and 25%, and above 25% and 2) below 10%, between 10% and 30%, and above 30% and 3) 0% to 50% and above 50%. (See Appendix 3.B for specific operations used in the computation for re-coding blockholder types.)

[49] Only one country and two transactions were re-coded: For Malaysia (1990, 1992), Other Company ownership, 3.5% and 3.5%, was recorded as local and recoded, 0% and 0%.

Although there remains no consensus on the appropriate threshold of share concentration to distinguish "manager-control" from "owner-control", many studies infer managerial control anywhere from 5% to 20%. The breakpoints we construct correspond with testing for curvilinear relationships between ownership and performance and dominant ownership in transition economies (Makhija & Spiro, 2000; Djankov, 1999; Claessens, 1997), and are not too dissimilar from those testing ownership and performance on samples drawn from a U.S. empirical base (Morck, Shleifer & Vishny, 1988; McConnell & Servaes, 1990). Similar to this research we constructed alternative ownership concentration measures[50] and tested for general ownership effects yet with no result, likely due to restriction of range for highly concentrated ownership structures in this sample (this is issue taken up in the results section, 4.3.1.)

3.5.2. Governance Structure

Hybrid governance form as an organizational structure is operationalized as inter-firm network, using network models as developed in diverse yet related areas of sociology and economics. A network can be defined as the pattern of direct ties linking a defined set of firms, and inter-firm network as an abstract concept for a set of nodes (firms) and the (equity-based) relationships that connect them (i.e. n nodes – 1 = n ties).

The direct equity ties created by trade sale privatization strategy that combine to form hybrid structure was measured as a count variable. A count was made of the number of new owner

[50] Alternative ownership concentration measures included the Herfindahl index (Demsetz & Lehn, 1985; Claessens, 1997), largest blockholder (Morck, et al, 1988), and testing for curvilinear effects using squared terms (Morck et al, 1988; Makhija and Spiro, 2000). It is likely that these general concentration measures suffered from restriction of range, being inadequately discriminating when ownership structure is highly concentrated.

partner firms investing in the focal privatizing firm. The following decision rules guided measurement.

For every Telco, Institutional, and Other Company link to the privatizing firm one tie was added; the cumulative total measured the total number of network ties; when no new owner partner firm is involved in the transaction no inter-firm ties are formed (i.e., inter-firm network = 0). Where holding structures mediated direct ownership ties between partner firms and the privatizing firm, the following decision rule was used: where the ownership structure of the holding company was identical in terms of ownership class(es) and percentage equity held to that of the 'parent' above, only one distinct node was recognized, and 1 tie added. Where conglomerate or business group owners were identified and first-order ownership distinguished only, more than one node with distinct ownership was presumed to exist, whether parent, subsidiary or partner, and a conservative number of 2 ties added. The count was not increased for Employees as no employee stock ownership plan or fund (i.e. investment companies) was reported in our sample. Likewise there was no increase for (diffused) Investors by definition as coding for this owner class reflects no known consolidation of shares. Neither was the count increased for State as a blockholder nor state funds or holding companies as no new private ownership ties were introduced and ownership in such holdings was assumed identical to the 'parent'.

Inter-firm network tie formation or "hybridness" will vary depending on whether privatization trade sale strategies include simple 'asset' transfer to a single company, a joint venture investment in the privatizing firm, or more complex consortia sales. In our study, hybridness

ranged from 0 to 6: Zero ties indicated no hybridness (i.e. "market" governance), while 1 through 6 ties indicated increasing degrees of hybridness.[51]

Generally, this hybrid construct is consistent with definitions of equity alliance, exchange agreements where partners share or exchange equity, including agreements where partners create a new entity in which equity is shared as well as those where one partner takes an equity interest in the other (Gulati & Singh, 1998). In our study, where new owners create a separate joint venture from which to invest directly in the privatizing incumbent both definitions of alliance apply.

Direct equity ties link the new owner firm(s) to the strategic action of the privatizing incumbent, introducing group-level dynamics of ownership and control. We introduce the hybrid construct and measure it directly to observe inter-firm effects as part of the trade sale privatization process. We hypothesize that hybridness or network governance as such will lead to improved privatization performance.

Our count measure for hybrids conforms to social network analysis concepts of degree centrality (Freeman 1979) and density of ties (Coleman, 1990). A common assumption from these perspectives is that knowledge and resources are broadly distributed, and the locus is found in a network of inter-firm relationships. Direct ties potentially providing resource-based knowledge-sharing amongst network members. A network governance approach suggests higher density of ties provides multiple channels for knowledge transmission (Kogut & Walker, 2001). In this way, hybridness or degree of inter-firm networking is reflected in the density of ties.

[51] Where full privatization is characterized jointly by a single new blockholder (1 tie) owning 100% of incumbent ownership, "hierarchy", or internalization, would be present. In our final sample, there was no such case.

Though we use a simple count variable, this metric is likely more powerful than a discrete variable, and may improve the likelihood that an additional source of performance variance is captured. To measure privatization transactions along inter-organizational dimensions finds support in an organizational configuration approach. When used in conjunction with single-industry samples and longitudinal design organizational configurations are stronger at capturing performance variance (Ketchen, Combs, Russell, Shook, 1997). Furthermore, the network governance variable may offer an alternative specification for large-block shareholder ownership structure that goes beyond dichotomous variables or threshold levels on aggregate ownership, and is more straightforward and perhaps interpreted more easily than certain curvilinear modeling (i.e. squared, cubed, or quadratic ownership terms).

There are calls to specify privatization as a multi-dimensional construct and distinguish privatization strategies as a way to capture a major source of variation overlooked in the empirical research (Zahra, Ireland, Gutierrez, & Hitt, 2000). However, very little of this work addresses issues of operationalization. Theory-building by management scholars does suggest a meso network concept to understand corporate privatization strategy (Doh, 2000) and privatization effects relevant for organizational learning (Zahra et al., 2000), yet certain still offer more traditional organization structure constructs (i.e. decentralized organization structure) to capture intervening variables for privatization performance (Cuervo & Villalonga, 2000). De Castro and Ulenbruck do examine trade sale privatization (privatization acquisitions), though measure the transaction using a dummy variable[52] (De Castro & Ulenbruck, 1997) or simply select trade sale transactions as the sample frame (Ulenbruck & De Castro, 2000), offering no direct measurement. Certain preliminary research models trade sale strategy using a dummy dependent variable for purposes of logit analysis (Megginson, Nash, Netter, Poulsen, 2000).[53]

[52] Type of acquisition: 0 if 100% acquired; 1 if only an equity stake.
[53] Logit analysis is used and requires the dependent variable to be discrete.

We recognize that the practitioner-based concept of privatization trade sale has not received attention in the empirical literature; neither has the network construct been advanced in this way in a larger sample statistical study on privatization performance effects. More complex network variables were not introduced given the exploratory nature in advancing network governance to observe an empirically unaddressed dimension of the privatization construct.

We distinguish our network analytic from that of the technological and physical facilities "network", the telecommunications systems built upon an array of heterogeneous yet interrelated technical components (Majumdar & Venkataraman, 1998). However, such that inter-firm networks affect larger scale fixed-line performance, our study has relevance for multiple level network effects.

Our hybrid measure is also distinct though similar to that of pyramid structure, as defined and operationalized in the ownership literature on private benefits of control. LaPorta, Lopez de Silanes, & Shleifer (1998) distinguish pyramids where controlling shareholders exercise control (using threshold levels of 10% or 20% ownership concentration) through at least one publicly traded company. In our study, operationalization of hybrids as inter-firm networks did not distinguish whether holding structures were publicly traded, rather our focus was to disaggregate measurement on ownership structure from organizational structure.

3.5.3. Time

Longitudinal design for examining incremental privatization over an 18-year period required controlling for unobserved temporal factors. Important implications likely stem from industry

technological change, general changes in economic environment and population during this period, as well as from public policy 'learning' in designing privatization programmes and specific transactions more effectively over time.

To control for these and other unobserved temporal effects a year trend variable was constructed and measured using the first sample transaction year as a baseline. Range was 1 (year of first sample transaction) to 18 (year of last transaction) and assumes linearity in the effect of time. No differences were observed in results based on alternative controls for time, using dummy variables or split sampling. To correct for skewness and mitigate effects of extreme cases a transformed year trend variable (year trend power 3) was used in subsequent analysis.

3.5.4. Competition

Many researchers conclude that competition and regulation are more important than ownership in determining performance, therefore, policymakers should focus primarily on improved regulatory capacity and making markets work well (i.e. Vickers and Yarrow, 1988; Demsetz & Lehn, 1985). A broad understanding suggests competition and regulation to provide market discipline and monitoring likely to impact on performance outcomes. In addition, these mostly exogenous factors are thought to restrict options available to owners, thus reducing the control potential of managing firm-specific risk in ways not fully reflected in more concentrated ownership or joint governance structures.

To control for aspects of competition in our sample, we construct a contestable markets measure. *General Trends* reports categorical data on level of competition for key telecommunications

markets, including local, domestic long distance, and international long distance. Market status was indicated as either: monopoly, where service is provided exclusively by one operator; as partially competitive, where limits exist on the number of licensees, geographical coverage, foreign ownership for that market; or fully competitive, where any company can license for service provision, with no limits on number of licenses. This reporting indicates legally permissible competition and may not necessarily reflect extant competition in these markets. Nevertheless, the data likely informs on degree of ease of entry (i.e. contestability) for these key telecommunications markets. Similar indictor variables based on permissible market entry have been used in recent empirical research on telecommunications privatization (Ros, 1999).

From this data three dummy variables were constructed to indicate competition (1=partial or full competition; 0= monopoly) in each market (local, domestic long distance, international long distance). To retain degrees of freedom the indicators were combined into a single count variable measuring aggregate competition across all three markets. The variable ranges from 0 to 3 (i.e. 0 indicates no partial or full competition in any of the key markets; 1 indicates competition in 1 key market; 2 in 2 key markets; and 3 in all 3 markets). Aggregating market status improved variation to some degree: when each market is considered separately, monopoly status is indicated on average for 70.53% of sample observations; when aggregated across key markets, monopoly is indicated for 53.1% of observations. (See Tables 3.10 and 3.11).

Table 3.10 Sample Distribution for Level of Competition Across All Three Markets

	Monopoly		**Partial Competition**		**Full Competition**		**Valid cases**
	Frequency	Percent	Frequency	Percent	Frequency	Percent	
Local Services	39	60.94%	8	12.50%	17	26.56%	64
Domestic Long Distance	48	76.19%	6	9.52%	9	14.29%	63
International Long Distance	47	74.60%	9	14.29%	7	11.11%	63
Average %	**70.53%**		12.11%		17.37%		

Table 3.11 Sample Distribution for Aggregate Competition Across All Three Markets

Dummy Value [a]	Frequency	Percent
Local Services		
.00	39	60.9
1.00	25	39.1
Domestic Long Distance [b]		
.00	48	75.0
1.00	15	23.4
International Long Distance [b]		
.00	47	73.4
1.00	16	25.0
Competition (sum across 3 markets)		
.00	34	**53.1**
1.00	13	20.3
2.00	8	12.5
3.00	9	14.1

[a] Dummy variable equals 1 for operators in partially or fully competitive markets
[b] Valid cases, n = 63

In prior multi-industry, multi-country studies on privatization measures for competition and regulation have been confounded using an industry dummy for subsampling purposes, where noncompetitive environment is defined as a highly regulated industry, and operationalized to include telecommunications, banking or electric utility sectors (Boubakri & Cosset, 1998;

Megginson et al 1994; D'Souza & Megginson, 1999). Our study attempts to isolate privatization and ownership effects further in parsing aspects of competition and regulation (see below) within a highly regulated and less competitive industry sector.

