

## **CONTRACTING FOR CREDIBILITY in International Telecommunication Investments**

**Allison Fine**

Yale Law School – allison.fine@yale.edu  
Columbia University, Department of Political Science – apf7@columbia.edu

ISNIE Conference, September 2000

Extensive literature supports the inverse correlation between credibility and uncertainty, confirming that the more credible a government and its institutions, the less investor uncertainty exists. Likewise, it is conventionally understood that credibility positively affects investment. Employing empirical evidence from government institutions and investment contracts in telecommunication sectors, this project analyzes the strategic dynamics of investment contracting between foreign investors and governments in developing countries. It argues that institutional credibility (alongside market opportunity) positively affects private investment, specifically foreign private investment. Because each state possesses a certain level of institutional credibility, investors require a minimum amount to safeguard their investment. In the absence of minimum credibility, however, investors and states devise strategies to overcome credibility gaps either by securing specific policy changes or, more feasibly, by implementing specific credibility-enhancing mechanisms within the contracting process. By examining the comparative utility of different gapfilling mechanisms and the empirical variation of international telecommunications investments in 176 developing countries between 1984 and 2000, this project explicates how, when, and to what success investors and states contract for credibility. This paper outlines the theoretical framework .

**\*\*DATA WORK IN PROGRESS\*\***

*Additional data specification during Conference presentation.  
Please do not redistribute without permission.*

Thanks to Columbia Institute for Tele-Information (CITI), Sloan Foundation, Center for International Business Education (CIBE), Javits Foundation, and International Telecommunication Union (ITU).

## INTRODUCTION

Governments around the world are opting to restructure their telecommunication sectors in an attempt to stimulate investment and growth. The process of reform has involved changes from large state-controlled telecommunications monopolies to market-oriented structures, shifts from governmental roles in ownership and operations to those in policy and regulation, and transformations in the importance of private capital and private enterprises.<sup>1</sup> Even the most rigid governments are reducing their involvement in the telecommunication sector and pursuing some degree of structural reform. They recognize that higher levels of investment tend to go hand in hand with higher growth and that an investment environment characterized by credible rules is critical. The World Bank's Brunetti, Kisunko, and Weder find, for instance, that "A business environment characterized by 'incredible' rules such as unclear property rights, constant policy surprises and reversals, uncertain contract enforcement, and high corruption most likely translates into lower investment and growth."<sup>2</sup> Governments are cornered by this correlation, and international institutions and private entrepreneurs are pushing to see better outcomes, particularly in developing countries. Now developing the telecom infrastructure necessitates developing the appropriate institutions or, at the very least, making credible contractual commitments. As a result, states are increasingly implementing structural reform programs led by the rubric of transparency, accountability, and well-defined property rights.

Accordingly, states are seeking an influx of capital and technological know-how through private telecommunications investment. But they have a credibility problem. States must convince investors that their government and institutions will not extract invested assets, unduly alter the policy environment, or otherwise renege on negotiated contracts. Potential investors

---

<sup>1</sup> See Appendix, "Telecom Reform: Alternatives."

<sup>2</sup> *World Bank Economic Review*, 1997: 353.

want a clear roadmap for how the telecommunication sector is to be restructured and regulated in order to make reliable financial projections about their own investments. Before they invest, investors want to know future operating conditions. In developing countries, such information is uncertain -- decisions on investments without well-established, long-run frequencies of future outcomes are made under uncertainty. Namely, uncertainty over credible government commitments arises from unanticipated changes in output demand, licensing structures and prices, interest and exchange rates, regulation and policies, as well as differing degrees of expropriation and nationalization. As a result, international telecommunications investors form subjective probability estimates that reflect their degree of belief about the underlying “state of the world.”

Extensive literature supports the inverse correlation between uncertainty and credibility. When theorizing about how states can demonstrate their credibility, scholars often draw a divide between governments that try to build a reputation and those that tie their hands with institutions, particularly regulatory agencies. But empirical evidence strongly suggests that more alternatives are employed by states and investors to thwart opportunistic behavior and to decrease the likelihood of public expropriation and unanticipated changes to the investment environment. What drives this variation? What mechanisms are available to help overcome the commitment hazards between investors and developing countries? What are the comparative utilities of different credibility-enhancing mechanisms?

Global telecommunication sectors provide important insight into this analysis of foreign investment. Not only do international telecommunications investments offer an overwhelming number and diversity of cases, but they possess high capital intensity, significant asset specificity, and economies of scale and scope. Moreover, the demands of domestic consumption

produce incentives to expropriate or renege that are potentially greater than other sectors. Even in 1989 industry specialists found that telecommunications markets are “intensely political affairs.”<sup>3</sup> Consequently, the type, parameters, and efficacy of investment contracts are displayed through an evaluation of the telecommunication sector. And conclusions can easily be extended into other sectors, specifically those reforming state-owned enterprises or infrastructure sectors.

This study investigates the micro-analytics of economic organization by focusing on the contracting level of international telecommunication investments in developing countries. Following the vision of Williamson, governance structures that “facilitate gapfilling, dispute settlement, adaptation, and the like [...] become part of the problem of economic organization.”<sup>4</sup> As such, this paper is the theoretical framework of a much larger empirical project. It advances conjectures on the relationship between institutional credibility, foreign private investment, and contracting structures – namely, under what conditions governments and investors select specific credibility mechanisms in the process of contracting and how effective these mechanisms are at overcoming governments’ credibility gaps.<sup>5</sup> Forthcoming work more explicitly utilizes the author’s data on the universe of telecommunication service contracts in and the institutional endowments of 176 developing countries over a seventeen year period (1984-2000).

---

<sup>3</sup> John Ure, “The future of telecommunications in Hong Kong,” *Telecommunications Policy*, v 13, n 4 (Dec) p. 371-378.

<sup>4</sup> Oliver Williamson, *The Mechanisms of Governance*. Oxford University Press, 1996. p. 56.

<sup>5</sup> This paper does not include the work-in-progress that utilizes the gathered large-N data on institutions and telecommunications services contracts in 198 countries for the years 1984-2000. Nevertheless, hypotheses and preliminary results are presented. Expanded analysis is forthcoming.

## LITERATURE

Telecommunications reform has emerged in fits and starts over the last half-century.<sup>6</sup> Beginning with the 1940s and 1950s, telecommunications companies in developing countries were first owned by foreign corporations like AT&T, ITT, and Cable & Wireless. The era of nationalized infrastructure hit in the 1950s, 60s, and 70s, yet it gradually lost its appeal as poor sectoral performance and macro-economic crises set in. By the mid to late 1980s, structural reform seemed the only remedy. States grew increasingly aware that privatizing their state-owned telecom enterprises could infuse capital into their struggling economies and jump start their indigenous securities industry, thus offsetting the pains of the more comprehensive reform package. The current trend of liberalizing and privatizing developing countries' telecommunication sectors is a direct result of this change.

Yet countries have followed very different specific paths in the pursuit of capital and economic development in the telecommunication sector. Namely, there are a complex and diverse variety of combinations of ownership and degrees of competition. As the "Telecom Reform" chart only partially demonstrates,<sup>7</sup> governments embarking on reform of their telecommunication sector can choose to corporatize their state-owned telecom enterprise, thus reorganizing the enterprise under financial and corporate principles, or they can choose to engage in one of the many populist or capitalist privatization plans. The further advanced the structural reform, the more active is the private sector and the more involved is the government in policy and regulation not ownership and management. Yet institutional problems have accompanied the different reform pathways. Notably, developing countries face difficult decisions about how to sequence management and ownership change, how to introduce competition and new market

---

<sup>6</sup> Roger Noll advances a chronology in "Telecommunications Reform in Developing Countries," forthcoming in Anne O. Krueger, ed. *Economic Policy Reform: The Second Stage*, University of Chicago Press.

structures, and how to regulate the sector. Governments in developing countries continue to confront investor uncertainty about the credibility of their institutional endowments and reform commitments.

Credibility is a critical component of the investment environment surrounding individual investment decisions. The level of credibility a government has is a product of the extent to which others believe that it will actually do what it said it would. Investment credibility, in particular, refers to the commitments a state makes with respect to investments and the stability and predictability of its institutions. Specifically, does the government abide by its contracts with foreign telecommunications investors? Do its institutions decrease uncertainty by predictably implementing policy commitments? If a state possesses high credibility, contracts are respected as negotiated and it's government and institutions do not adversely manipulate the investment environment after the contracting and implementation phases conclude. If a state possesses low credibility, investors are uncertain whether the government will act as promised. Typically, states possess low credibility until they have proven otherwise. More weight is placed on recent observations about a state's institutional credibility than on observations from the distant past. Because investors generally pursue the highest profits at the lowest risk and uncertainty, their beliefs about a government's credibility are critical in decisions about whether to invest or not to invest and in decisions about which contracting structures to employ as credibly mechanisms.

Literatures on reform, credibility, and investment have consistently focused on the dynamic relationship between foreign investors and governments in developing countries. Yet these literatures have faltered in their analytical specification of the investment process. The literature on reform and development hypothesizes on the nature and timing of private

---

<sup>7</sup> See Appendix.

investment and economic performance.<sup>8</sup> Unfortunately, it only partially identifies alternatives and strategies available to investors and governments. Most of this literature, especially that dealing with infrastructure and telecommunications, fails to distinguish the varying degrees of institutional forms present or the diverse kinds of mechanisms available. In particular, this reform literature looks at macro-economic performance and infrastructure growth, leaving the actual commitment and contracting process unclear.

