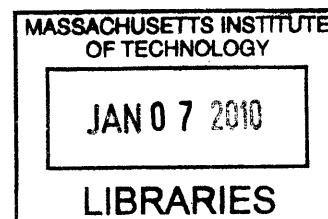# The Drivers of Foreign Direct Investment in Telecommunications among Developing Countries:

The Role of Government

by

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The Drivers of Foreign Direct Investment in Telecommunications among Developing Countries: The Role of Government

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Abstract

During the late 1980s, globalization of the world's economies and technological development created the conditions for the expansion of Foreign Direct Investment (FDI) in telecommunications. This tendency has been further boosted by different economic reforms that countries have implemented, which have included the liberalization of FDI regimes and the opening of the infrastructure sectors, including telecommunications, to private investment and competition. As a result, developing countries have received considerable inflows of FDI in telecommunications through multinational companies, headquartered in developed countries that either have purchased state-owned telecom providers or have entered mobile markets. In this context, since the late 1990s a few domestic companies from emerging economies have also emerged as successful players in the international markets, generating a new wave of investment, commonly called "South-South" FDI, that currently represents nearly one-third of foreign capital inflows in telecommunications in developing economies.

This thesis explores the country-level drivers of the recent wave of South-South FDI in telecommunications and how these drivers have shaped domestic companies' competitive advantages. Specifically, I address two research objectives: First, to determine what country-level factors have enabled a few domestic companies from developing countries to emerge as successful players in the international telecommunications markets. Second, to identify the role governments have played in the rise of this type of investment. Using economic and regulatory information on 145 developing countries I built a cross-section econometric model of the determinants of this wave of FDI during the period 1998-2007. The results indicate that multinational telecommunications companies from developing economies tend to originate in relatively large countries with maturing telecommunications markets. These companies' operations tend to be located in nearby countries whose markets exhibit large potential, where they find favored access conditions and where they are able to exploit their superior knowledge of emerging markets. Also, these companies are more likely to emerge in countries that have both incorporated competitive forces and provided these companies some protection from full liberalization. In this regard, government intervention has created particular pressures, sources of advantage and business opportunities that have resulted in additional incentives for these companies' internationalization.

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1. Introduction

During the late 1980s and the beginning of the 1990s, globalization of the world's economies and technological development created the conditions for the expansion of Foreign Direct Investment (FDI) in telecommunications. This tendency was further boosted by the structural reforms that countries implemented aiming to integrate their economies to the global flows of production and investment. These reforms included the liberalization of FDI regimes and the opening of the infrastructure sectors, including telecommunications, to private investment and competition. As a result, developing countries started receiving considerable inflows of FDI in telecommunications through multinational companies, headquartered in developed countries, that either purchased state-owned telecom providers or entered mobile markets. Telecommunications FDI, therefore, became an important driver of sector growth in developing countries.

Nevertheless, in the late 1990s, after the downfall of the telecommunications industry and the emerging economies' crises, many of the existing multinational companies withdrew their investments from the developing world. This created an investment gap that has been filled, for the most part, by emerging companies from developing countries. The internationalization of these domestic companies generated a new wave of investment commonly called "South-South" FDI that currently represents nearly one-third of foreign capital inflows in telecommunications in developing economies. However, despite the expansion of this wave of FDI, only a small number[1] of developing countries have become a source of such investments and, consequently, a few[2] domestic companies have emerged as successful players in the international markets.

The relatively high concentration of the sources of South-South FDI in telecommunications is probably explained by distinctive advantages that have enabled a few domestic companies to become competitive abroad. The existing literature states that

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[1] During the period 1990-2007, companies from 25 developing countries have originated South-South investments in telecommunications. Source: PPI Database; own calculations.

[2] By 2002, for example, the list of the 30 largest telecommunications multinational corporations included four companies from developing countries: Datatec and MTN Group from South Africa, América Móvil from Mexico and Telekom Malaysia (World Bank, 2006).

these advantages are commonly derived either from firms' indigenous characteristics or from certain country factors like the size of the domestic markets and the institutional context in which companies operate. In the case of telecommunications, sector reforms and the resulting regulatory environments of home and host countries have traditionally been regarded as primary factors driving these companies' investment decisions in the international markets.