More refined measures on competition were not sought for two reasons, beyond data limitations in place when developing consistent metrics across this larger developing economy sample. First, extant variation along competition was clearly lacking in our sample. For instance, most sample incumbents are listed by the Federal Communications Commission as dominant operators, presumed to possess market power in key product markets (i.e. more than 50% market share in international transport facilities; intercity facilities and services; and local access facilities and services on the foreign end of the U.S. route).[54] Moreover, this presumption extends to all carriers that control, are controlled by, or are under common control with, the carriers identified as dominant operators (i.e. including joint venture partners, new ventures in emerging sectors, etc.). For our sample, more traditional measures of market concentration would be less useful due to restriction of range. Given the concentrated industry structure a contestable markets measure would suffice.

Second, a primary focus in our study is to examine the relative effects of privatization governance in terms of ownership and hybrid structure. Central aims do not extend to testing which matters most ownership, competition or regulation. These important research objectives were beyond the scope of our study and would require more discriminating scales. For these reasons a basic competition control variable was adequate.

[54] Source: http://www.fcc.gov/Bureaus/International/Public_Notices/1999/da990809.txt

3.5.5. Regulation

Following Wallsten (2001) and preliminary research on telecommunications privatization (Bortolotti, D'Souza, Fantini, Megginson, 2001) regulation was measured using a dummy variable indicating whether the industry had a separate telecommunications regulatory agency not directly under the control of the ministry (1= yes, a separate regulator is established, 0= no, a separate regulator is not established). Whether telecommunications operations and regulatory functions are separate is likely associated with propensity to undertake regulatory reform.

Measures for both competition and regulation were developed using cross-sectional data, reflecting status as of 1997/1998, and are likely to bias upward for earlier transactions (i.e. more competition or regulation measured than perhaps was the case earlier on). However, this bias was not considered too severe given the number of later observations in the sample (mode = 1997, mean = 1994). Furthermore, in the case of telecommunications privatization and regulation in Latin America and Africa (1985-1997), there is some evidence that year of privatization and year an independent regulator was established to be highly correlated.[55] This may suggest that confidence in cross-sectional data on regulation is not too inappropriate for dynamic modeling of privatization in this sample.

In D'Souza and Megginson, subsample analysis on noncompetitive/highly-regulated sectors showed "the most intriguing results", significantly greater privatization performance improvements (1999:1426). These authors recognize their dataset to be inadequate to determine whether de-regulation, technological change, or privatization are the driving factors. In our study, the data structure allowed us to control for industry technological change (i.e., indirectly,

[55] Summary statistics from Wallsten (2001: 10).

in part, by using a temporal variable), competition and regulation (i.e., directly), and isolate both privatization ownership and network governance effects overtime.

3.5.6. Income

Similar to Boubakri and Cosset (1998), developing economy privatization observations were parsed further to control for differential effects on performance among incumbent operators in low- and middle-income economies. Unobserved fixed-effects associated with (1996) middle-income level were measured using a dummy variable (1= lower- or upper-middle income, 0= low-income).

Low-income economies are more likely to have thin capital markets and weaker regulatory and governance (legal) institutions, thus may lack the market-based infrastructure needed to consolidate shares in the hands of strategic investors willing to engage in restructuring and maximize performance improvements. Kikeri, Nellis and Shirley (1992 in Boubakri & Cosset, 1998) maintain that a market-friendly policy framework and well-developed regulatory policy are correlated with income.

Dependent Variable:

3.5.7. Performance

Similar to the longitudinal approach used by Megginson et al. (1994), Boubakri and Cosset (1998), and D'Souza and Megginson (1999) annual performance data was obtained for a pre- and

post-privaitzation timeline spanning 6 years, 3 years before (-3, -2, -1) and 3 years after (+1, +2, +3) the privatization transaction event year (0). The only exception was for a limited number of 1998 observations. For these transactions the post-privatization period included the transaction event year; any tests results would likely bias downward (less privatization effects in the event year). Valid data was obtained where at least two data points were present: one annual observation in each of the pre- and post-privatization period. The Megginson programme requires observations from at least year –2 to 2+, or a minimum of four data points.

From this annual time series data we calculated a growth metric using mean percentage performance change over the pre-post privatization periods (Δ performance = [average post performance / average pre performance] – 1). Examining performance growth rates conveys information on scale of change within transactions and not about order of magnitude between transactions.

We sought a wide-range of indicator data from the *World Telecommunications Indicators Database* to calculate valid performance metrics. Twenty-eight financial and non-financial indicators were extracted to measure performance constructs such as customer service quality, innovation, pricing, investment intensity, profitability, and numerous financial ratios and efficiency measures. These constructs tap performance critical for longer-term operator viability and competitive advantage in the marketplace.

The precise definition of our performance variable was dictated by data constraints as very few indicators were viable on a cross-country basis. We were successful in calculating a growth metric for performance in fixed-line telecommunications service provision, a ratio of 'waiting' per 'household'. (See Figure 3.1) This measure denotes negative growth as privatization performance improvement: a rate of reduction for delay in basic telecommunications services.

Waiting List for mainlines (in 1000s) was recorded as the number of unmet applications for connection to the public switched telephone network (PSTN) that are held over due to a lack of technical facilities (i.e. equipment, lines, etc.). This indicator refers to registered applications and may not reflect total unmet demand. Waiting was industry-adjusted for cross-country demand characteristics using Households. Households was recorded as the number of housing units consisting of persons who live together or a person living alone; numbers are based on growth rates between censuses.

Figure 3.1 Performance in Fixed-line Service Provision

$$\Delta delay = \frac{\frac{\overline{\omega}_{post}}{\overline{h}_{post}}}{\frac{\overline{\omega}_{pre}}{\overline{h}_{pre}}} - 1$$

Important exogenous variables that may affect demand and supply for telecommunications services are income per capita, and capital investment and digital switching, respectively (Ros, 1999; Ros & Banerjee, 2000). In our study, demand influence was limited in part in selecting a developing economy sample frame, and further with a middle income control variable; cross-country adjustments for households limit impact of demand conditions as well. Pricing change is an additional factor though recent research on telecommunications privatization using panel data on 23 countries in Latin America showed significant privatization effects even once tariff rebalancing was controlled for (Ros, 2000). Unfortunately, demand-related data on pricing as well supply-related data on investment and switching was missing for observations in this sample.

Generally, waiting for PSTN connection is recognized as a quality of service indicator (Durant et al., 1998; Ros, 1999), though the industry-adjusted growth calculation used here imparts an efficiency interpretation to this quality construct. More generally, then, our study examines the efficiency of privatizing fixed-line incumbents by analyzing variations in delay.

This metric offers an important measure of privatization performance for this sample. For many developing economies the main drivers of telecommunications privatization are improved service performance, as well as ability to handle expansion; and compared to financial measures, aggregate measures such as quality of service are quite pertinent as privatization restructuring is anticipated in broader systems and structures (Ramamurti, 1996 in De Castro, 1997). Moreover, non-financial performance may serve as a driver of financial performance in the longer term. No attempt is made here to explain PSTN service provision *per se*. Rather the aim is to use improved privatization metrics to capture relative effects on important fixed-line performance with relevance to privatization.

A total of 329 years of annual performance data, spanning 1978 to 1999, was used in constructing this metric across the sample. To correct for skewness and mitigate effects of extreme cases a transformed performance variable (power 3) was used in subsequent analysis. Table 3.12 describes the independent and dependent variables.

Table 3.12 Variable Definitions

Variable	Description
Time[a]	Number of years between operator transaction event and first sample event.
Competition	Count variable; aggregate of 3 dummy variables for operators in competitive markets for local, domestic long distance, and international long distance. Partially or fully competitive = 1
Regulation	Dummy variable for operators with a separate regulator (yes = 1).
Income	Dummy variable for operators in middle-income countries; Lower-middle or upper-middle income = 1.
State	Total percentage shareholding for operators owned by government, including ownership by agencies, ministries, or other government owned bodies.
Foreign	Total percentage shareholding for operators owned by strategic investors, including Telco, Institutional, or Other Company owners, recorded as no less than partially foreign-based.
Telco	Total percentage shareholding for operators owned by other telecommunications operators, including parent, subsidiary, or holdings companies.
Institutional	Total percentage shareholding for operators owned by financial institutions, including banks, investment companies, or portfolio funds.
Other Company	Total percentage shareholding for operators owned by other companies, recorded as neither telecommunications operators nor financial institutions, including conglomerates/business groups or manufacturers operating in industries other than the telecommunications sector.
Employees	Total percentage shareholding for operators owned by respective operator employees.
Investors	Total percentage shareholding for operators recorded as either widely-held or a residual amount owned by neither State, Telco, Institutional, Other Company, nor Employees.
Hybrids	Count variable; Add 1 tie for each Telco, Institutional, Other Company equity link; number of new owner firms (nodes) investing in privatizing firm (node): n nodes – 1 = n ties
Delay[a]	Mean percentage change in performance pre-post transaction event for the ratio Waiting for PSTN connection cross-country industry-adjusted for Households; negative growth demonstrates performance improvement: reduction in delay for basic telecommunications services.

[a] Power (exponential) 3 transformation.

3.5.8. Econometric Model

The econometric model consists of three vectors of explanatory variables: the controls, as (1) time, and (2) institutional and fixed factors (competition, regulation and income); and privatization strategy, as (3) transaction-specific characteristics, ownership structure (large-block shareholdings and diffused shareholdings) and governance form (hybrids). Performance change was estimated using the following multiple regression equation: where X_1 is the vector for the temporal variable, X_2 the vector of institutional and fixed factors, X_3 the vector of transaction-specific variables, and u the normally-distributed, random error term. (See Figure 3.2) Equation 1 was estimated using ordinary least squares (OLS).

Figure 3.2 Equation 1

$$\Delta perf = \alpha_0 + \alpha_1 \chi_1 + \alpha_2 \chi_2 + \alpha_3 \chi_3 + \mu$$

Assessment of the correlation matrix as well as instability of estimates in initial modeling demonstrated some independent variables to be imperfectly correlated. Multicollinearity existed between major large-block shareholders State, Telco, and, of course, Foreign (as derived by Telco, Institutional, and Other Company). (Refer to Table 4.2, Pearson Correlations.) As a result, we chose to run alternative blockholder specifications. Subsequent checks for

multicollinearity using variance inflation factors (VIF) indicated multicollinearity posed no serious threat to the validity of the analyses for the models.[56]

Other options included dropping redundant variables, thus, specifying one blockholder model only, where blockholders left out become the baseline comparison, and results interpreted accordingly. Generally, alternative specifications simply make baseline comparisons explicit when assessed unambiguously across alternative models. In the case for Telco and Foreign blockholders separate models were run to distinguish marginal effects, if any, between (foreign) Telco and Foreign (Telco, Institutional, and Other Company). Another option was to combine redundant variables (in a ratio for instance). However, this would be appropriate only if estimates for State and Telco/Foreign were expected to move in the same direction; they were not.