Scholars often focus on an independent regulatory agency as the primary solution to expropriation and uncertainty. A particularly influential work in this school is Brian Levy and Pablo Spiller's *Regulations, Institutions, and Commitment*. Citing a flexible yet reliable, independent regulatory agency as the strongest institutional mechanism to assist governments in overcoming their credibility problem, Levy and Spiller argue that the state's success at establishing "substantive restraints on discretionary actions by the regulator, formal or informal restraints on changing the regulatory system, and institutions to enforce restraints" determine performance and investment.<sup>9</sup> Certainly, the more restrained arbitrary government action, primarily executive and legislative, the more credible the commitment governments can make to investors. But Levy and Spiller focus on domestic regulatory mechanisms to the exclusion of other alternatives. Because credibility mechanisms come in shapes and forms besides those, understanding the range of credibility mechanisms and the dynamic of the selection process proves increasingly important. Levy and Spiller also conflate public and private investment,

---

<sup>8</sup> See Williamson, 1976; Grandy, 1989; Nelson, 1989; Nelson, 1990; North, 1990; Bates and Krueger, 1993; World Bank, 1994; Campos and Lien, 1994; Daniels and Trebilcock, 1994; Levy and Spiller, 1994; Broner, Brunetti, Weder, 1995; Brunetti and Weder, 1995; Crain and Oakley, 1995; Galal and Nauriyal, 1995; Haggard and Kaufman, 1995; Knack and Keefer, 1995; Nabli, 1995; Petrazzini, 1995; Sachs and Werner, 1995; World Bank, 1995; Levy and Spiller, 1996; Olson, 1996; Ramamurti, 1996; Spiller and Vogelsang, 1996; World Bank, 1996; Savedoff and Spiller, 1997; World Bank, 1997; Bergara Duque, Henisz and Spiller, 1998; Cabellero and Hammour, 1998; Dailami and Leipsiger, 1998; Henisz and Zelner, 1999; Zelner and Henisz, 1999; Noll, forthcoming.

<sup>9</sup> Levy and Spiller, 1996, p. 1.

leading to indistinct results. Better empirical specification and a more expansive range of credibility mechanisms should advance Levy and Spiller's work.

In a different manner, the literature on credible commitments offers historical examples of commitment mechanisms and suggests possible comparative advantages of such mechanisms.<sup>10</sup> The literature falls short, however, in fully explaining and formalizing the range of credibility-enhancing mechanisms available, the process of bargaining by which mechanisms are selected or designed, and the conditions under which certain mechanisms are chosen over others.

The institutions literature, on the other hand, performs better at identifying several categories of political and contractual hazards.<sup>11</sup> This literature does not fully integrate the different hazards with empirical testing. Similarly, traditional literature on investment fails to recognize the nuances of foreign investment.

Recent research on the impact of uncertainty on investment offers greater theoretical utility, though it needs additional empirical support.<sup>12</sup> Economists like Avinash Dixit, Robert Pindyck, and Luis Serven suggest that if an investment is costly or irreversible, investors have an incentive to postpone investment and wait for new information in order to avoid costly mistakes. This 'value of waiting' can be quite considerable, especially in highly uncertain environments of immature reform and incredible institutions.

---

<sup>10</sup> See North and Thomas, 1973; Root, 1989; North and Weingast, 1989; Akerlof, Milgrom, Weingast, and North, 1990; North, 1990; 1991; Murphy, Shleifer, and Vishny, 1991; Shepsle, 1991; Weingast, 1993; DeLong and Shleifer, 1993; Mokyr, 1993; Greif, Milgrom, and Weingast, 1994; Landes, 1998.

<sup>11</sup> See Williamson, 1985; Anderson and Gatignon, 1986, 1988; Murtha, 1991; Oxley, 1995, 1997; Henisz, 1999, 2000.

<sup>12</sup> See Dixit and Pindyck, 1994; Serven, 1996, 1998; Dixit, 1997. See also Bernanke, 1983; Baldwin and Krugman; vanWynbergen, 1985; Zeira, 1990; Gul, 1991; Laban 1991; Ingersoll and Ross, 1992; Hassett and Metcalf, 1994; Aizenman and Marion, 1995; Hausmann and Gavin, 1995; Caballero and Pindyck, 1996.

Applied to telecommunications, this new theory of investment has three main parts.<sup>13</sup> First, the majority of fixed capital investments in telecommunications are partly or completely irreversible. The initial cost of investment is at least partially sunk, and investors are incapable of completely recovering the capital by selling it once invested. Second, investors face uncertainty about their future rewards. This uncertainty arises from hazards: unanticipated changes in output demand and prices, interest and exchange rates, licensing structures and policies, and more explicit yet unanticipated predatory behavior of the government. For instance, foreign telecommunications investors in India have confronted unforeseen fluctuations in regulatory authority; radical changes in licensing structures, as private operators' licensing system switched in August 1999; and continual delays in stated government objectives about the planned liberalization of domestic long distance. Third, investors can feasibly control the timing of their telecommunications investment. Namely, they can postpone investing until they acquire additional information about the future. This option value of waiting can be substantial, especially in highly uncertain investment environments.<sup>14</sup> As a consequence, uncertainty about investment environments in emerging telecommunication markets often proves a powerful investment deterrent for risk-averse foreign investors.

New entrants to telecommunication markets in the developing countries, for example, cite high licensing and service fees and erratic government behavior as factors retarding higher levels of investment. Several unanticipated changes in Egypt, Lebanon, and Jordan highlight the recent difficulties of telecom investment in the Middle East. First, Jordan's private mobile

---

<sup>13</sup> Luis Serven, "Irreversibility, Uncertainty, and Private Investment," mimeo, World Bank, 1996.

<sup>14</sup> "The optimal investment policy balances the value of waiting for new information with the cost of postponing the investment in terms of foregone returns. When a firm makes an irreversible investment expenditure, it kills its option to wait for new information that might affect the desirability of the investment. To take into account this fact, the standard-net-present-value investment rule (invest when the anticipated return on the additional capital equals its purchase and installation cost) must be modified: the anticipated return must exceed the purchase and installation cost by an amount equal to the value of keeping the option alive." Serven, 1996.

company, Fastlink, and other private operators complained that Jordan Telecommunications Company (JTC) failed to abide by its license agreement to offer a second mobile license through an open tender and instead awarded JTC the license. This, on the heels of a nontransparent 40% sale of JTC to the France Telecom Group, has not assured potential investors. Second, Lebanon continues to threaten its two GSM operators, Libancell and Cellis, with the termination of their 10-year BOT contracts. The operators claim that Lebanon is arbitrarily breaking its agreement, but the government suggests the operators sold more lines than their contracts permitted. With the high profits of mobile investments, as witnessed by the \$1.1 billion Moroccan GSM license awarded to the Spanish Telefonica group, resolving this dispute comes with a big price tag. Likewise, in Egypt, government commitments to withhold the auction of a third mobile license until 2002 now appear incredible as the government gears up.

The investment models of Dixit, Pindyck, and Serven thus propose that a critical threshold must be reached by the marginal profitability of capital if investment is to occur.<sup>15</sup> They predict that as volatility increases, so too does the investment threshold – investors become increasingly reluctant to invest. They want to avoid getting caught with too much capital should the future turn out worse than expected. Radical and detrimental changes in licenses and tariffs, like those above, don't bode well for encouraging investment. In contrast, if the future should turn out better than expected, investors can simply invest additional capital as necessary. Industry analysts suggest that the huge returns on capital invested in the Egyptian MobiNil project (at times hitting 200%) helped trigger the mobile license race that produced Morocco's big win, but current investor-state struggles heighten some investors' fears about regulatory volatility.

---

<sup>15</sup> See Dixit and Pindyck, *Investment Under Uncertainty*. Princeton, 1994.

Investment-friendly reforms, such as improvements in property rights regimes or telecommunications licensing policies, typically raise investors' anticipated returns on investment, but they can also increase uncertainty if investors believe that the reform measures could be reversed. Investors' perceptions about the probability of reversal become a key determinant of the investment response. The possibility of policy reversal thus creates a value of waiting for investors facing sunk costs in irreversible projects. For instance, telecom providers laying land-lines or fiber-optic cables throughout India may re-evaluate their investment as the Indian government debates the New Telecommunications Act of 1999 and delays its domestic liberalization plans. Put differently, the credibility of the government's commitment drives investors' decision making.

## **HYPOTHESES**

Based on the extensive literature highlighted previously, several assumptions are employed in this study. First, all feasible contracts are necessarily incomplete contracts. This incompleteness arises because of the inability to foresee all possible contingencies, the complexity of specifying rules for both foreseen and unforeseen disputes, and the difficulty of objectively observing and verifying contingencies.<sup>16</sup> As Williamson clarifies, "All complex contracts are unavoidably incomplete by reason of bounded rationality, and the convenient concept of contract as promise (unsupported by credible commitments) is vitiated by opportunism."<sup>17</sup> In contract design, various *ex ante* provisions can constrain contractual parties from opportunistic behavior but the "success or failure of economic ventures and transactions can depend on the ability of the participants to devise such institutions and enforcement

---

<sup>16</sup> Essentially, such factors are spin-offs of information asymmetries (namely adverse selection, moral hazard, and nonverifiability), opportunism, and asset specificity.

mechanisms.”<sup>18</sup> Second, because all actors pursue their self-interest, investors and actors in government institutions use the strategic calculus of cost-benefit analysis in the decision-making process to devise gapfilling strategies. Finally, this study starts from the supported negative association between uncertainty and credibility. Namely, the more uncertain the investment environment, the less credible the government and institutions and the more credible the government and institutions, the less uncertain the investment environment. Developments in the relevant literatures further support the positive relationship between credibility and investment.