3.5.8.1. Main Models and Piecewise Models

Each main model included the control variables, diffused shareholdings (Investors) and governance form (Hybrids), and an alternative large-block shareholder, either State (Model 1), Foreign (Model 2), or Telco (Model 3). The structure of the main models is presented in Table 3.13.

Table 3.13 Main Models

	Model 1	**Model 2**	**Model 3**
Control Variables:	X_1	X_1	X_1
	X_2	X_2	X_2
Transaction-specific Variables:	X_3	X_3	X_3
Large-block Shareholdings	State	Foreign	Telco
Diffused Shareholdings	Investors	Investors	Investors
Governance Form	Hybrids	Hybrids	Hybrids

[56] A common threshold for concern for VIF is 5, though some researchers use a factor of 10 as indicating multicollinearity may be influencing the least squared estimates of the regression coefficients.

Similarly, each piecewise model included the control variables, diffused shareholdings (Investors) and governance form (Hybrids), and an alternative large-block shareholder recoded for relevant breakpoints. The structure of the piecewise models for dominant ownership breakpoints 0% to 5%, 5% to 25%, and >25% (Models 1.1, 2.1, 3.1) is presented in Table 3.14. Corresponding models were included for breakpoints 0% to 10%, 10% to 30%, and >30% (Models 1.2, 2.2, 3.2), as well as 0% to 50%, and >50% (Models 1.3, 2.3, 3.3); these models follow the same overall design and are not illustrated here.

Table 3.14 Piecewise Model, Breakpoints 0% to 5%, 5% to 25%, and >25%

	Model 1.1	**Model 2.1**	**Model 3.1**
Control Variables:	X_1	X_1	X_1
	X_2	X_2	X_2
Transaction-specific Variables:	X_3	X_3	X_3
Dominant Ownership	State (0,5)	Foreign (0,5)	Telco (0,5)
	State (5,25)	Foreign (5,25)	Telco (5,25)
	State (25,100)	Foreign (25,100)	Telco (25,100)
Diffused Shareholdings	Investors	Investors	Investors
Governance Form	Hybrids	Hybrids	Hybrids

3.5.9. Regression Diagnostics

To ensure stability of the estimates and confidence in the results, the models were empirically checked using standard econometric criteria for assumptions underlying the methodology. Residual variances failed to uncover extant problems with heteroscedasticity or autocorrelation. However, Cook's distance, leverage, standardized predicted values detected certain outliers and influential cases for nine observations in six countries, including Czech Republic, Bahrain,

Belize, Hungary, Pakistan, Peru. This was not unexpected as smaller (absolute) sample size carries with it a potential for greater effects of outliers.

Drastic and unrepresentative changes in transition economies may have contributed to extreme data for incumbent privatization in the Czech Republic (1998) and Hungary (1996, 1997), while coding difficulties in collapsing units of analysis and transaction dates for Peru (1994, 1996) and Pakistan (1994) may have contributed to measurement error. The Bahrain (1981) transaction was the earliest in the sample and the only observation with pre-performance data from the 1970s, which may have caused unusual influence. It is unclear why Belize (1990, 1991) was an outlier. When no practical remedy exists to address outliers and influential data cases are excluded (Kennedy, 1992). Substantive conclusions were generally not different in the reduced model (n = 55).

4. RESULTS

In this chapter the empirical results are presented, including descriptive statistics, correlations, and regression analysis. Descriptive statistics and Pearson correlations for all the variables are reported in Tables 4.1 and 4.2, respectively. Table 4.3 presents the main models, and Table 4.4 the piecewise models.

4.1. Descriptive Statistics

Descriptive statistics indicate that, on average, privatization was transacted in years 13/14 and 17 (mean = 13.6, median = 14.5, mode = 17), or the mid- to late-1990s (i.e., 1993/94 and 1997). Incumbent operator context showed: (partial or full) competition was lacking in local, domestic long distance, or international long distance provision of services as monopoly conditions were common (mean = 0.87, median and mode = 0); extant regulation was the norm though many transactions were realized without a separate regulator in place (mean = 0.55, median and mode = 1); and (lower- or upper-) middle income countries presented as typical privatizing administrations (mean = 0.73, median and mode = 1).

The variables of interest demonstrate that, on average (mean), the State retained 47% ownership, while for new private ownership, 26% involved Telco, 18% involved Investors, and the remainder a combination of Fianancial/Institutional (2.58%), Other Company (2.71%), and Employee/management (2.39%). When Telco, Institutional, and Other Company are re-coded for foreign direct ownership, 31% involved Foreign. For some incumbent operator transactions complex hybrid structures were established (maximum = 6 network ties). However, for most, between one and (nearly) two direct ties were created (mean = 1.67 ties, median and mode = 1 tie), suggesting joint ventures (between an acquiring firm and the privatizing firm or between the

acquiring firms themselves) to be common for incumbent operator privatization in developing economies. Also, performance generally improved for this industry though was negatively skewed as some transaction observations showed greatly improved performance (i.e. mode = -9.64, mean = -.84, median = -.29).

Overall, descriptive statistics on key variables point to privatization transaction strategy characterized by non-negligible state ownership residuals, potentially active large-block shareholders introducing joint venture structures as well as more complex consortia, as well as diffused shareholders and differential performance improvements.

Table 4.1 Descriptive Statistics[a,b]

	Mean	Median	Mode	S.D.	Min	Max
Time[c]	13.6	14.5	17	3.49	1	18
Competition	0.87	0	0	1.10	0	3
Regulation	0.55	1	1	0.5	0	1
Income	0.73	1	1	0.44	0	1
State	47.13	51	51	27.73	0	95.17
Foreign	31.57	34.5	0	25.28	0	94.9
Telco	26.38	27.9	0	24.98	0	94.9
Fin/Institutional	2.58	0	0	7.70	0	40
Other Company	2.71	0	0	7.46	0	40
Employee/Mgmt	2.39	0	0	5.02	0	24
Investors	18.78	14.95	0	18.80	0	68.9
Hybrids	1.67	1	1	1.63	0	6
Delay[c]	-0.84	-0.29	-9.64[d]	1.74	-9.64	0.87

[a] $n = 64$
[b] See Table 3.12 for summary of variable definitions.
[c] Descriptive statistics are presented for untransformed functional forms of variables Time and Delay.
[d] Multiple modes exist. The smallest value is given.

4.2. Correlations

The correlation matrix shows State and Telco ($r = -641$, $p < .01$), thus State and Foreign ($r = -.705$, $p < .01$), to be imperfectly correlated ($r \geq |.50|$). The high correlation between these blockholder

types reflects measurement choice and actual incumbent ownership structure in the industry: once ownership on two of three major types was accounted for (either State and Telco, or State and Foreign) along with Investors, the small fraction remaining was split between three negligible shareholder classes (Fianancial/Institutional, Other Company, Employee/management).

Consistent with the hypotheses, the dependent variable, Delay, is significantly correlated with blockholders Telco (-.250, p <.05) and Foreign (-.272, p <.05), as well as with governance form Hybrids (-.423, p <.01), and in the expected direction to indicate performance improvements. Also consistent with the hypotheses, correlation between State (.350, p <.01) and Delay is significant yet in the opposite direction to suggest worsened performance; and no significant correlation is present for Delay and Investors, diffused shareholdings. None of the remaining variables are correlated to an extent that warrants discussion; control variables are not addressed here.

Table 4.2 Pearson Correlations[a]

	1	2	3	4	5	6	7	8	9	10	11	12
1.Time[b]												
2.Competition	.006											
3.Regulation	.032	.068										
4.Income	-.220	.222	-.192									
5.State	.252*	-.052	-.012	-.303*								
6.Foreign	.013	-.103	-.208	.130	-.705**							
7.Telco	-.023	-.265*	-.183	.099	-.641**	.898**						
8.Fin/Institutional	.150	.192	-.062	.054	-.033	.189	-.151					
9.Other Co.	-.034	.343**	-.023	.050	-.197	.168	-.164	.110				
10.Employees	-.090	-.057	-.042	.075	-.342**	.024	.043	-.026	-.036			
11.Investors	-.366**	.230	.306*	.253*	-.440**	-.304*	-.268*	-.196	.075	.206		
12.Hybrids	.078	.285*	.145	.337**	-.408**	.459**	.259*	.431**	.235	.169	-.057	
13.Delay[b]	-.153	.020	-.182	-.256*	.350**	-.272*	-.250*	-.066	-.014	-.254*	-.084	-.423**

[a] $n = 64$

[b] Descriptive statistics are presented for untransformed functional forms of variables Time and Delay.

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

4.3. Multiple Regression Analysis

The general proposition investigated in the models is that percentage change in incumbent operator performance is a function of privatization implementation strategy, once controlling for temporal effects and certain institutional and fixed factors. More specifically, we argue that performance will vary according to the distribution of large-block shareholdings and hybrid governance (the number of equity-based inter-firm network ties) characterized by the transaction. Modelling for Hybrid effects stems from conceptual extension and novel propositions advanced in this study.

Regression results for reduced main Models 1, 2, 3 and piecewise Models 1.1, 2.1, 3.1 are presented below. Models without outliers and influential data removed are reported in Appendices 4.A and 4.B. Generally, results remain qualitatively similar for transaction-specific variables between reduced and full sample observations; where substantive conclusions are affected, these are noted. Results are reported using transformed variables Time and Delay. Similarly, results remain consistent for all transaction-specific variables for equations estimated using nontransformed variables.

Main Models 1, 2, and 3 are used to test for diffused shareholdings, active blockholder, state residual and hybrid governance effects (Hypotheses 1, 2, 3, 5, and 6). Parameter estimates of interest are for State, Foreign, Telco, Investors and Hybrids. Piecewise Models 1.1 and 2.1 test non-monotonic relationships, specifically dominant ownership effects (Hypothesis 4). Parameter estimates of interest are State (25,100) and Foreign (25,100). Results are discussed in this order. All other re-coded breakpoint variables for piecewise modelling were dropped from the analysis

due to inappropriate distributions and paucity of data; the corresponding models are reported in Appendix 4.C [57]. Though Model 1.3 is presented in Table 4.4 below, for consistency, results for Telco breakpoints are not discussed, for the reasons just specified.

Unstandardized regression coefficients are shown, with *t*-values in parentheses. Only Hypothesis 1 does not posit directionality (in either improved or worsened performance), thus a two-tailed test is appropriate. For all other hypotheses that posit directionality one-tailed tests are more suitable. However, to provide uniform reporting across the models two-tailed tests were used. As a result, our tests for Hypotheses 2, 3, 4, 5, and 6, generally, are more conservative.

A word on the controls and overall modeling. Consistent across all models is a significant temporal (Time) effect (from $p < .01$ to $p < .05$), while Income is significant ($p < .10$) for State and Foreign blockholder models; these results suggest improved performance in more recent privatization transactions and generally better outcomes in middle-income developing economies. Competition and regulation were not significant. It is possible our rather coarse measures on these variables may not adequately discriminate variance in performance change. Alternatively, it is plausible that other effects may impact on performance in relatively non-competitive and regulated industry contexts.

All models are statistically significant (from $p < .01$ to $p < .001$) and provide good explanatory power (adjusted R^2 from .270 to .338) for percentage change in performance.

[57] Assessment of descriptive statistics and histograms for these variables as well as subsequent variance inflation factors (multicollinearity) on regression estimates indicates only three variables to provide interpretable results: state (25,100), foreign (25,100), and state (30, 100). Ownership breakpoints variables 0% to 10%, 10% to 30%, >30% and 0% to 50%, >50% show few observations and inappropriate distributions for regression analysis. Though State (30,100) does present suitable distribution for analysis, this variable shows no significant effects, and is not discussed. Thus, Models 1.2, 2.2, 3.2 and 1.3, 2.3, 3.3 are reported in the appendix only.

4.3.1. Main Models

Models 1, 2 and 3 show strong support for Hypothesis 1 (privatization strategy characterized by diffused shareholdings does not improve performance). As expected, no significant privatization effects are shown for Investors. Privatization transaction strategy characterized by diffused shareholdings results in no significant percentage change to performance in provision of fixed-line telecommunications services in developing economies

However, Model 3 provides no evidence to support Hypothesis 2 (privatization strategy characterized by large-block shareholdings improves performance), for industry-specific strategic investors as no significant privatization effects are found for blockholders, Telco, in new ownership in privatizing firms by multinational telecommunications operators.

Model 2 shows some support for Hypothesis 3 (privatization strategy characterized by foreign blockholdings improves performance). As predicted, significant privatization effects are demonstrated for Foreign large-block shareholdings ($p < .10$), and the sign of the coefficient indicates that the postulated directionality specifies improved performance change. The negative coefficient for Foreign blockholdings (i.e., multinational telecommunications operators (Telco), Financial/Institutional investors, and Other Companies) indicates that privatization transaction strategy characterized by sales to foreign strategic investors introduces corporate governance expertise, strong incentives for active monitoring to force restructuring, resulting in reduced delay for basic telecommunications service provision in developing economies (i.e., accelerated service provision). However, when outliers and influential observations are not removed from the model the Foreign blockholder effect does not reach a level of significance to indicate improved performance.

We also modelled two conventional ownership concentration variables, Herfindahl index and Largest owner[58], in alternative specifications to test for general ownership effects (models not reported). These ownership variables did not yield significant parameter estimates, though Hybrid effects remained significant in each model. Both Herfindahl and Largest were highly and significantly correlated with Telco (r =.865, r =.924), and thus, Foreign (r =.865, r =.924), suggesting concentrated ownership to be characteristic of ownership structure for fixed line incumbent telecommunications sectors in developing economies. More important, perhaps, these general concentration measures failed to distinguish ownership effects, being less useful than blockholder type to inform privatization performance improvements in our sample of developing economy operators.

Model 1 presents strong support for Hypothesis 5 (privatization strategy characterized by residual state shareholdings worsens performance). As expected, significant privatization effects are shown ($p < .10$) and in the direction to indicate worsened performance where more State ownership is retained. The positive coefficient indicates privatization transaction strategy that maintains a larger residual is detrimental to restructuring, resulting in an increase in delay, hindering the provision of basic telecommunications service in developing economies.

Models 1, 2, and 3 demonstrate some support for Hypothesis 6 (privatization strategy characterized by hybrid governance improves performance). As predicted, significant privatization effects are found for Hybrids (from $p < .10$ to $p < .01$) and the sign of the coefficients indicate that the postulated directionality specifies an improved change in performance. The negative coefficient indicates that privatization transaction strategy characterized by sales to

[58] The Herfindahl index of ownership concentration/dufussion was calculated by summing the squared total percentage of shares held by each new private blockholder type (Telco, Financial/ Institution, and Other Company), and a Largest owner variable computed by identifying the percentage held by the largest single private blockholder within the total percentage held by owners of that type.

large-block shareholders introducing larger hybrid governance structures, "hybridness" such as joint ventures with the privatizing firm or between themselves, or complex consortia arrangements, presents an advantage in restructuring specialized assets, resulting in reduced delay for the provision of basic telecommunications services in developing economies. However, in the State blockholder model where outliers and influential observations are not removed Hybrids does not reach a level of significance to specify improved performance.

With the results reported above, the issue of endogeneity is now addressed. We argue that Foreign blockholder improvements to performance were not due to a spurious effect, as understood in the financial economics literature on privatization, where certain large-block shareholders 'improve' performance through informational advantages, private or inside information about the quality of a particular privatizing firm's assets or management, thus are attracted to better quality firms, presenting a spurious relationship between better firms with concentrated ownership and higher performance.

To explore whether Foreign blockholders targeted better performing operators, or alternatively, whether the State held on to poorly performing operators with larger residuals, two alternative specifications were run. In separate models, blockholder variables State and Foreign were regressed on pre-privatization performance, along with the usual controls and other transaction-specific variables, Investors and Hybrids. These tests showed no pre-privatization performance effects for either variables State or Foreign: it is not the case that Foreign acquirers, as such, were able to "cherry-pick" significantly better firms, nor that State administrations retained significant ownership in "lemons". However, Hybrids were significant (p <.001) in both models, and these structures represent new, primarily foreign, large-block shareholdings as observed along a related but distinct transaction dimension. Furthermore, the sign of the coefficients indicates worse pre-privatization performance where Hybrids are subsequently established with incumbent operators.

not better performance as the literature on privatization (and foreign direct investment also) suggests. That blockholder hybrid governance may have an advantage when brought to bear on underperforming specialized assets during the privatization process is not inconsistent with conceptual development (and Hypothesis 6) advanced in our study.

Table 4.3 Main Models: Effects of Privatization Transaction Strategy on Performance Delay[a,b]

	Model 1		Model 2		Model 3	
Constant	17036.668	(28.788)***	18270.325	(33.100)***	17958.214	(31.657)***
Control Variables						
Time[b]	-.309	(-3.527)**	-.311	(-3.547)**	-.300	(-3.279)**
Competition	-88.764	(-.645)	-88.479	(-.645)	-65.648	(-.453)
Regulation	-143.983	(-.449)	-152.122	(-.474)	-41.268	(-.127)
Income	-646.196	(-1.823)†	-630.503	(-1.785)†	-588.243	(-1.619)
Transaction-Specific Variables						
Large-Block Shareholdings						
State	12.220	(1.880)†				
Foreign			-12.473	(-1.915)†		
Telco					-5.303	(-.826)
Diffused Shareholdings						
Investors	6.989	(.674)	-5.956	(-.633)	-3.892	(-.400)
Governance Form						
Hybrids	-203.776	(-1.797)†	-213.521	(-1.935)†	-288.866	(-2.767)**
Adjusted R^2		.336		.338		.296
F		4.904***		4.934***		4.248**
df		7, 54		7, 54		7, 54

[a] $n = 55$
[b] Transformed functional forms (power 3) of variables Time and Delay.
Unstandardized regression coefficients are shown, with t-values in parentheses.
†$p < .10$; *$p < .05$; **$p < .01$; ***$p < .001$
All two-tailed tests.

4.3.2. Piecewise Models

Model 1.1 provides no evidence to support Hypothesis 4 (privatization strategy characterized by dominant shareholdings worsens performance). No significant privatization effects were found for dominant State (25,100) ownership at levels greater than 25%; and, contrary to predictions in this hypothesis, Model 2.1 shows some evidence of significantly improved performance by dominant Foreign (25,100) ownership at these levels, though effects hold for the reduced sample only. These results, in effect, offer additional yet conditional support for Hypothesis 3, significant privatization improvement for Foreign blockholdings at higher levels.

Alternative curvilinear specifications were also modeled to test for non-monotonic relationships using squared and cubic blockholder variables, yet without result (not reported).

Table 4.4 Piecewise Models, Breakpoints 0% to 5%, 5% to 25%, and >25%: Effects of Privatization Transaction Strategy on Performance Delay[a,b]

	Model 1.1		Model 2.1		Model 3.1	
Constant	16892.657	(23.305)***	18194.942	(31.947)***	17983.478	(30.986)***
Control						
Time[b]	-.308	(-3.378)**	-.315	(-3.526)**	-.304	(-3.209)**
Competition	-90.095	(-.636)	-101.533	(-.712)	-61.018	(-.394)
Regulation	-158.266	(-.481)	-136.095	(-.417)	-27.040	(-.080)
Income	-639.922	(-1.763)†	-632.733	(-1.761)†	-589.218	(-1.584)
Transaction-specific variables						
Dominant Ownership						
State (0,5)	41.726	(.261)				
State (5,25)	15.976	(.416)				
State (25,100)	10.312	(1.073)				
Foreign (0,5)			-266.803	(-.278)		
Foreign (5,25)			67.762	(.278)		
Foreign(25,100)			-19.006	(-1.708)†		
Telco (0,5)					-32.193	(-.137)
Telco (5,25)					-8.826	(-.145)
Telco (25,100)					-2.659E-02	(-.002)
Diffused Shareholdings						
Investors	7.021	(.658)	-4.463	(-.453)	-3.777	(-.369)
Governance Form						
Hybrids	-205.586	(-1.774)†	-249.172	(-1.982)†	-265.085	(-2.307)*
Adjusted R^2		.309		.317		.270
F		3.678**		3.783**		3.217**
Df		9, 54		9, 54		9, 54

[a] $n = 55$

[b] Transformed functional forms (power 3) of variables Time and Delay.

Unstandardized regression coefficients are shown, with t-values in parentheses.

†$p < .10$; *$p < .05$; **$p < .01$; ***$p < .001$

All two-tailed tests.

5. DISCUSSION AND CONCLUSIONS

5.1. Privatization Strategy Effects

Using a microanalytic perspective from a contractual view of economic organization, our study extends a traditional agency theory approach to include a transaction cost economics framework in examining privatization performance. Relevant learning arguments are also advanced. From this conceptual extension, a novel hypothesis was proposed and tested successfully using a transaction unit of analysis on a larger sample of developing economy fixed-line telecommunications operators. A central finding is that hybrid governance predicts change in privatization performance, and its effects go beyond pure "ownership effects", capturing additional privatization variation, hitherto unexplored in the literature.

More specifically, performance benefits of privatization transaction strategy depend upon not only large foreign blockholdings but also the introduction by these owners of hybrid structures, such as joint ventures or more complex consortia arrangements. Where divestiture maintains more extensive state ownership, privatization performance suffers; dispersed shareholdings have no impact.

Though Megginson and colleagues (Megginson, Nash, & Van Randenborgh, 1994; D'Souza & Megginson, 1999) find general privatization effects when examining public offerings, the results here suggest otherwise, with dispersed shareholdings having no effect on privatization performance. Subsample results from this research that shows better performance for "control privatization" are more in line with findings in our study. Similarly, and strikingly, our investigation documents not simply foregone performance improvements from state residuals (i.e.

less privatization benefit), but significantly worse performance where government retains a non-negligible ownership stake.

Samples for the Megginson programme are chiefly drawn from developed economies, where share issue privatization has more relevance. Privatization performance is less certain in developing economies than may be suggested in prior research drawn from a developed economy empirical base. It is unlikely that dispersed privatized ownership, or share issue privatization alone, will be effective in spurring restructuring and performance improvements where capital market development is weak, or other market-supporting institutional frameworks are lacking. While contextual factors as such were not examined directly (beyond controls for competition, regulation, and income), our results are consistent with sample selection criteria and basic aims to verify generalizability of results to a developing economy population, where such institutions are presumed weak. Our findings suggest that where trade sale privatization introduces large-block foreign shareholders and hybrid structures, these strategies achieve improved privatization performance in developing economies. This general conclusion is not inconsistent with Boubakri and Cosset (1998), who find privatization effects for developing economies in a pooled sample of firms privatized through trade sales to one or several investors, public share issues, and those privatized with a combinations of both strategies.