By logical extension, I argue that *institutional credibility positively affects foreign private investment*. The more credible a state’s institutional endowment, the more confident foreign investors are. States must convince investors that their government and institutions will not renege on negotiated contracts, expropriate invested assets, or unduly alter the investment environment. By employing cross-country data, Stephen Knack and Philip Keefer conclude that, “to encourage investment, the stability and predictability of the incentive framework – relative prices, demand, interest rates, taxes – may be much more important than the level of the incentives themselves.”<sup>19</sup>

As such, I contend that *foreign investors require a specific amount of institutional credibility to proceed with investment*. More credibility is always better, but investors have a minimum requirement. The minimum amount acceptable is determined not only by the investor’s risk-preference but also by market opportunity. As the investment’s market potential increases, the minimum credibility amount required by the investor decreases. This is the basic

---

<sup>17</sup> Williamson, 1996. p. 6.

<sup>18</sup> Avinash Dixit, *The Making of Economic Policy: A Transaction-Cost Politics Perspective*. MIT Press, 1997. p. 61.

<sup>19</sup> Knack and Keefer, p. 223.

risk-reward ratio. Market opportunity, as such, intervenes in the effect of institutional credibility on foreign private investment decisions. In telecommunications, market opportunity is primarily determined by penetration rates, consumer purchasing power, and competition profile.<sup>20</sup>

In the simple 2x2 matrix below, the interaction between institutional credibility, market opportunity, and investment becomes clearer. Ideally, a state will possess significant institutional credibility and its particular investment will have strong market potential (IV). In such a scenario, the investor invests. Conversely, investment will not result in an incredible and unprofitable investment environment (I). But what about the case of low institutional credibility or limited market opportunity (II/III)? Levy and Spiller suggest that the extraction of short-term rents or short-terminism results.<sup>21</sup> This study confers that investors and states explore strategies to extract short-term profits and rents. Yet investors and states have several other alternatives in high/low situations. Notably, investors and states have the ability to gapfill with safeguards and mechanisms. Gapfilling is a hazard mitigating action designed “to shift the decision calculus of the potential expropriating government either by raising their political and/or economic costs to or lowering their benefits from the expropriation of assets or the revenue from those assets under consideration.”<sup>22</sup> As Williamson states, “Transactions that are subject to ex-post opportunism will benefit if appropriate safeguards can be devised ex ante.”<sup>23</sup>

Assume for a moment that the objective valuation of a state’s institutional credibility corresponds with an investor’s credibility valuation (i.e., the objective ‘low’ is equivalent to an investor’s minimum credibility value). *In the absence of market potential (I/III), states can institute profit safeguards* such as investment incentives, tax breaks, and subsidies to improve the

---

<sup>20</sup> Hensiz and Zelner warn that “Investors in the telecommunication sector must realize that low penetration rates relative to levels of economic development may not signify untapped market potential, but rather a large risk of expropriation by the state.” “The Institutional Environment for Telecommunications Investment.” Mimeo, 1999.

<sup>21</sup> Levy and Spiller, p. 29.

investment market. But only in the context of a strong institutional endowment can a state credibly commit to these safeguards (III). *In the absence of minimum credibility (I/II), investors and states can devise strategies to overcome credibility gaps either by securing specific policy ‘commitments’ or by implementing specific contract mechanisms.* To move a state from low institutional credibility to high institutional credibility requires the right safeguarding mechanisms, complemented if necessary by strong dispute-resolution mechanisms. The goal is to protect the investment enough to move from either II or III to IV.

**Table 1.**

		<b>Market Opportunity</b>	
		<i>Low</i>	<i>High</i>
<b>Institutional Credibility</b>	<i>Low</i>	No Investment  I.	No Investment OR Investment with Credibility Mechanisms II. ↓
	<i>High</i>	No Investment OR Investment with Profit Safeguards III. →	IV.  INVESTMENT

Picture a coin machine that sorts pennies (\$0.01), nickels (\$0.05), dimes (\$0.10), and quarters (\$0.25). Loose change is tossed into the machine and the coins are separated by type. Imagine that each state has a different combination of coins and that this change signifies its institutional endowment. Potential investors require a minimum amount of credibility – i.e., \$2.00 – before they will invest. Assessing a state’s coin distribution, investors can recognize the

---

<sup>22</sup> Henisz, “The Institutional Environment for Multinational Investment,” mimeo, 1999.

credibility gaps in that state's institutional endowment and overall government credibility. Too few quarters, no dimes, not enough nickels, and only a couple of pennies, for instance, may signify a weak legal structure, few regulatory safeguards, little judicial independence, and only a few international commitments. Both the investor and the state seek to overcome these credibility gaps to proceed with investment. For instance, if the country possesses only \$1.64, then both the investor and the government must gapfill \$0.36. The most efficient strategy presumably would be to gapfill one quarter, one dime, and one penny – a transaction of three coins. But the reality is not so simple.

Coins as credibility mechanisms are not one-dimensional. Certainly, the larger the coin, the higher its value – in other words, the more effective it is at its function. But *credibility-enhancing mechanisms differ in two dimensions: transaction costs and effectiveness*. In the \$1.64 example, the parties could feasibly decide to gapfill using three dimes, one nickel, and one penny, or six nickels and six pennies, or thirty-six pennies, etc. The larger the coin, the higher the transaction costs, yet the more credible the commitment. Williamson supports this in his work on mechanism design finding that “When contractual hazards are low, more complex forms of organization are at a disadvantage since they incur ‘added bureaucratic costs for which no benefits can be ascribed.’”<sup>24</sup> An autonomous and credible telecommunications regulator secured by a transparent telecom law and an independent judiciary may cost more to implement but they're stronger than a type-of-regulation provision, certain investment insurance programs, and pending policy commitments. The better substitutes (though not perfect) would be a contractual stabilization clause, binding international arbitration, and international policy commitments under WTO/GATS or a bilateral investment treaty. Investing in a country with layers of

---

<sup>23</sup> Williamson, 1996. p. 48.

<sup>24</sup> Williamson, pg.

domestic credibility is always better than investing in numerous piece-meal safeguards. But most of the world's countries do not possess the desired layers of domestic credibility – parties must strategically superimpose credibility mechanisms on a less than ideal institutional endowment. *If investors and states cannot satisfactorily gapfill by moving from low to high market opportunity through profit safeguards or from low to high credibility through credibility-enhancing mechanisms, investors will not invest – ‘the option value of waiting.’*

The contracting market for credibility does not work perfectly, however. *Investors occasionally make costly mistakes by unnecessarily lowering their minimum credibility requirement in the face of new market opportunities that place a premium on first-movers. This ‘option value of [gold]-rushing’ opens the door for opportunism.* Much like nineteenth century America in which territory frontiers were pushed westward in the rush to find gold, the investment frontier is a boundary demarcated by contemporary understandings of what assets can be owned, how such assets can be owned, who can own such assets, under what conditions such assets can be transferred, and why such assets are scarce. With the beginning of public telecommunication operators' privatization in the 1980s and the opening of new markets like cellular telephony brought on by technological change, investor perceptions of profit opportunities in the international telecom market shifted. 'Investing-first' became more valuable than waiting for new information, thus pushing questions about institutional credibility into the background. Only in cases of extreme incredibility did investors exercise their option of waiting.<sup>25</sup> But without hazard-mitigating mechanisms incorporated into the investment contract, investors were quite vulnerable to arbitrary policy reversals and creeping expropriation. A series

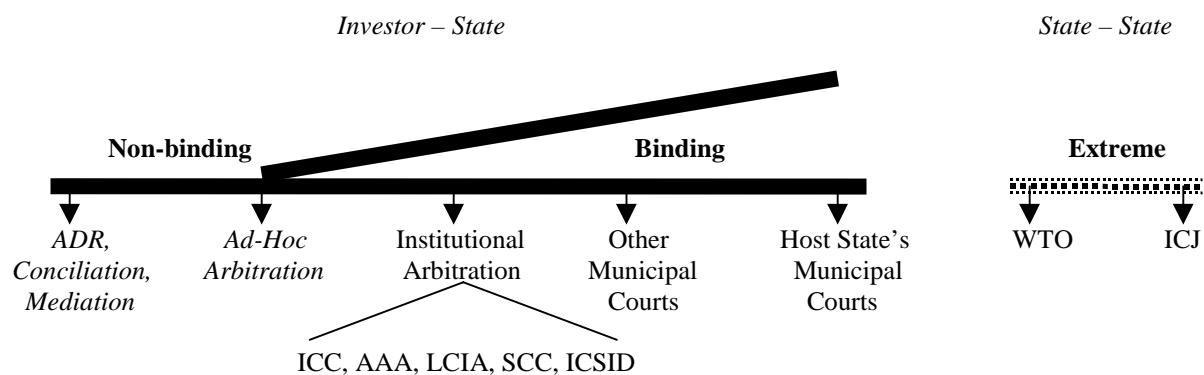
---

<sup>25</sup> Time-series data on telecommunication investment supports this.

of formal and informal disputes followed.<sup>26</sup> As investors gained expertise and the value of rushing decreased, fewer vulnerabilities were incorporated into new contracts.