The findings on blockholder effects support recent cross-sectional evidence from the corporate governance literature on voucher privatization in postcommunist transition economies that suggests privatization restructuring and improved performance is contingent upon a fairly active governance system and foreign strategic investors in particular (Makhija & Spiro, 2000; Djankov, 1999; Claessens, 1997). Privatization, as dispersed private ownership, by itself, did not provide sufficient incentives to shareholders to monitor management and encourage good performance in newly privatized firms. Active (foreign) investors or strategic investors or large shareholders

were necessary to distinguish privatization effects. Our results generalize this evidence over time to include other privatization strategies and other developing economy regions. Furthermore, as presumed (Spicer, McDermott & Kogut, 2000), the market for shares (liquid or otherwise) was not the mechanism that enabled these active shareholders to get their stakes and exercise their rights. Negotiated trade sales (the market for firms/partners) were key to selecting the right investors.

Our findings document that the effects of privatization on performance, while in some cases significant, are neither automatic nor uniform across different transaction strategies for newly privatized firms in developing economies. Together with evidence reported on transition economies, our study qualifies the general proposition made in the literature that privatization improves performance. Research in our study distinguishes better results empirically in going beyond change-of-ownership effects, by considering privatization and fragmentation of ownership more broadly. Though privatization is by definition a change, the public-private distinction remains underdefined when the privatization construct is limited to direct measures of state divestiture and sales to private investors, only. The data structure in our study, however, did not allow for perhaps the most parsimonious test, to examine privatization effects when the state becomes a minority owner.[59]

More important still, our research documents numerous and consistent findings by examining privatization implementation strategy longitudinally, dynamically, and directly as an incremental process, using a transaction unit of analysis. Our research design avoids a potential aggregation bias when examining a multi-transaction privatization process indirectly (using temporal variables) and time series performance data with the firm as unit of analysis. In a recent

[59] A test for "effective privatization", when the state becomes minority owner, is presented in Villalonga (2000). In our study, inappropriate distributions for State (0,50) did not allow for piecewise regression with interpretable results.

longitudinal study, Villalonga (2000) found few consistent ownership effects on privatization performance yet did not disaggregate variation in privatization from variance in performance when modeling dynamic effects, and erroneous conclusions may have been drawn. Consistent with the literature, however, foreign buyers were found to improve performance significantly.[60]

Prior comparative ownership research in Boardman and Vining (1989) examining performance effects using categorical ownership measures and the firm as unit of analysis draws rather negative conclusions on privatization, though privatization was not examined directly, rather, a small subsample of mixed enterprise was advanced as a proxy. Our research models incremental privatization and relates transaction-specific variation to performance, distinguishing better performing mixed enterprise from worse performing mixed enterprise, and disaggregating important ownership effects as a result.

To our knowledge, there are no extant empirical studies examining effects of privatization strategy on performance, directly, at, or near, the firm level. Here privatization transaction strategy was examined along the dimensions of ownership and governance, wherein large-block shareholdings and hybrid structures are identified with trade sale privatization strategy, and diffused shareholdings with share issue privatization strategy.[61]

In this way, the research also answers recent calls in the strategy and organization literature to recognize privatization implementation as an incremental and complex process, comprised of different strategies with unique characteristics, and to examine this process using a

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[60] Villalonga (2000) specifies foreign buyers as a 'political' variable, a possible intervening factor in the privatization-performance relationship. Yet this variable might be more appropriately interpreted as an additional ownership effect, albeit, perhaps, not a "pure" ownership effect.

[61] Data coding and preparation showed that in most cases blockholdings were the result of direct trade sale by the government to strategic investors, and not to have been the outcome of market-mediated exchange. However, in some cases data was not complete and/or explicit and the possibility remains that eventual consolidation as reported resulted from share issue privatization strategy.

multidimensional privatization construct (Zahra, Ireland, Gutierrez, & Hitt, 2000) and a dynamic multilevel model (Ramamurti, 2000) to capture observed yet unexplained performance variance.

5.2. Privatization and Corporate Restructuring

Prior theory and empirical research on privatization performance has focused primarily on redistribution of ownership and incentive alignment effects, and more recently, on the importance of large shareholders in facilitating takeover to induce better performance in firms. However, the content of these corporate governance and corporate restructuring constructs has not been specified. Certain studies, however, have looked at the influence of management replacement on privatization performance, though with mixed results (D'Souza & Megginson, 1999; Barberis, Boycko, Shleifer & Tsukanova, 1996; Megginson, Nash, and Van Randenborgh, 1994). Neither has the post-privatization internal adjustment processes been systematically explored as this research also has left important organizational issues unexplored (Cuervo & Villalonga, 2000; Villalonga, 2000; Zahra, Ireland, Gutierrez, & Hitt, 2000).

To date, privatization research in finance and economics has placed more emphasis on specifying variance in performance rather than variation in the privatization implementation process itself. Construct validity has been limited to market-for-shares privatization implementation strategies (share issue privatization, as well as voucher privatization), and similarly a market-for-shares mediated post-privatization restructuring process. Largely, our research calls into question the empirical validity of privatization theory based on market-for-shares restructuring mechanisms, state divestiture, and private investors, broadly, or at least the generalizability to a developing economy context.

Strategy and organization theorists, however, though recognizing corporate governance as an important area, have neglected ownership as a major organizational variable as well as its role in performance (Kang & Sorensen, 1999). Only recently have researchers in management generally shown interest in privatization theory and empirical research.

Consequently, neither finance and economics nor strategy and organization researchers have articulated the organization transformation process that variations in corporate governance and corporate restructuring presumably induce on privatization performance. A better understanding of major organizational change that follows privatization is likely needed to clarify differential privatization performance outcomes (Cuervo & Villalonga, 2000; Villalonga, 2000; Zahra, Ireland, Gutierrez, & Hitt, 2000).

We advance hybrid governance as a meso-level organizational implication of trade sale privatization and corporate restructuring, to address this shortcoming in the literature. That blockholder hybrid structures predict additional privatization performance improvements is a reasonable finding. Large-shareholder hybrid structures may provide a proxy for actual takeover and subsequent management replacement, signaling likelihood of restructuring, and providing additional predictive power in specifying performance. It is also consistent with arguments that private benefits of control and expropriation risk for performance is lessened when several large shareholders are present, suggesting some pyramidal group structures to have a positive effect (Wolfenzon, 2000). Such that large-block shareholders and hybrids are distinct yet related concepts based on different sets of assumptions but similar constructs, these findings suggest hybrid structure as an alternative measure for more complex blockholder effects.

In this way, our research contributes to the empirical literature on ownership, generally, in answering calls for better metrics to distinguish the active monitoring potential of blockholders

(McConnell & Servaes, 1990), and to theory-building on the importance of large shareholders in facilitating takeover to induce better performance in firms (Shleifer & Vishny, 1986). More important, perhaps, our model also points toward an interplay between "ownership effects", the focus of recent financial economic theory, and (inter-) "firm effects", a major preoccupation of strategy and organization research.

5.3. Privatization and Network Governance

That inter-firm networks linking large-block shareholders to the privatizing firm predicts improved performance is reasonable from a network governance perspective as well. This approach draws on transactions costs, knowledge/resource-based views, and social network reasoning to understand patterns of exchange relations and resource flows between independent organizational units (Jones, Hesterly, & Borgatti, 1997).

Hybrid structure as an equity-based inter-firm network with degrees of property-rights sharing suggests a proprietary network form advantageous for interorganizational learning. Privatization strategy introducing larger hybrid structures may offer both economies in safeguarding and advantage in access for privatization restructuring that includes inter-firm knowledge transfer of transaction-specific assets across this network. Specifically, our evidence suggests higher proprietary network density safeguards multiple channels for knowledge transfer.

Theory building by management scholars does suggest a meso network concept to understand corporate privatization strategy (Doh, 2000) and privatization effects relevant for organizational learning (Zahra et al., 2000). Our research operationalizes this notion successfully, and advances new organizational forms in organizational structure rather than more traditional organizational designs. Recent theory-building by strategy and organization scholars and attempts to explore

organizational implications of privatization on performance empirically has shown mixed results (Uhlenbruck & De Castro, 2000; Villalonga, 2000).[62]

Generally, our model is consistent with that proposed by Zahra, Ireland, Gutierrez, and Hitt (2000), with first order privatization effects felt through organizational transformation, such as changes to governance arrangements and organizational structure; these in turn may stimulate second-order effects, such as access to networks, organizational learning, and technological opportunities.

Our evidence also finds support in resource-based arguments for knowledge transfer and technological diffusion in industry-based networks. Nagarajan and Mitchell (1998) propose that firms acquire know-how needed for "encompassing" technology-related changes through equity-based interorganizational arrangements. Our research indicates privatizing firms that acquire multiple proprietary channels for knowledge transfer significantly improve large-scale technological capacity, reducing delay in telephone network service provision, held over due to lack of technical facilities.

Our model also sheds light on why patterns of technological diffusion in the telecommunication industry may vary across countries leading some economies to develop and upgrade their fixed-line service provision substantially faster than others. Though certain empirical work has examined technological diffusion in this industry, studies have been limited to developed economies (Koski & Majumdar, 2000; Majumdar & Venkataraman, 1998), while characteristics of performance variation remain empirically unaddressed, generally, for this sector. Our

[62] Of three organizational variables examined (capital intensity, firm size, initial performance) in Villalonga (2000) only one was significant and in the expected direction postulated. Of four organizational variables examined (pertaining to strategic and organization fit, and organizational transformation) in Uhlenbruck & De Castro (2000) only strategic fit provides minimal support for expected performance results.

evidence suggests higher proprietary network density may speed transmission of inter-firm knowledge transfer. Speed or timeliness in privatization restructuring may be critical for incumbent operator performance in the longer term as newly privatized firms face both increased competition by traditional as well as emerging carriers in a rapidly changing market environment and increased technological change in information and communications technology. The results here suggest strategies that introduce hybrid structures to be effective for privatizing operators in developing economies as a fast means of improving fixed-line telecommunications service.

Recall, that in the Megginson programme (D'Souza & Megginson, 1999) the most intriguing subsample results are for telecommunications and electric utilities privatization, documenting significantly improved performance in these highly regulated and less competitive sectors. The dataset, however, did not allow these authors to determine whether privatization, deregulation, or major technological developments were the driving forces. Our research examines telecommunication privatization exclusively, and controls for aspects of competition and regulation, allowing significant transaction-specific effects to distinguish improved performance for some operators and not others. These and other observations, along with the discussion above offers an understanding of how privatization strategy, through ownership effects and (inter-) firm effects, drives large-scale technological system effects in the telecommunications sectors of developing economies.