Nevertheless, investors and states operate under the shadow of the contract law throughout the entire investment process. That shadow is as large as the dispute resolution forum’s threat is credible. As such, critical differences exist between the different dispute forum.

**Chart 1. Dispute Resolution Forum**



Foreign investors prefer to invoke binding international arbitration in their dispute resolution clause, especially when the state is incredible. Such dispute forums as the International Chamber of Commerce’s Court of Arbitration (ICC) in Paris or the World Bank’s International Center for the Settlement of Investment Disputes (ICSID) in Washington D.C. tend to operate under international standards. Even if emerging from serious public policy goals, states guilty of expropriation, “creeping expropriation,” or other predatory behavior know their case will not be looked favorably upon in a court devoted primarily to private commercial arbitration. Consequently, states typically prefer national courts or forums more open to political maneuvering and public policy goals. In these forums, states know their policy initiatives will be

<sup>26</sup> The majority of the fifty-plus disputes in this time period were resolved in municipal courts.

taken seriously and that such forums are more susceptible to lobbying and influence. Because the risks of private arbitration forums are high for states and the risks of national courts are high for foreign investors, “playing chicken” and losing is potentially devastating.

As a result, contractual clauses and safeguarding mechanisms are used by players as credible threats. Investors know that states, when confronted with the credible threat of binding arbitration, will prefer to informally negotiate a ‘resolution’ or ‘compromise’ with the investor instead of entering into formal arbitration. Even if the state incurs losses in the informal resolution, the costs of losing in formal arbitration are higher. There are financial expenses (including attachments and frozen assets), costs to the states’ investment reputation, critical losses of time and manpower, and potential domestic damage. Conversely, states know that investors, when confronted with the credible threat of national court jurisdiction, will often prefer to informally negotiate, even if some losses are incurred. Unless the dispute is irreconcilable, its better to stay in bed together than lose it all. *Certain credibility mechanisms, therefore, perform better at dispute avoidance, often through their threat credibility.*

## **EMPIRICS**

To systematically test the relationship between credibility and investment and the performance of various credibility safeguards, extensive empirical evidence is required. I gathered institutional and credibility data on 198 countries over a 17 year period (1984-2000).<sup>27</sup> Because I employ the decision (i.e., a single transaction between two parties) as the primary unit of analysis, I compiled original information on contract decisions. Specifically, I established the universe of contracts for the telecommunication services sector, totaling nearly 650 individual contracts. No other contractual dataset on telecommunications investments exists to this extent.

In total, there are more than 400,000 points of observation on countries, investors, investments, institutions, and contracts. And sources on each observation were ‘triangulated’ to verify accuracy. In addition, extensive data on the telecommunications and economic realities was incorporated as test and control variables.

I gathered data on country risk and political institutions from International Country Risk Guide (ICRG), Business Environmental Risk Intelligence (BERI), Stephen Knack and Philip Keefer’s IRIS dataset, Witold Henisz’s Political Constraints and Competition datasets (POLCON, POLCONJ, POLRIV), and the new Database of Political Institutions (DPI) from Thorsten Beck, George Clarke, Alberto Groff, Philip Keefer, and Patrick Walsh. Because the period of private investment activity in basic and mobile telecommunication services began in 1984, this information is for the recent period, 1984-2000.

Witold Henisz and Bennet Zelner have brought attention to the vulnerabilities of the ICRG/BERI datasets – namely, their retrospective and tautological qualities. “We believe that most of the problems with conventional political risk measures ultimately stem from their lack of focus on the political systems that they purport to measure.”<sup>28</sup> Certainly, any analysis should be circumspect when using these risk measures, but the databases continue to be good sources of institutional information and investor perception. That notwithstanding, Henisz’s new data variables POLCON, POLCONJ, and POLRIV provide innovative measurements. As Henisz himself summarizes, “certain observable characteristics – the structure of a country’s political institutions and the preferences of the actors that inhabit them – can be incorporated into a simple spatial model of political interaction to generate an internationally comparable measure of the feasibility of policy change.” This study utilizes the Henisz data. It further tests the data’s

---

<sup>27</sup> See Appendix III, Data Sample.

<sup>28</sup> Henisz and Zelner, “Political Risk and Infrastructure Investment,” mimeo, 1999.

validity (alone and in competition with the ICRG/BERI data) and it expands the data's focus by adding information on the regulatory structure of countries and the contract-level of investments.

In addition, I indexed data on the extra-contractual, legal and regulatory, judicial, and general government credibility.<sup>29</sup> At the bottom layer of credibility is the extra-contractual investment rules established by the foundations of customary international law and a collection of bilateral investment treaties and international agreements. These international investment agreements establish in varying degrees the investment issues of admission and treatment of foreign investment, the promotion of foreign investment, investment insurance, aspects of corporate conduct, taxation, competition and jurisdictional matters, and dispute settlement procedures. Certainly, investors and governments have choice in the individual contract structure they employ, but the feasible choice-set of potential contracts is constrained by the overlapping investment treaties and agreements. Consequently, I gathered information on whether the investor and state were involved in a bilateral investment treaty at the time of investment, whether the state made commitments under the WTO/GATS regime, and whether the state was signatory to the 1958 New York Convention (establishing the enforcement of arbitral awards) and the International Centre for Settlement of Investment Disputes (ICSID, establishing the authority of the public-private arbitration forum).

To establish the credibility of states' legal and regulatory framework for telecom investment, I collected extensive information on the legal structure of the country at the moment of investment (telecom law, foreign investment law, takings law, and contract law), whether changes in those laws had recently been undertaken, and to what extent those changes were favorable to foreign investment and credibility. Improvements in the legal environment prove at

least a partial antidote both to investors' uncertainty and incomplete contracting problems. The primary focus is on protection against expropriation – nationalization and other cases of deprivation of property and the infringement of property rights of investors. Countries have certainly taken strides toward securing their assurances against expropriation. UNCTAD's 1999 World Investment Report tracked changes in countries' investment regimes between 1991 and 1998 and ascertained that, of the 895 changes introduced, only 52 were unfavorable to FDI.<sup>30</sup> These changes in investment regimes directly affect investors' beliefs about the level of investment uncertainty they face in different markets.

**Table II. CHANGES in INVESTMENT REGIMES: 1991-1998**

	1991	1992	1993	1994	1995	1996	1997	1998
Number of Countries that Introduced Changes	35	43	57	49	64	65	76	60
Number of Regulatory Changes	82	79	102	110	112	114	151	145
<i>More Favorable to FDI</i>	80	79	101	108	106	98	135	136
<i>Less Favorable to FDI</i>	2	--	1	2	6	16	16	9

Source: UNCTAD *World Investment Report 1999: Foreign Direct Investment and the Challenge of Development*, p. 115.

- a. Including liberalizing changes or changes aimed at strengthening market functioning, as well as increased incentives
- b. Including changes aimed at increasing control as well as reducing incentives.

Likewise, I gathered information on the regulatory structure of the telecommunication sector – particularly the level of competition, the licensing regime, and the independence, autonomy, and efficacy of the regulatory authority. In terms of telecommunications investment, it cannot be overstated how important the credibility of the regulatory authority is to the decision-making process of investors. Susan Rose-Ackerman and Jim Rossi find that,

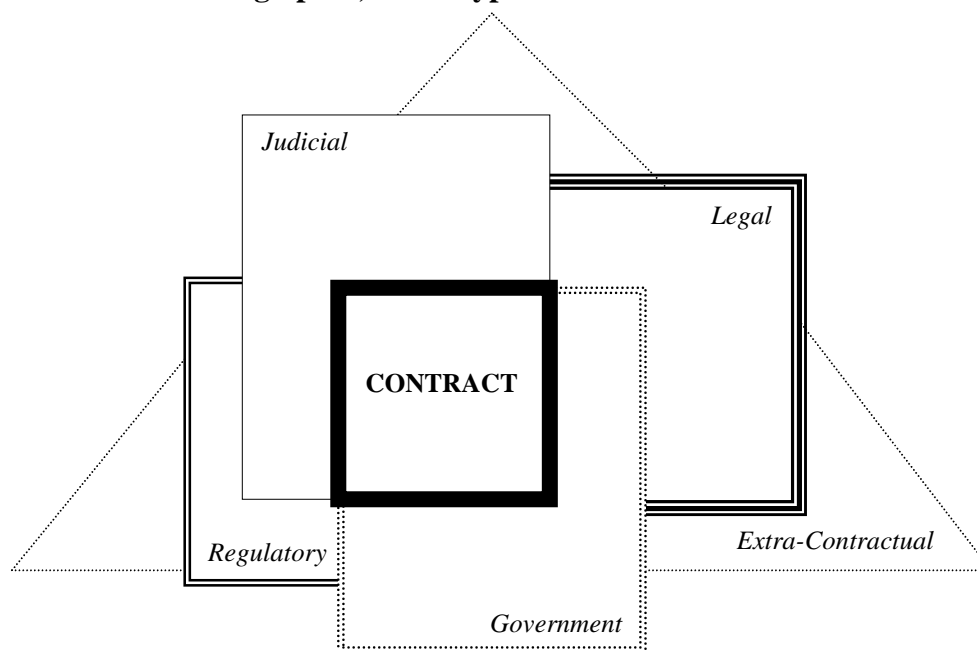
---

<sup>29</sup> Great attention was paid to gathering as much micro-data as possible, particularly contractual information on telecommunication basic and mobile service investment decisions. The bulk of telecom investment activity and telecom sector revenue takes place in basic services and mobile services.

“...regulatory changes can result in heavy costs for regulated infrastructure projects and may influence the behaviors of investors and the firm.”<sup>31</sup> Preliminary data analysis confirms this.

Similarly, Irayczower, Spiller, and Tommasi present strong evidence from Argentina, concluding that “Courts can function as a credibility enhancing institution.” Without an independent or strong national court system, the investor has no little confidence that legitimate investment disputes will be dealt with fairly – thus, introducing yet another layer of uncertainty and incredibility. As Serven finds, “the lack of impartial mechanisms to resolve contractual disputes make the returns to investment more difficult to predict, as the practical validity of contracts become uncertain.”<sup>32</sup> Consequently, I collected various measures of judicial independence, law and order, and dispute activity.

### Chart II. Credible Contracting Space, Ideal Type



<sup>30</sup> Recently, both India and Saudi Arabia liberalized rules for foreign investment funds, for example, with India allowing nearly 75% FDI in satellite systems and Saudi Arabia permitting 100% foreign investment.

<sup>31</sup> Susan Rose-Ackerman and Jim Rossi, “Takings Law and Infrastructure Investment: Certainty, Flexibility, and Compensation,” Mimeo, 1999.

<sup>32</sup> Luis Serven, “Irreversibility, Uncertainty, and Private Investment: Analytical Issues and Some Lessons for Africa,” Mimeo, 1996.

Ultimately, I established the universe of investment contracts using ITU public and private sources and numerous industry publications, particularly Telecommunications Daily, Telecommunications Reports, Pyramid Research's Telecom & Wireless worldwide reports, and proprietary banking and law documents. I gathered explicit information on the investor's firm size, total revenue and income, foreign experience, and investment diversity. Because this theoretical framework requires an investigation of all investment decisions, I tracked which firms bid for investment (if any), which firms won the bids, whether those firms chose to bid, what percentage of the company was bought, what dollar amount was paid, and whether the firm later sold off the investment. In regard to the investment contracts, I coded the type of contract: privatization through strategic investment, joint venture, license, or franchising agreement. Then, using contract information available through legal counsel and publication, I coded information on the actual contractual content and clauses on investment tenure, exclusivity, regulatory provisions, investment protection, dispute resolution, stabilization, renegotiation, adaptation, force majeure, and arbitration. I also tracked the presence of disputes, formal and informal, the type of dispute, and the settlement outcome.

Using factor analysis and different econometric techniques, a series of credibility indices will be produced on the extra-contractual, government, legal, regulatory, judicial, and general credibility values. As Chart II illustrates, the space in which a protected-investment contract can be negotiated is determined by the overlapping layers of institutional credibility. In less ideal situations, however, credibility-enhancing mechanisms must be used to move the contracting space into a more credible arena.

## CONCLUSION

Extensive literature supports the inverse correlation between credibility and uncertainty, confirming that the more credible a government and its institutions, the less investor uncertainty exists. Likewise, it is conventionally understood that credibility positively affects investment. Employing empirical evidence from government institutions and investment contracts in 176 telecommunication sectors between 1984 and 2000, this project analyzes the strategic dynamics of investment contracting between foreign investors and developing countries. It argues that institutional credibility (alongside market opportunity) positively affects private investment, specifically foreign private investment.

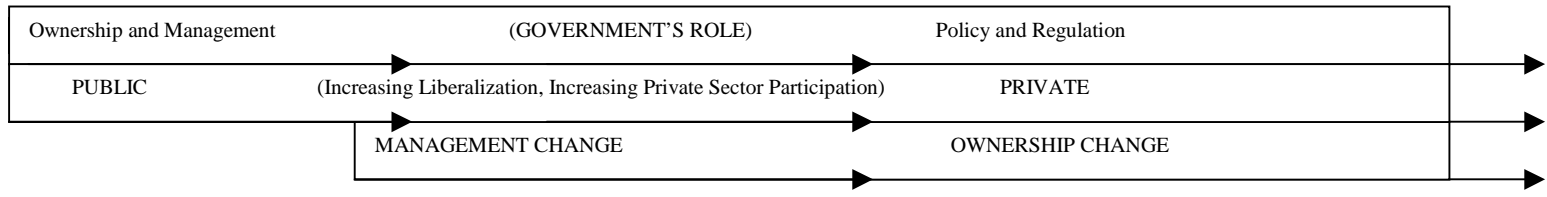
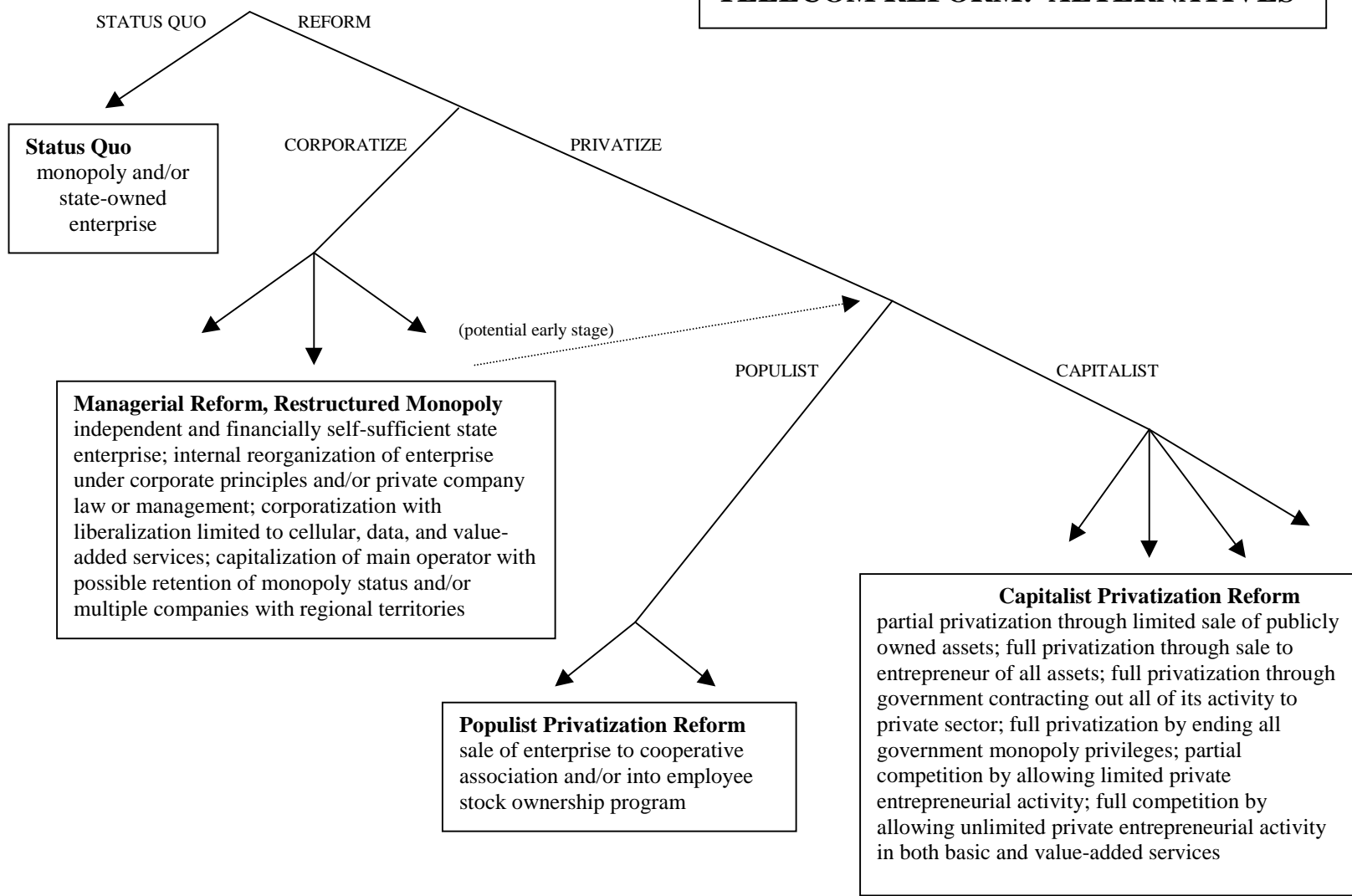
Because each state has a certain level of institutional (in)credibility, investors require a minimum amount of credibility to safeguard their investment. In the absence of minimum credibility, however, investors and states devise strategies to overcome credibility gaps either by securing specific policy changes or, more feasibly, by implementing specific credibility-enhancing mechanisms within the contracting process. Such mechanisms differ in two dimensions: transaction costs and effectiveness. Namely, the more effective the credibility mechanism, the more costly it is to implement. If the contracting parties satisfactorily ‘gapfill,’ then the investor invests. But if they cannot ‘gapfill,’ the investor chooses not to invest and exercises its ‘option value of waiting’ instead.

The contracting market for credibility does not work perfectly, however -- disputes between investors and states do occur. Occasionally, investors make costly mistakes by unnecessarily lowering their minimum credibility requirement in the face of new market opportunities that place a premium on first-movers. This ‘option value of [gold]-rushing’ opens

the door for opportunism. But investors have a learning curve and ultimately correct their market mistakes.

The data gathered to test this theoretical framework spans nearly 200 countries for over fifteen years and compiles original information on the universe of telecommunication service contracts. Certainly, this study is preliminary as the larger project's model and statistics have not fully been explicated. But the forthcoming analysis will shed more explicit light on the comparative utility of different gapfilling mechanisms, the empirical variation of international telecommunications investments, and the impact of institutional credibility on those mechanisms and contract decisions.