5.4. Alternative Explanations

5.4.1. Market Power

Framing privatization implementation using a transaction cost approach along with organizational learning arguments offers a plausible conceptual framework for theory-building with relevance

for strategy and organization scholars. There are other avenues to pursue, however, including a strategic positioning or merger approach (De Castro & Uhlenbruck, 1997; Uhlenbruck & De Castro, 2000; Doh, 2000). Management theory-building from a strategic behaviour perspective though relevant[63] and likely offers to enrich our understanding of privatization acquisition strategies, neither facilitates conceptual extension with mainstream privatization research in any particular manner nor seeks to bridge new initiatives with prior work. Theory-building and modeling in our research does both, offering novel direction and tractable orientation for future research in privatization, strategy, and organization. A market power argument, and an industrial organization (IO) economics perspective generally, however, may offer an alternative explanation for findings. We take up this issue below.

D'Souza and Megginson (1999) recognize that a difficult-to-refute challenge levelled at privatization studies showing performance improvements is the assertion these improvements may represent nothing other than the exploitation of market power by newly privatized firms, as governments do face real revenue incentive to sell state-owned enterprise as private monopolies as this maximizes the price private investors are willing to pay for shares. Our study does not examine this question directly, but introduces indirect evidence that the performance gains documented here are not primarily the result of market power exploitation.

Abuse of market power by incumbent operators is typically observed in high prices, insufficient supply, poor service quality and reliability, slow repairs, and slow introduction of new services (Smith & Wellenius, 1999). Tariffs excluded, reductions in delay are not consistent with these indicators. Quite the contrary: significantly reduced delay in unmet applications for connection to

[63] Merger and strategic positioning approaches identify the following reasons for being active in the market for corporate control in terms of acquisition strategy (Hitt, Hoskisson, Johnson, Moesel, 1996): to achieve greater market power; to increase the size of the firm and its resources and capabilities; to overcome barriers to entry; to enter new markets (related or unrelated diversification).

the public switched telephone network, held over due to a lack of technical facilities, is a direct measure of service quality, and may suggest better reliability and more repairs, as well. As discussed earlier, price rebalancing may not be problematic (Ros, 2000), and data constraints limited the choice of factors to be examined, such as investment (supply-related factor), switching technology, and financial performance. Furthermore, unlike a financial indicator such as profitability, reducing delay suggests socially beneficial improvements, that many more people in developing economies no longer are deprived of a basic public service, lack of which is often deemed to cause serious economic and social disadvantage. Conceivably, this change follows from better corporate governance, knowledge transfer and improved operational strategy in newly privatized incumbent operators.

Regardless of the reason for privatization acquisitions through trade sales, and market power may be one of many, our research demonstrates that "firm effects" discriminate performance within similar industry structures. Specifically, our research models industry performance, a major focus of IO research, and advances inter-firm network structure to distinguish performance variance that other traditional measures of market share and industry concentration would not discriminate in this sample of dominant operators (these incumbent operators are by definition dominant operators based on IO concepts and measures used by the FCC). In effect, our research takes into account influences of firm strategy overlooked in IO research. At the very least, however, our model of privatization transaction strategy and inter-firm hybrid structures may indicate "how" competitive positioning in the industry takes place successfully.

Additionally, the negative coefficients in the models indicate that competition and regulation is associated with better performance (though the relationships are not significant), thus, better privatization outcomes are observed where exercise of market power may be more limited.

5.4.2. Substitution Effect

Substitution effects between mobile cellular and fixed-link communications take place at several levels (Kelly, 1996). In some parts of the world, and among some parts of the community, there is evidence that mobile phones are substituting for the first fixed-line telephone. At present, the majority of mobile communications users also own a fixed-link telephone. In this case, any substitution which does occur is at the level of traffic flows whereby the consumer chooses which device to use for a particular call. A different type of substitution is the choice of whether to buy a second telephone or a mobile telephone. In countries where fixed-line penetration rate is furthest advanced, ownership of second phones is quite common. Thus, in this area, the substitution effect is at the level of the marginal choice over whether the second device should be fixed-link or mobile.

It is the first substitution effect that is likely to have implications for our developing economy sample and performance metric.

The assertion that performance improvements, in percentage decrease in delay for telecommunications services, may represent nothing other than potential subscribers dropped from the waiting lists in a shift to alternative telecommunications, specifically, mobile cellular services and networks, is difficult to refute as well. It is possible, however, that many potential subscribers for various reasons may choose not to withdraw current applications for basic telephony even with an intent to or actual shift to emerging services. Despite this reasoning there is other indirect yet compelling evidence to suggest a substitution effect is not problematic for our sample.

As of 1999, 79% of the mobile cellular market was restricted to developed economies only (*ITU World Telecommunications Development Report*, 1999). In many developing economies, mobile has only recently been introduced and some countries still do not have service. This is changing, however. After some increase, the share of worldwide market in mobile cellular services by developing economies accelerated in 1996. In our sample, 50% of the privatization observations took place between 1981 and 1990, prior to this period of growth. Moreover, of the four largest markets in emerging economies, including China, Brazil, Republic of Korea, and Turkey, that account for 12% of worldwide subscribers, only one sample observation is drawn from this group, Brazil (1993). The balance of the mobile cellular market, just 9%, is split between more than 100 remaining developing countries. Nearly our entire sample is drawn from this population, where mobile cellular services and networks have less relevance.

Additionally, the temporal variable likely captures some unobserved substitution effects over time.

For these reasons, the discussion above suggests statistical conclusion validity not to be threatened in this study.

5.5. Study Limitations and Future Research

Three limitations of this empirical study that qualify the results discussed above have been mentioned previously: potential idiosyncrasies in this industry-specific research context and heavy sample representation by two regions (Latin America and the Caribbean, and Eastern Europe and Central Asia) with implications for privatization transaction strategy and performance, which limit the specific findings; and the data constraints faced in the choice of performance variables to be examined.

Sample limitations were hardly solvable given extant privatization in telecommunications has occurred in these regions for the time period studied (the era of privatization), while the industry-specific research context was a design choice particularly advantageous for examining privatization performance in developing economies.

Though results are limited generally in using a single measure to examine performance variation in newly privatized operators, change in pre- and post-privatization performance was measured objectively and appropriately at the firm-industry level. Moreover, it is encouraging that hypothesized (and consistent) privatization performance effects were captured in any way for transactions occurring in a developing economy context. Empirical research on privatization by other strategy and organization scholars has realized less in these regards (Uhlenbruck & De Castro, 2000).

Notwithstanding, results may be sensitive to the choice of performance indicator, though delay of fixed-line telecommunications service provision due to technical assets (and perhaps technological organization capability) does have relevance for asset specificity arguments advanced here and offers a reasonable indicator for capturing hybrid governance effects.

It is recognized, however, that diffused shareholder incentives may take longer to work than allowed for in a 3-year post-privatization performance window. Similarly, investor effects generally may not impact asset-specific or technology-related performance outcomes in privatization restructuring, and are more appropriately captured in changes to financial performance, for instance. Then again, this interpretation is more in line with theory-building advanced here.

More important, perhaps, is that the change metric for delay did not measure absolute levels of performance, and it is possible that privatization transaction strategy was selected in response to unobserved urgency to restructure. This matter is unlikely to have impacted results since pre- and post-privatization performance was adjusted for ("initial" and ongoing) conditions in cross-country demand, which might be expected to influence need for restructuring.

To these limitations a forth may be added, which is also a product of data constraints, as well as a fifth, with regard to modeling. Both have implications for future research.

Basic design choices were an attempt to limit extant variation across numerous institutional factors, however, it is possible that privatized ownership and governance effects are overstated. Improved measures for competition would be useful in future research, particularly as increased change in market conditions have led to the introduction of new entrants in alternative carriers and new infrastructure in alternative telecommunications network systems. Wallsten (2001), for instance, used a simple competition metric (number of mobile cellular operators) and found competitive effects, which may have lessened privatization effects for incumbent operators in Africa and Latin America and the Caribbean. Also, an avenue for further research would be to investigate whether our results hold for different institutional environments (as measured directly). Programmatic research by La Porta, Lopez-de-Salines, Shleifer and Vishny in the law and finance literature would offer appropriate direction here (see, for instance, La Porta, Lopez-de-Salines, & Shleifer, 1999; La Porta, Lopez-de-Salines, Shleifer and Vishny, 2000).

Data may also overstate some performance improvements, as the research does not account for other firm-specific variables with relevance for asset-specificity and organizational learning. Direct measures for asset specificity (i.e. investment in research and development) would improve this and future research. The notion of "absorptive capacity", which is constituted from

abilities to "recognize the value of new information, assimilate it, and apply it to commercial ends" (Cohen and Levinthal 1990: 128), offers one important avenue. Similarly, there is a need to go beyond structural explanations and examine the process of inter-firm knowledge transfer directly, at the resource level. A more extensive treatment on forms of network structures would likely benefit these efforts as well

Finally, it is recognized that in modeling alternative blockholder specifications evidence cannot be offered as to whether significant outcomes might be the result of more large (foreign) shareholdings or less State ownership, or *vice versa*. A panel study and more advanced econometric techniques rather than traditional multiple regression, too, would improve control for additional dynamic implications of privatization when using longitudinal data, such as contemporaneous change competition, regulation, and, possibility of autocorrelation along the performance timeline.

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APPENDICES

Appendix 3.A
Source: http://www.itu.int/itudoc/itu-d/baap/regsur/survey_ww6.doc

TELECOMMUNICATIONS REGULATORY SURVEY
1996 / 1997

Country:_____ Date of completion_____

Name of person (s) that completed the survey	Title	Organization Address	Phone	Fax
1)				
.....email.....			✆	☎
2)				
.....email.....			✆	☎
3)				
.....email.....			✆	☎
4)				
.....email.....			✆	☎

Note: all information provided throughout this survey should describe the current situation. Future policy initiatives should be listed under question 2 section I.

SECTION I - THE POLICY PROCESS

1) What major policy changes in the sector have occurred in the past two years (i.e. liberalization, identify which market segments e.g. domestic, long distance, international, cellular mobile)?

2) What major policy changes are planned or anticipated over the next two years?

2.a) Are these planned policy changes stated by the government in an "official sector policy paper"?

☐ Yes ☐ No

3) What is the process for developing or reviewing telecommunication policy?

Initiated by: ☐ Sector Minister ☐ Cabinet or Cabinet Committee

☐ Other entity (Please specify)_____

SECTION II - THE REGULATORY PROCESS

4) What laws, decrees, legal instruments, or regulations govern the telecommunication sector in your country?

Law/Regulation	Year Adopted	Description/Remarks (e.g. review procedure)

Sub-Section II.1 - The Regulator

5) Have regulatory and operational functions been separated? ☐ Yes ☐ No

6) Does a separate ("independent" in terms of finance and authority) Telecommunication Regulatory Authority exists?

☐ Yes ☐ No if **no**, name entity responsible for regulation and proceed to question

7._____

If **yes**,

6.a) Name of Authority:_____Year created_____

6.b)To whom does the regulatory Authority report?

☐ The sector Ministry ☐ The Head of State ☐ The legislative branch

☐ No one, it is independent ☐ Other_____

6.c) How is the Telecommunication Regulatory Authority financed?

☐ License fees ☐ Government appropriation

☐ Numbering fees ☐ Spectrum fees ☐

Other_____

6.d) Is the Telecommunication Regulatory Authority a collegial body (i.e. There are several Commissioners)? ☐ Yes ☐ No

If **no**, identify the position of the head of the authority (i.e. Director General, Chairman, Administrator, etc.)_____

7) If no Telecommunication Regulatory Authority exists, are there plans to create one?

☐ Yes, when?_____ ☐ No

Sub-Section II.2 - Regulation

8) Regulatory functions,

Please mark (X) below which entities have responsability for the functions listed.

Functions	**Sector Ministry** Yes	**Other Ministry or Government body (name)** Yes	**Regulatory Authority*** Yes	**Operator** Yes	**Not regulated**	**Other (Please specify)**
Numbering plans						
Tariff proposal						
Tariff approval						
Technical standards						
Interconnection rates						
Frequency allocation						
Type approval						
Monitor service quality						

Establishment of license fees						

**Note:* If you answered no to question 6, leave column for Regulatory authority blank.

9) What data and documents have to be filed by each operator with the Regulatory Authority or government entity on a regular basis? Please check those that apply and indicate frequency (e.g., monthly, annual).

Accounting rates ☐ frequency_____ Interconnection rates ☐ frequency_____

Financial Reports and Accounts ☐ frequency_____Tariff tables ☐ frequency_____

Service performance indicators (e.g., quality of service) ☐ frequency_____

Business/investment plans ☐ frequency_____ Cost manuals ☐ frequency_____

Sub-Section II.3 - Licensing

10) Please indicate below which services are subject to licensing. For those services subject to licensing, please mark (X) which entity is responsible for licensing that service.

	Service subject to licensing		**Entity responsible for licensing***					**License fee?**		**License duration (state time period)**
	Yes	No	M	OMG	TRA	PTO	O (please specify)	Yes	No	
Local services										
Domestic long										

distance										
International long distance										
Data										
Telex										
Leased lines										
Mobile (cellular)										
Paging										
Cable Television										
Fixed satellite										
Mobile satellite										

* M= Ministry, OMG= Other Ministry or Government body, TRA= Telecommunication Regulatory Authority, PTO= Operator, O= other

11) How are license fees established or calculated?
According to: ☐ % of annual revenue (turnover) ☐ Regulation ☐ Frequency bandwith
☐ Services ☐ % of investment ☐ Cost recovery ☐ Distance
☐ Number of subscribers or stations or terminal equipment
☐ Other_____

12) Do fees vary for the different services ☐ Yes ☐ No or
different operators ☐ Yes ☐ No?

Sub-Section II.4 - Private Networks

13) Are there any restrictions on the use of leased lines or private networks?
Domestic ☐ Yes ☐ No, International ☐ Yes ☐ No

If yes, please explain.

_____

_____

14) Is third party resale of leased line capacity permitted?
Domestic ☐ Yes ☐ No, International ☐ Yes ☐ No

15) Is it permitted to connect leased lines or private networks to the telecommunication public network?

Domestic ☐ One-end only ☐ At both ends ☐
Other_____

International ☐ One-end only ☐ At both ends ☐
Other_____

Sub-Section II.5 - Callback services

16) Are callback services allowed in your country?
☐ Yes ☐ No

If **yes**, please name the main service providers_____

If **no**, state which law prohibits the provision of these services.
_____

SECTION III - SECTOR STRUCTURE

Sub-Section III.1 - Status of the main operator

17) Have the postal and telecommunications operations been separated? ☐ Yes ☐ No

18) Are all telecom services (local, trunk, international, cellular, others) provided by the same operator?

☐ Yes ☐ No

19) Has the main fixed link operator been corporatized (in terms of organizational structure)?
☐ Yes, since_____ ☐ No

19.a) If **no**, does the Government have plans to corporatize it?
☐ Yes, when is it planned for?_____ ☐ No

20) Is the main fixed link operator privately owned?
☐ Yes ☐ No ☐ Partially _____%

20.a) If privatization occurred, fill one line per each entry.
If two or more modes were used simultaneously, please fill one line per mode.

Date of privatization	**Percentage of shares sold**	**Mode used** mark (X) for those that apply					**Level at which the sale occured**		**How much was it sold for?** (Currencies)	
		PO	SEP	E	O	Specify other	Dom %	Intl %	(local)	(US$)
1)										
2)										
3)										
4)										

Note: PO = Public offering (listing on the Stock Exchange), SEP = Sale to a strategic equity partner or consortium.

E= Sale to employees, O= Other Dom = Domestic, Intl = International

20.b) Indicate name, and main shareholders's percentage ownership according to the date (s) of privatization.

1)_____

_____

_____

2)_____

_____

_____

_____

3)_____

_____

_____

_____

4)_____

_____

21) If no privatization occured yet, does the Government intend to privatize the main operator? (check one)

☐ In the process of privatizing ☐ No intention to privatize at present

☐ Yes, precise forecast date_____

If the Government intends to privatize the operator within 10 years:

21.a) What degree of private ownership is envisaged?

Give a precise percentage_____% (or a range_____% to _____%)

21.b) What will be the mode for privatization?

☐Public offering _____%, expected date _____

☐ Sale to a strategic equity partner _____%, expected date _____

☐ Sale to employees _____%, expected date _____

☐ Other (please specify)_____

21.c) Regulatory process for privatization :

- Legislation ☐ Amendments to the existing law ☐ Prepared ☐

Approved, when?_____

☐ Enactment of new regulations ☐ Prepared ☐

Approved, when?_____

- Government ☐ Privatization approved, when?_____

☐ Pending approval

21.d) Has an advisor for privatization been selected?

☐ Yes ☐ No

If yes, please indicate name of advisor_____

21.e) If the mode for privatization includes strategic equity partner, please answer the following:

- Tender ☐ Under preparation (expected date)_____

  ☐ Issued, date_____

- Partner selected ☐ Yes, please indicate name_____

  ☐ No

Sub-Section III.2 - Competition

22) Please complete the following table by marking (X) the relevant level of competition.

Service	**Monopoly**	**Partial competition** (please indicate restrictions)	**Full competition** (please indicate number of licensees)
Local services			
Domestic long distance			
International long distance			
Data			
Telex			
Leased Lines			

Mobile (cellular) analog			
digital			
Paging			
Cable Television			
Fixed satellite services			
Mobile satellite services			

Note: Monopoly = service provided exclusively by one operator

Partial competition = limits on the number of licensees, geographical coverage, foreign ownership etc.

Full competition = any company can be licensed to provide the service, no limits on number of licensees.

22.a) In the case of partial or full competition for certain services such as data and mobile cellular, are these operators permitted to use their own network for: long distance services

☐ Yes ☐ No

International gateway ☐ Yes ☐ No

If **no**, are they required to use the main fixed link operator's network?

☐ Yes ☐ No

SECTION IV - PRIVATE SECTOR PARTICIPATION

23) Is the private sector permitted to participate in providing public switched telephone services (Local, long distance, international, cellular, others)?

☐ Yes ☐ No

If **yes**, please identify by marking (X) the services or the % of private participation and the financial forms:

	Local	Long distance	International	Mobile (cellular)	Other
Total private ownership					
Joint venture with the Government					
Joint venture with local and/or foreign investors					
Other					

24) Have any of the following forms of operating been used?

Please give examples

(I) Build-Operate -Transfer (BOT) ☐ Yes ☐ No_____

(ii) Build-Transfer-Operate (BTO) ☐ Yes ☐ No_____

(iii) Concession . ☐ Yes ☐ No_____

25) What is the maximum foreign participation or ownership permitted for any telecommunication entity?

_____ %.

25.a) Do the same restrictions apply in broadcasting and cable television?
☐ Yes ☐ No If no, please explain_____

SECTION V - UNIVERSAL SERVICE

26) Does your country have a definition of "universal access to basic services" or "universal service"? ☐ (Yes) ☐ (No)

26.a) If yes, please specify which services are covered:
☐ Basic telephony ☐ Telex ☐ Data transmission ☐ Fax ☐ Accessibility of telephone service from any populated area of the country
☐ Public payphone ☐ Internet ☐ Other_____

27) What policies have been implemented in order to ensure universal access to basic services?

- Direct subsidy from government? ☐ Yes ☐ No
- Cross subsidy between services? ☐ Yes ☐ No
- Access charges? ☐ Yes ☐ No
- Universal service funds? ☐ Yes ☐ No
- Other policies (please specify)_____

_____

_____

28) Do operators have to meet specific universal service obligations? ☐Yes ☐No

29) What other obligations are imposed on operators?
☐ Service quality ☐ Expansion & improvement ☐ Interconnection
☐ Special services for impaired or elderly
Other_____

29.a) How are they regulated?
☐ In license/concession contract ☐ Contractual programme with the government
☐ Other_____

30) Are there plans or measures to bring about universal service that do not involve the telephone operator? ☐ Yes ☐ No

If **yes**, please explain._____

SECTION VI - INFORMATION INFRASTRUCTURE

31) Is there a policy or strategy for the development of a nationwide broadband interactive network? (Please specify relevant documents or responsible bodies) ☐ Yes ☐ No

If **no**, proceed to question 34.

_____

_____

32) What are the main goals and objectives of this policy/strategy?

Goals/objectives	Target dates

33) Will any of the initiatives be government funded? ☐ Yes ☐ No

34) What is the status of cable television in your country?

Year	Number of subscribers	% of households passed	% of households subscribing

34.a) Is there a law regulating cable television? ☐ Yes ☐ No

34.b) Are telecommunication companies permitted to provide cable television service?

☐ Yes, Please specify any restrictions_____

☐ No

34.c) Are cable companies permitted to provide telephony?

☐ Yes, Please specify any restrictions_____

☐ No

35) Are there plans for telecommunication companies to provide interactive information services? ☐ Yes ☐ No

If yes, describe the services and any market research undertaken to gauge consumer demand, any trials taking place and likely year of implementation.

36) Is access to the Internet available in your country? ☐ (Yes) ☐ (No)

36.a) Name the leading Internet access providers* in your country?

36.b) Are there any restrictions placed on Internet service providers* ? ☐ (Yes) ☐ (No)
If yes, please explain.

* Note: An Internet access provider furnishes a connection to the Internet.
An Internet services provider offers services over the Internet.

SECTION VII - NATIONAL TELECOM NEEDS

37) What are the most pressing problems in the telecommunications sector in your country? (please check all those that apply.)

- ☐ Lack of financing
- ☐ Need for regulations dealing with
  - ☐ Interconnection
  - ☐ Tariffing
  - ☐ Licensing
  - ☐ Other_____
- ☐ Cost of services
- ☐ Cost of infrastructure
- ☐ Other _____
- ☐ Lack of equipment
- ☐ Antiquated Network
- ☐ Lack of business management skills
- ☐ Long waiting list
- ☐ Lack of trained personnel

38) Are there any other factors which inhibit the full optimization or utilization of your present infrastructure? ☐ (Yes) ☐ (No) If yes, please specify.

SECTION VIII - DOCUMENTATION

The ITU/BDT is compiling national policy and regulatory documents (including national policy document, national legislation, decrees, laws, latest tariff decision etc.) in an effort to establish a comprehensive regulatory library. We would greatly appreciate any relevant documentation (hard copies or electronic) from your country.

Please list documentation provided.

_____

_____

_____

_____

We appreciate your participation in this survey. Please return the questionnaire by the 23rd of May 1997 to:

Mrs.D. Bogdan-Martin
ITU/BDT
Tel: 41-22-730-5643
Fax: 41-22-730-6449
email: bogdan@itu.int

Appendix 3.B

Theory and prior empirical research indicate the following breakpoints, χ^* , where χ is the independent variable in the equation the slope of which will change and χ^*, the threshold or breakpoint value.