# TELECOM REFORM: ALTERNATIVES



**Data by VARIABLES...**

Country of Investment  
 Year of Investment  
 Company/Investment  
 Investor  
 Nationality of Investor  
 Number of Employees in Investor's Firm (ITU)  
 Total Revenue in Investor's Firm (ITU)  
 Total Net Income in Investor's Firm (ITU)  
 Foreign Experience of Investor  
 Product Diversity of Investor  
 Status of Bid  
 Percentage of Company Bought  
 Amount of Investment  
 Price paid per line  
 Status of Investment  
 Contract Structure

**Extra-Contractual**

Bilateral Investment Treaty  
 WTO: GATS Commitments  
 ICSID Signatory  
 New York Convention Signatory

**Government/Executive/Bureaucracy**

Political Constraints, POLCON (Henisz)  
 Political Competition, POLRIV (Henisz)  
 Database of Political Institutions, DPI (Beck, et. al.)  
 Political Leadership (ICRG)  
 Government Corruption (ICRG)  
 Party Development (ICRG)  
 Probability of Change in Government (ICRG)  
 Bureaucratic Quality (ICRG)  
 Bureaucratic Delays (BERI)  
 Red Tape (ICRG)  
 Corruption (ICRG)

**Legal**

Telecom Law  
 Change in Telecom Law in Past Year  
 Takings Law  
 Change in Takings Law in Past Year  
 Foreign Investment Law  
 Change in Foreign Investment Law in Past Year  
 Contract Law  
 Change in Contract Law in Past Year  
 Legal System (ICRG)  
 Corruption (ICRG)  
 Institutional Change (ICRG)

**Regulatory**

Separate Post and Telecom  
 Separate Regulator and Operator  
 Regulator Reports to...  
 Regulator Financed by...

Regulatory Disputes  
 Basic Services Monopoly  
 Level of Competition  
 Licensing Entity for Mobile  
 Mobile License Fee  
 Maximum Foreign Ownership Allowed

**Judicial**

POLCON and POLCONJ (Henisz)  
 Law and Order (ICRG)

**Contractual**

Contract Tenure  
 Exclusivity Clause  
 Regulatory Provisions  
 Investment Protection  
 Tax Breaks or Subsidies  
 Dispute Resolution Forum  
 Stabilization Clause  
 Renegotiation Clause  
 Adaptation Clause  
 Force Majeure Clause  
 Arbitration Clause  
 ICSID Clause  
 Legal Counsel  
 Enforceability of Contracts (BERI)  
 Contract Repudiation (ICRG)  
 Informal Dispute  
 Formal Dispute  
 Forum of Dispute  
 Type of Dispute  
 Dispute Outcome

**Investment Risk and Uncertainty**

Nationalization Risk (BERI)  
 Expropriation Risk (ICRG)  
 Institutional Change (ICRG)  
 Institutional Change (ICRG)  
 Corruption (ICRG)  
 Former Investment Disputes

**General Risk and Uncertainty**

Gastil Civil Rights  
 Gastil Political Rights  
 External Conflict Risk (ICRG)  
 Military in Politics (ICRG)  
 Religion in Politics (ICRG)  
 Racial Tensions (ICRG)  
 Political Terrorism (ICRG)  
 Civil War Risks (ICRG)  
 Social Stability (ICRG)  
 Labor Stability (ICRG)  
 Relationship with Neighbors (ICRG)  
 Terrorism (ICRG)  
 Distribution of Wealth (ICRG)  
 Middle Class (ICRG)

**Telecommunications Indicators (ITU)**

Telephone sets  
 % of households with telephone  
 Public pay phones  
 Coin-operated pay phones  
 Card-operated pay phones  
 Public call offices  
 Main telephone lines in operation  
 Main lines per 100 inhabitants  
 Main telephone lines in largest city  
 % of automatic main lines  
 % of digital main lines  
 % of main lines equipped for direct intl dialing  
 % of residential main lines  
 % of urban main lines  
 Connection capacity of local exchanges  
 Total km of fiber optic cable in network  
 International telephone circuits  
 Waiting list for main lines  
 Total national telephone traffic (calls)  
 Total national telephone traffic (minutes)  
 Total national telephone traffic (pulses)  
 Number of local telephone (calls)  
 Number of local telephone (minutes)  
 Number of local telephone (pulses)  
 International outgoing telephone traffic (calls)  
 International outgoing telephone traffic (min)  
 International outgoing telephone traffic (pulses)  
 International incoming telephone traffic (min)  
 % of telephone faults cleared by next day  
 % of unsuccessful local calls  
 Telephone faults per 100 main lines  
 National telegrams  
 International outgoing telegrams  
 Estimated facsimile machines  
 Digital cellular subscribers  
 Trunk mobile subscribers  
 Radio-paging subscribers  
 Estimated modems in use  
 Number of Internet hosts  
 Number of personal computers  
 Total full-time telecommunications staff  
 Exports of telecommunication equipment (US\$)  
 Imports of telecommunication equipment (US\$)  
 Consumer Price index (1987=100)  
 Total telecommunication service revenue  
 Telecom revenue (US\$)  
 Income from telephone service  
 Other telecom income  
 Total telecom expense  
 Operating costs  
 Depreciation  
 Net interest paid/(received)  
 Taxes on telecom income  
 Other costs  
 Net profit/loss

Total telecom investment (capital expenditure)  
 Telecom investment (US\$)

**Economy**

Population  
 % of urban population  
 Population of largest city  
 Households  
 Gross domestic product GDP  
 Gross domestic product in US\$  
 Gross Fixed Capital Formation GFCF  
 National currency per US\$  
 Average annual exchange rate  
 Economic Expectations (ICRG)  
 Economic Planning Failure (ICRG)  
 Loan Default (ICRG)  
 Delayed Payments (ICRG)  
 Exchange Control Losses (ICRG)

*Factor Analyses...*

*Extra-contractual Credibility Index*  
*Government/Executive Credibility Index*  
*Legal Credibility Index*  
*Regulatory Credibility Index*  
*Bureaucratic Credibility Index*  
*Judicial Credibility Index*  
*Credibility Index*  
*Investment Risk and Uncertainty Index*  
*General Risk and Uncertainty Index*

**Data by COUNTRIES for  
YEARS 1984-1999/2000...**

Afghanistan	Estonia	Morocco
Albania	Ethiopia	Mozambique
Algeria	Falkland Islands	Myanmar
Andorra	Fiji	Namibia
Angola	Gabon	Nauru
Antigua and Barbuda	Gambia	Nepal
Argentina	Georgia	Nicaragua
Armenia	Ghana	Niger
Azerbaijan	Gibraltar	Nigeria
Bahamas	Grenada	Oman
Bahrain	Guatemala	Pakistan
Bangladesh	Guinea	Palestinian Territories
Barbados	Guinea-Bissau	Panama
Belarus	Guyana	Papua New Guinea
Belize	Haiti	Paraguay
Benin	Honduras	Peru
Bhutan	Hong Kong	Philippines
Bolivia	Hungary	Poland
Bosnia and Hertzegovnia	India	Puerto Rico
Botswana	Indonesia	Qatar
Brazil	Iran	Reunion
British Virgin Islands	Iraq	Romania
Brunei Darussalem	Israel	Rwanda
Bulgaria	Jamaica	Russia
Burkino Faso	Jordan	St. Kitts and Nevis
Burundi	Kazakhstan	St. Lucia
Cambodia	Kenya	St. Vincent and the Grenadines
Cameron	Kiribati	San Marino
Cape Verde	People's Republic of Korea	Sao Tome and Principe
Central African Republic	Korea	Saudi Arabia
Chad	Kuwait	Senegal
Chile	Kyrgyz Republic	Seychelles
China	Laos	Sierra Leone
Colombia	Latvia	Singapore
Comoros	Lebanon	Slovak Republic
Congo	Lesotho	Slovenia
Congo Republic	Liberia	Solomon Islands
Cook Island	Libya	Somalia
Costa Rica	Lithuania	South Africa
Cote d'Ivoire	Macau	Sri Lanka
Croatia	Macedonia	Sudan
Cuba	Madagascar	Suriname
Cyprus	Malawi	Swaziland
Czech Republic	Malaysia	Syria
Czechoslovakia	Maldives	Taiwan-China
Djibouti	Mali	Tajikstan
Dominica	Malta	Tanzania
Dominican Republic	Marshall Islands	Thailand
Ecuador	Mauritania	Togo
Egypt	Mauritius	Tonga
Equatorial Guinea	Mayotte	Trinidad and Tobago
Eritrea	Mexico	Tunisia
	Micronesia	Turkey
	Moldova	Turkmenistan
	Mongolia	Tuvalu

Uganda  
Ukraine  
United Arab Emirates  
Uruguay  
Uzbekistan  
Vanuatu  
Venezuela  
Vietnam  
Western Samoa  
Yemen  
Yugoslavia  
Zaire  
Zambia  
Zimbabwe  
*Subtotal 176*

Australia  
Austria  
Belgium  
Canada  
Denmark  
Finland  
France  
Germany  
Great Britain  
Greece  
Ireland  
Italy  
Japan  
Luxembourg  
Netherlands  
New Zealand  
Norway  
Portugal  
Spain  
Sweden  
Switzerland  
USA  
*Subtotal 22*

*TOTAL: 198 Countries  
1984-2000*

**RAW DATA SAMPLE**

Allison Fine, "Contracting for Credibility in International Telecommunication Investments"

ISNIE, September 2000

<i>Country</i>	<i>Year</i>	<i>Operator</i>	<i>Investor</i>	<i>Natl</i>	<i>%</i>	<i>\$US mil</i>
Argentina	1990	Telecom ARG	STET	ITA	19.5%	\$ 539.0
			France Telecom	FRA	19.5%	
			JP Morgan	US	6.0%	
Argentina	1990	Telefonica ARG	Telefonica	SPA	14.2%	\$ 631.0
			Citicorp	US	35.0%	
			Techint	ITA	6.0%	
Argentina	1994	CTI	GTE	US	25.5%	
			AT&T	US	10.0%	
			CAI	CAR	20.0%	
Armenia	1995	ArmenTel	TransWorld Telecom	US	49.0%	\$ 143.0
	1998	ArmenTel	OTE	GRE	95.0%	\$ 142.5
Azberjian	1996	Azercell	Turkcell	TUR		
Bangladesh	1994	Sheba Telecom	TRI	MAL	49.0%	
Bangladesh	1997	Grameenphone	Telenor	NOR	51.0%	
Bangladesh	1997	Sheba Telecom	TRI	MAL	49.0%	
Bangladesh	1997	TMIB	Telekom Malaysia	MAL	60.0%	
Bangladesh	1996	Intntl Comm Technologies	ICT-W	US	35.0%	
Barbados	1991	BET	Cab&Wire	UK	25.0%	\$ 22.0
Barbados	1991	BET	Cab&Wire	UK	85.0%	
Barbados	1991	BARTEL	Cab&Wire	UK	11.0%	\$ 3.0
Barbados	1991	BARTEL	Cab&Wire	UK	75.0%	
Belaruse	1991	Belcel	Cab&Wire	UK	50.0%	
Belize	1988	Belize Telecom	British Telecom	UK	25.0%	\$ 4.0
Belize	1995	Belize Telecom	MCI	US	23.5%	
Bolivia	1995	Entel	STET	ITA	50.0%	\$ 610.0
Botswana	1998	Vista	France Cable and Radio	FRA	51.0%	
Brazil	.	BCP	BellSouth	US	41.0%	\$2,277.0
Brazil	1998	BCP	BellSouth	US	3.5%	
Bulgaria	1999	BTC	KPN	NET	51.0%	\$ 510.0
Bulgaria	1994	MobilTel	TRON	AUS	50.0%	\$ 15.0
			US West	US		
Burundi	1993	Telecel-Burundi	Telecel-Zaire	.	40.0%	
			Telecel Intntl	US	57.0%	
Cambodia	1993	TRICELCAM	TRI	MAL	70.0%	
Cape Verde	1995	Cabo Verde Telecom	Portugal Telecom	POR	40.0%	\$ 20.0
Central African	1990	SOCATEL	France Cable and Radio	FRA	40.0%	
Central African	1996	Telecel-CAR	Telecel Intntl	US	90.0%	
Chad	.	TIT	France Cable and Radio	FRA	43.0%	
			Telspace	FRA		
Chile	1988	ENTEL	Telefonica	SPA	20.0%	\$ 56.0
			Chase Manhattan Bank	US	10.0%	
Chile	1995	ENTEL	STET	ITA	18.0%	\$ 278.0
Chile	1987	ENTEL	COINTEL	ARG	20.0%	

Colombia	1994	Occidente y Caribe Celular	Cab&Wire	UK	22.0%	\$ 150.0
			Cacel	CAR	17.3%	
			Itochu	JAP	2.7%	
Colombia	1994	Celumovil SA	McCaw	US		\$ 461.0
Congo	1995	Cyrtel	Nexus/FCR	FRA	70.0%	
Congo	1998?	ONPT	Atlantic Tele-Network	US	67.0%	
Cook Islands	1990	Telecom Cook Islands	Telecom NZE	NZE	40.0%	
Cote d'Ivoire	1996	SIM	France Cable and Radio Comafrique	FRA	70.0% 30.0%	
Cote d'Ivoire	1997	Cote d-Ivoire Telecom	France Cable and Radio	FRA	51.0%	\$ 210.0
Croatia	1999	Hrvatska Telekom	Deutsche Telekom	GER	35.0%	\$ 850.0
Cuba	1994	ETECSA	CITEL	MEX	49.0%	\$1,165.0
			STET	ITA	.	
Cuba	1994	CUBACEL	TIMSA	MEX		\$1,500.0
Cuba	1991		STET	ITA	50.0%	
Czech Republic	1995	SPT Telecom	Swiss PTT Telecom	SUI	13.5%	\$1,330.0
			KPN	NET	13.8%	
Czech Republic	1990	Eurotel Prague	US West	US	24.5%	
			Bell Atlantic	US	24.5%	
			STET	ITA		
El Salvador	1998	CTE	France Telecom	FRA	51.0%	\$ 275.0
El Salvador	1998	INTEL	Telefonica	SPA	51.0%	
Equatorial Guinea	1996	.	France Telecom	FRA	40.0%	
Estonia	1993	Eesti Telepfon	Telia	SWE	24.5%	\$ 25.0
			Telecom Finland	FIN	24.5%	
Estonia	1991	EMT	Telecom FIN	FIN	24.5%	
			Telecom Finland	SWE	24.5%	
Estonia	1992	.	Swedish Telecom	SWE	24.5%	
			Telecom FIN	FIN	24.5%	
Estonia	1998	Ritabell	NetCom	SWE	48.0%	
Fiji	1989	Fiji Intntl Telecom	Cab&Wire	UK	49.0%	
Fiji	1994	Vodafone	Vodafone	UK	49.0%	
Ghana	1996	Ghana Telecom	Telekom Malaysia	MAL	30.0%	\$ 38.0
Ghana	1995	Celltel	AT&T	US	5.0%	
Ghana	1992	Mobitel	Millicom	BLX	80.0%	
Ghana	1993?	Scancom	Investcom	LEB	60.0%	
		Tele2 Nornett	Swedish Telecom	20		
Gibraltar	1989	Gibraltar Nynex Communications	NYNEX	US	50.0%	\$ 10.0
Greece	1992	Panafon	France Telecom	FRA	35.0%	\$ 160.0
			Vodafone	UK	45.0%	
Guatemala	1998	Telecomunicaciones de Guatemala	Luca Group	Central America	95.0%	\$ 700.0
Guinea	1993	Telecel-Guinea	Telecel Intntl	US	60/90%	
Guinea	1995	SOTELGUI	Telekom Malaysia	MAL	60.0%	\$ 45.0

Guinea-Bissau	1989	Guine Telecom	Marconi now Portugal Telecom	POR	51.0%	\$ 3.0
Guyana	1991	GT&T	Atlantic Tele-Network	US	80.0%	\$ 17.0
Hong Kong	1989	Pacific Link	Vodafone	UK	35.0%	
Hong Kong	1993	SmarTone GSM	AT&T	US	30.0%	
Hong Kong	1988	Hong Kong Telecom	Cab&Wire	UK	79.4%	
Hong Kong	1997	Hong Kong Telecom	China Telecom	CHI	5.5%	1, 185
Hong Kong	1993	Orient Telecom	NYNEX	US	23.1%	\$ 177.0
Hungary	1996	MATAV	Deutsche Telekom	GER	37.0%	\$ 852.0
			Ameritech	US		
Hungary	1989	WesTel	US West	US	49.0%	500
Hungary	1993	WesTel GSM	US West	US		500
			Pannon	SWE, DEN, NET, NOR, FIN)		
Hungary	1993	MATAV	Deutsche Telekom	GER	15.0%	\$ 875.0
			Ameritech	US	15.2%	
Hungary	1993	Pannon	KPN	NET	18.6%	
		*	Tele Danmark	DEN	18.6%	
			Telecom Finland	FIN	14.0%	
			Telenor	NOR	16.0%	
			Telia	SWE	16.0%	
Hungary	1998	Pannon	above		18.6 or 23.2%	\$ 160.0
Hungary	1994	Hung Tele/Cable	TeleDanmark	DEN	20.0%	\$ 7.9
Hungary	1989	Domestic Telecom	UniPharm	GERM	30.0%	
Hungary	1997	MKM Tel	Unisource	AMS	40.0%	
India	1995	Sterling Cellular	Swiss Telecom	SUI	30.0%	
India	1995	BPL Systems	France Telecom	FRA	26.0%	
India	1995	Hutchison Max	Hutchison	HOK	29.0%	
India	1995	Usha Martin Telecom	Telekom Malaysia	MAL	49.0%	
India	1995	Modi Telestra	Telstra	AUS	49.0%	
India	1995	Mobile Telecom	Vodafone	UK	.	
India	1995	RPG Cellular	AirTouch	US	20.0%	
India	1995	Skycell	BellSouth	US	24.5%	
			Millicom	BLX	24.5%	
India	1997	Birla	AT&T	US	49.0%	
Indonesia	1996	Aria West Intntl	US West	US	35.0%	
Indonesia	1996	Pramindo Ikat	France Telecom	FRA	35.0%	
		NUSntra				
Indonesia	1985	Mobisel	IWC	US	20.0%	
Indonesia	1991	Metrocel	First Pacific	HOK	35.0%	
Indonesia	1991	Komselindo	Electrindo	.	65.0%	
Indonesia	1994	Satelindo	Deutsche Telekom	GER	25.0%	
Indonesia	1994	Telkomsel	KPN	NET	17.0%	
Indonesia	1996	Excelcomindo	Nynex	US	23.0%	
Indonesia	1996	MGTI	Telstra	AUS	20.0%	
			NTT	JAP	15.0%	
Israel	1990	Bezeq	Cab&Wire	UK	10.0%	
Israel	1995	Bezeq	Cab&Wire	UK	7.0%	
Israel	1997	Bezeq	Merrill Lynch	US	12.5%	\$ 250.0