Piecewise Regression Breakpoint Values

Dominant Ownership Breakpoints Of 0% To 5%, 5% To 25% And > 25%							
χ [0, 5%	[	{ χ	if	0%	≤	χ^*	< 5%
		{ 5%	if			χ^*	≥ 5%
χ [5%, 25%	[	{ 0%	if			χ^*	< 5%
		{ χ - 5%	if	5%	≤	χ^*	< 25%
		{ 20%	if			χ^*	≥ 25%
χ [25%, 100	[	{ 0%	if			χ^*	< 25%
		{ χ - 25%	if			χ^*	≥ 25%

Dominant Ownership Breakpoints of 0% to 10%, 10% to 30% and > 30%							
χ [0, 10%	[	{ χ	if	0%	≤	χ^*	< 10%
		{ 10%	if			χ^*	≥ 10%
χ [10%, 30%	[	{ 0%	if			χ^*	< 10%
		{ χ - 10%	if	10%	≤	χ^*	< 30%
		{ 20%	if			χ^*	≥ 30%
χ [30%, 100	[	{ 0%	if			χ^*	< 30%
		{ χ - 30%	if			χ^*	≥ 30%

Dominant Ownership Breakpoints of 0% to 50% and > 50%							
χ [0, 50%	[	{ χ	if	0%	≤	χ^*	< 50%
		{ 50%	if			χ^*	≥ 50%
χ [50%, 100	[	{ 0%	if			χ^*	< 50%
		{ χ	if			χ^*	≥ 50%

Main Models

Appendix 4.A

Results of Regression Analysis: Effects of Privatization Transaction Strategy on Performance Delay (*n*=64)

	Model 1A		Model 2A		Model 3A	
Constant	17214.960	(13.620)***	19493.040	(18.006)***	19456.606	(18.487)***
Time	-.476	(-2.704)**	-.463	(-2.601)*	-.470	(-2.644)*
Competition	362.107	(1.264)	406.415	(1.411)	354.015	(1.196)
Regulation	-973.005	(-1.439)	-858.951	(-1.266)	-779.132	(-1.174)
Income	-1415.747	(-1.845)†	-1373.926	(-1.770)†	-1289.541	(-1.665)
State	25.659	(1.835)†				
Foreign			-19.614	(-1.382)		
Telco					-19.640	(-1.485)
Investors	-3.952	(-.178)	-30.312	(-1.572)	-30.298	(-1.578)
Hybrids	-379.679	(-1.571)	-454.820	(-1.911)†	-516.062	(-2.385)*
Adjusted R^2		.286		.268		.271
F		4.598***		4.288**		4.351**
Df		7, 63		7, 63		7, 63

Transformed functional forms (power 3) of variables Time and Delay.
Unstandardized regression coefficients are shown, with t-values in parentheses.
†p <.10; *p <.05; **p <.01; ***p <.001
All two-tailed tests.

Piecewise Models

Appendix 4.B

Results of Piecewise Regression Analysis, Breakpoints 0% to 5%, 5% to 25% and > 25%: Effects of Privatization Transaction Strategy on Performance Delay (*n*=64)

	Model 1.1A		Model 2.1A		Model 3.1A	
Constant	17752.808	(11.518)***	19683.792	(17.575)***	19583.777	(18.087)***
Time	-.470	(-2.568)*	-.486	(-2.660)*	-.489	(-2.623)*
Competition	360.069	(1.239)	438.538	(1.489)	363.219	(1.168)
Regulation	-945.677	(-1.357)	-886.980	(-1.278)	-771.866	(-1.141)
Income	-1442.030	(-1.841)†	-1352.946	(-1.725)†	-1270.577	(-1.614)
State (0,5)	-163.570	(-.518)				
State (5,25)	38.723	(.557)				
State (25,100)	28.378	(1.467)				
Foreign (0,5)			-915.779	(-.620)		
Foreign (5,25)			176.589	(.466)		
Foreign(25,100)			-9.832	(-.446)		
Telco (0,5)					-70.886	(-.144)
Telco (5,25)					-35.967	(-.286)
Telco (25,100)					-5.198	(-.230)
Investors	-2.783	(-.120)	-29.019	(-1.476)	-29.059	(-1.457)
Hybrids	-367.094	(-1.493)	-388.039	(-1.520)	-464.975	(-2.031)*
Adjusted R^2		.265		.253		.253
F		3.523**		3.371**		3.372**
Df		9, 63		9, 63		9, 63

Transformed functional forms (power 3) of variables Time and Delay.
Unstandardized regression coefficients are shown, with t-values in parentheses.
†p <.10; *p <.05; **p <.01; ***p <.001
All two-tailed tests.

Results of Piecewise Regression Analysis, Breakpoints 0% to 10%, 10% to 30% and > 30%: Effects of Privatization Transaction Strategy on Performance Delay (*n*=64)

	Model 1.2A		Model 2.2A		Model 3.2A	
Constant	17088.039	(11.514)***	19763.341	(17.800)***	19631.598	(18.156)***
Control						
Time	-.486	(-2.691)**	-.503	(-2.792)**	-.513	(-2.763)**
Competition	351.542	(1.207)	410.430	(1.402)	411.294	(1.342)
Regulation	-955.917	(-1.375)	-973.087	(-1.423)	-836.052	(-1.235)
Income	-1407.907	(-1.806)†	-1326.833	(-1.709)†	-1318.589	(-1.680)†
Ownership						
State (0,10)	111.993	(.665)				
State (10,30)	-18.257	(-.248)				
State (30,100)	31.140	(1.518)				
Foreign (0,10)			-435.417	(-1.439)		
Foreign (10,30)			176.299	(1.107)		
Foreign(30,100)			-21.334	(-.874)		
Telco (0,10)					-166.390	(-.967)
Telco (10,30)					39.143	(.432)
Telco (30,100)					-12.219	(-.508)
Investors	-6.600	(-.287)	-27.778	(-1.432)	-26.146	(-1.308)
Governance						
Hybrids	-384.000	(-1.563)	-361.454	(-1.426)	-468.776	(-2.051)*
Adjusted R Square		.264		.268		.256
F		3.514**		3.562**		3.410**
Df		9, 63		9, 63		9, 63

Transformed functional forms (power 3) of variables Time and Delay.
Unstandardized regression coefficients are shown, with t-values in parentheses.
†p <.10; *p <.05; **p <.01; ***p <.001
All two-tailed tests.

Results of Piecewise Regression Analysis, Breakpoints 0% to 50%, and > 50%: Effects of Privatization Transaction Strategy on Performance Delay (n=64)

	Model 1.3A		Model 2.3A		Model 3.3A	
Constant	16909.811	(12.566)***	19592.813	(17.305)***	19564.994	(18.143)***
Time	-.466	(-2.626)*	-.467	(-2.600)*	-.478	(-2.650)*
Competition	337.922	(1.154)	420.968	(1.407)	335.420	(1.121)
Regulation	-991.515	(-1.458)	-888.228	(-1.281)	-791.984	(-1.188)
Income	-1397.966	(-1.817)†	-1388.232	(-1.773)†	-1268.473	(-1.630)
State (0,50)	29.458	(1.165)				
State (50,100)	8.854	(.690)				
Foreign (0,50)			-25.264	(-1.171)		
Foreign(50,100)			-1.699	(-.130)		
Telco (0,50)					-25.102	(-1.298)
Telco (50,100)					-3.910	(-.283)
Investors	.273	(.012)	-30.910	(-1.583)		
hybrids	-377.534	(-1.584)	-424.074	(-1.697)†	-487.911	(-2.194)*
Adjusted R^2		.283		.256		.265
F		4.113**		3.709**		3.845**
Df		8, 63		8, 63		8, 63

Transformed functional forms (power 3) of variables Time and Delay.
Unstandardized regression coefficients are shown, with t-values in parentheses.
†p <.10; *p <.05; **p <.01; ***p <.001
All two-tailed tests.

Appendix 4.C

Results of Piecewise Regression Analysis, Breakpoints 0% to 10%, 10% to 30% and > 30%.: Effects of Privatization Transaction Strategy on Performance Delay (*n*=55)

	Model1.2 B		Model 2.2B		Model 3.2B	
Constant	16810.958	(24.109)***	18217.254	(31.892)***	17976.635	(31.012)***
Time	-.312	(-3.489)**	-.314	(-3.510)**	-.309	(-3.284)**
Competition	-101.003	(-.718)	-108.807	(-.760)	-36.888	(-.237)
Regulation	-162.864	(-.498)	-133.872	(-.409)	-54.579	(-.163)
Income	-653.612	(-1.817)†	-626.162	(-1.743)†	-607.679	(-1.637)
State (0,10)	80.021	(1.012)				
State (10,30)	-9.646	(-.267)				
State (30,100)	12.855	(1.278)				
Foreign (0,10)			51.539	(.265)		
Foreign (10,30)			-31.651	(-.322)		
Foreign(30,100)			-17.628	(-1.500)		
Telco (0,10)					-59.172	(-.693)
Telco (10,30)					17.272	(.380)
Telco (30,100)					-2.586	(-.212)
Investors	5.703	(.534)	-5.404	(-.556)	-2.338	(-.227)
Hybrids	-202.480	(-1.756)†	-254.509	(-1.987)†	-270.429	(-2.357)*
Adjusted R^2		.318		.315		.272
F		3.794**		3.763**		3.244**
Df		9, 54		9, 54		9, 54

Transformed functional forms (power 3) of variables Time and Delay.
Unstandardized regression coefficients are shown, with t-values in parentheses.
†p <.10; *p <.05; **p <.01; ***p <.001
All two-tailed tests.

Results of Piecewise Regression Analysis, Breakpoints 0% to 50%, and > 50%: Effects of Privatization Transaction Strategy on Performance Delay (*n*=55)

	Model 1.3B		Model 2.3B		Model 3.3B	
Constant	17011.150	(26.376)***	18368.065	(32.039)***	18047.530	(30.794)***
Time	-.295	(-3.301)**	-.316	(-3.596)**	-.310	(-3.320)**
Competition	-62.383	(-.436)	-97.738	(-.699)	-68.783	(-.471)
Regulation	-134.847	(-.411)	-170.254	(-.526)	-48.888	(-.150)
Income	-622.309	(-1.725)†	-640.609	(-1.811)†	-590.212	(-1.613)
State (0,50)	16.315	(1.270)				
State (50,100)	-.202	(-.031)				
Foreign (0,50)			-15.704	(-1.552)		
Foreign(50,100)			-3.134	(-.514)		
Telco (0,50)					-9.761	(-1.019)
Telco (50,100)					2.055	(.300)
Investors	5.988	(.556)	-6.791	(-.710)	-4.840	(-.489)
Hybrids	-245.331	(-2.136)*	-184.904	-1.583	-270.033	(-2.473)*
Adjusted R^2		.310		.339		.287
F		4.037**		4.463***		3.723**
df		8, 54		8, 54		8, 54

Transformed functional forms (power 3) of variables Time and Delay.
Unstandardized regression coefficients are shown, with t-values in parentheses.
†p <.10; *p <.05; **p <.01; ***p <.001
All two-tailed tests.