Israel	1994	Cellcom	BellSouth	US	30.8%	
			Safra	BRA		
Israel	1998	Partner Communications	Hutchison	HOK	57.5%	
			Elbit	.	17.5%	
Israel	1998	Bezeq	Cab&Wire	UK	3.0%	
Jamaica	1987	TOJ	Cab&Wire	UK	39.0%	
Jamaica	1989	TOJ	Cab&Wire	UK	20.0%	
Jamaica	1990	TOJ	Cab&Wire	UK	20.0%	
Jamaica	1988	Jamaica Digiport	AT&T	US	30.0%	
Kazakhstan	1997	Kazaktelecom	Daewoo	KOR (Rep)	40.0%	\$1,370.0
Kiribati	1990	Telecom Services Kiribati Limited	Telstra	AUS	49.0%	
Korea (Rep)	1994	Shinsegi Mobile Telecom	AirTouch	US	11.3%	
			SBC	US	8.3%	
			QualComm	US	2.6%	
Korea	1998	Hansol PCS	Bell Canada	CAN	23.6%	\$ 159.0
Laos	1994	Lao Shinawatra	Shinawatra	THA	39.0%	
Latvia	1994	Lattelkom	Cab&Wire	UK	31.0%	\$ 160.0
			Telecom FIN	FIN	24.5%	
Latvia	1998	Lattelkom	Sonera	FIN		\$ 116.0
Lesotho	1996	Vodacom Lesotho	Vodacom SAF	SAF	20.0%	
Lithuania	1998	Lithuania Telecom	Sonera	FIN	60.0%	\$ 510.0
			Telia	SWE	.	
Lithuania	1991	Comliet	Millicom	BLX	24.5%	
			TeleDanmark	DEN	24.5%	
			Antene UAB		10.0%	
Lithuania	1994/8	Omnitel	Telia	SWE	27.5%	
			Sonera	FIN	27.5%	
			Motorola	US	35.0%	
Macau	1988	CTM	Cab&Wire	UK	51.0%	
			Portugal Telecom	POR	28.0%	
Madagascar	1995	Madagascar Telecom	France Cable and Radio	FRA	34.0%	
Madagascar	1994	Telecel-Madagascar	Telecel Intntl	US		
Malawi	1995	Telekom Network	Telekom Malaysia	MAL	70.0%	
Malaysia	1996	Binariang	US West	US	20.0%	\$ 226.0
Malaysia	1996	Celcom	Deutsche Telekom	GER	21.0%	\$ 252.0
Malaysia	1995	Mutiara	Swiss Telecom	SUI	30.0%	
Malaysia	1989	Celcom	Deutsche Telekom	GER	21.0%	
Malaysia	1995	TRI	Deutsche Telekom	GER	21.0%	
Maldives	1988	Dhiraagu Private Limited	Cab&Wire	UK	45.0%	
Mauritius	1989	Emtele	Millicom	BLX	46.0%	
Mexico	1991	Telmex	SBC	US	5.1%	\$ 467.3
Mexico	1990	Telmex	France Telecom	FRA	12.5%	\$1,757.0
			SBC	US	7.9%	
Mexico	1993	Iusacell	Bell Atlantic	US	41.9%	\$1,040.0
Mexico	1993/4	Avantel	MCI	US	44.5%	\$ 450.0

Mexico	1994	Mobilcom	Nextel	US	22.0%	107.5 or 122.5
Moldova	1997	Start	France Telecom	FRA	51.0%	
			Mobil Rom	ROM	4.0%	
Mongolia	1995	Mongolia Telecom	Korea Telecom	KOR	40.0%	\$ 4.5
Mozambique	1997	TMM	Deutsche Telekom	GER	26.0%	
Namibia	1995	MTC	Telia	SWE	26.0%	
			Swedfund	SWE	23.0%	
Nicaragua		Nicacel	BellSouth	US	49.0%	
Pakistan	1990	Pakcom	Millicom	BLX	59.3%	
Pakistan	1994	Pakistan Mobile	Motorola	US	66.0%	
Pakistan	1990	Paktel	Cab&Wire	UK	80.0%	
Panama	1997	INTEL	Cab&Wire	UK	49.0%	\$ 652.0
Paraguay	1999	Copesa	Mastec	US	51.0%	
Paraguay	1998	Nucleo	Telecom ARG	ARG	68.5%	
Peru	1994	Telefonica del Peru	Telefonica	SPA	35.0%	\$1,392.0
Philippines	1994	ICC	Nynex	US	15.0%	
Philippines	1996	Digitel	Telia	SWE	10.0%	
			Jasmine	THA	2.5%	
Philippines	1991	Extelcom	Millicom	BLX	37.0%	
Philippines	1994	Globe Telecom	SNG Telecom	SNG	40.0%	
Philippines	1994	Islacom	Shinawatra	THA	24.0%	
			Deutsche Telekom	GER	10.0%	
Philippines	1990	Eastern	Cab&Wire	UK	40.0%	
Philippines	1994	Capwire	Korea Telecom	KOR	20.0%	
Philippines	1998	PLDT	First Pacific	HOK	17.2%	\$ 749.0
Poland	1991	Polska	Ameritech	US	24.5%	
		or Centertel	France Telecom	FRA	24.5%	
Poland	1996	Polkomtel	AirTouch	US	19.3%	\$ 130.0
			TeleDanmark	DEN	19.3%	
Poland	1996	Polska	US West	US	22.5%	\$ 130.0
			Deutsche Telekom	GER	22.5%	
Puerto Rico	1992	Telefonica LARGa de Distancia de	Telefonica	SPA	79.0%	\$ 141.6
		Puerto Rico				
Puerto Rico	1998	Puerto Rico Telephone Company	GTE	US	50.0%	\$ 375.0
Romania	1998	RomTelecom	OTE	GRE	35.0%	\$ 675.0
Romania	1991	Telefonica Romania	Telefonica	SPA	60.0%	
Russia	1992	Baltic Mobiltel	Telecom FIN	FIN	50.0%	
			Millicom	BLX	20.0%	
Russia	1997	Sviazinvest	Deutsche Morgan Grenfell	GER	25.0%	
Sao Tome & Principe	1989	Compahia Santomense de Telecomunicacoes	Marconi or Portugal Telecom	POR	51.0%	\$ 1.0
Senegal	1997	Sonatel	France Telecom	FRA	33.3%	\$ 90.0
Singapore	1995	Mobile One	Cab&Wire	UK	15.0%	
			Hong Kong Telecom	HOK	15.0%	
Slovak	1990	Eurotel Bratislava	US West	US	24.5%	

Republic			Bell Atlantic	US	24.5%	
Solomon Islands	1989	Solomon Telekom	Cab&Wire	UK	41.9%	
South Africa	1997	Telekom SA	SBC	US	18.0%	\$ 757.0
			Telekom Malaysia	MAL	12.0%	\$ 504.0
Sri Lanka	1997	Sri Lanka Telecom	NTT	JAP	35.0%	\$ 225.0
Sri Lanka	1989	Celltel Lanka	Millicom	BLX	79.0%	
Sri Lanka	1996	Lanka Bell	SNG Telecom	SNG	80.0%	
			Nortel	US	12.0%	
Sri Lanka	1996	Suntel	Telia	SWE	75.0%	
Taiwan-China	1997	Pacific Comm	GTE	US	12.0%	
Taiwan-China	1997	Smart Link	First Pacific	HOK	17.0%	
Tanzania	1996	Tritel	TRI	MAL	60.0%	
Tanzania	1994	MIC	Millicom	BLX	51.0%	
			Ultimate Tele	.	14.0%	
Thailand	1993	Thai Telephone	NTT	JAP	18.0%	
Trinidad & Tobago	1989	Telecom Services	Cab&Wire	UK	49.0%	
Trinidad & Tobago	1990	Telco	Cab&Wire	UK	49.0%	
Uganda	1995	Celstel	Vodafone	UK	37.0%	
			Mobile Systems Intntl	.	42.0%	
			Commonwealth Devel	.	10.5%	
			Co			
Uganda	1998	MTN Uganda	MTN	SAF	50.0%	
			Telia	SWE	30.0%	
			Tristar	RWA	10.0%	
Ukraine	1992	UMC	Deutsche Telekom	GER	16.3%	
			KPN	NET	16.3%	
			Tele Danmark	DEN	16.3%	
Ukraine	1992	UTEL	AT&T	US	19.5%	
			KPN	NET	10.0%	
			Deutsche Telekom	GER	19.5%	
Uzbekistan	1992	Uzdunrobita	Intntl Communications	US	45.0%	
Vanuatu	1992	Telecom Vanuatu	Cab&Wire	UK	33.3%	
Venezuela	1991	CANTV	GTE	US	20.4%	\$1,885.0
			AT&T	US	5.0%	
			Telefonica	SPA		
Venezuela	1991	Telcel	BellSouth	US	53.3%	
Venezuela	1998	Telcel	BellSouth	US	25-35%	\$ 210.0
Vietnam	1995	Mobifone	Millicom	BLX	45.0%	
Yugoslavia	1997	PTT Servia	STET	ITA	29.0%	\$ 900.0
Zambia	1997	Telecel	Telecel Intntl	US	70.0%	