Telecommunications reforms in the developing world, however, have been commonly designed amid conflicting policy objectives. On the one hand, for most of the countries telecom reforms have been an opportunity to bring into domestic markets the benefits of private participation and competition. On the other hand, by incorporating certain restrictions into sector liberalization or into privatization, some governments have attempted to develop strong national companies capable of competing in the global markets, to keep some control of the provision of services or to obtain additional revenues. Therefore, different countries have decided to incorporate different levels of liberalization in their telecommunications sectors. The heterogeneity in sector reforms may have created additional conditions for the emergence of multinational telecommunications companies in a number of developing countries since, as a result, some companies may have encountered favorable conditions in both domestic and foreign markets. In this regard, the World Bank (2006) has argued that emerging companies generally come from countries that not only implemented early reforms, forcing their companies to become more efficient, but that also protected them from full market liberalization.

The purpose of this thesis is to explore the country-level drivers of the wave of South-South FDI in telecommunications, and find how these factors have shaped emerging companies' competitive advantages. Specifically, I address two research objectives: First, to determine what country-level factors have enabled a few domestic companies from developing countries to emerge as successful players in the international telecommunications markets. Second, considering the influence that regulatory

environments have traditionally had in the telecommunications sectors, I address the role that governments have played in the rise of this type of investment.

Using economic and regulatory information of 145 developing countries, collected from different sources such as the World Bank's and the International Telecommunications Union's datasets, I build a cross-section econometric model to estimate the country-level determinants of South-South FDI in telecommunications during the period 1998-2007. Based on this model, I test the role that countries' regulatory environments have played in both creating the conditions for the emergence of multinational telecommunications companies and in shaping their investment decisions in the international markets.

The next section reviews the global FDI tendencies in telecommunications as well as the conceptual framework within which I build my analysis; it also includes a brief description of the traditional relationship between regulation and FDI. Chapter 3 presents the research objectives, methodology and sources of data; it also presents an estimation of the recent trends in South-South FDI in telecommunications, based on the available information. In addition, this chapter introduces the econometric model and explains each one of the included variables. Chapter 4 describes the estimation results. Chapter 5 presents the analysis of these results in the context of this thesis' research objectives. Finally, Chapter 6 provides a summary and presents the conclusions and policy implications.

2. Background

This chapter presents the background of my thesis. Initially, I mention the recent global tendencies in FDI. Then, I describe three waves of telecommunications FDI in developing countries[3] that have taken place since the mid 1980s: Privatizations of national incumbents, expansion of mobile services, and the rise of South-South FDI. I also present the conceptual framework regarding the internationalization of companies from developing countries. Additionally, I present some antecedents about the role of governments in shaping the paths of FDI flows in developing countries.

2.1 FDI in telecommunications in developing countries

2.1.1 Global tendencies in FDI

One of the main outcomes of globalization has been the expansion of international production (UNCTAD, 1999). In this context, multinational corporations operating in foreign countries have made massive investments in order to build and/or control specific assets required for production; as a result, during the last years FDI around the world has increased drastically. Between 1990 and 2007, total global FDI net inflows[4] grew from $204 billion to $2.1 trillion, which reflects an average growth rate of 14.8% each year.

The participation of developed countries in international FDI flows has been traditionally large; over the past decades the share of European Union, Japan and the United States, in total FDI inflows fluctuated at around 60-70% (UNCTAD, 2006). However, as a result of economic development, developing countries' participation in these flows has increased over time; their share of FDI inflows went from an average of 20% at the beginning of the 1980s to 35% in 2003-2005 (UNCTAD, 2006).

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[3] In this thesis I follow the World Bank's country classification, which is based on the economies' Gross National Income (GNI). Accordingly, I use the term "Developing Country" to refer to each of the 145 countries that in 2008 were classified as either low-income or middle-income economies.
[4] Source: Word Bank's Word Development Indicators (2009).

Another characteristic of global FDI flows has been the increasing participation of the services sector; it represented 25% of FDI stock in the early 1970s, 49% in 1990 and 62% in 2006[5]. Two main factors may explain this structural change (UNCTAD, 2004); first, the worldwide rise of services consumption during the last years, and second, the liberalization of services FDI regimes around the world, which eliminated many of the previously existing barriers to entry for foreign companies.

The composition of global services FDI has also changed over time. Although this sector has been traditionally dominated by trade and finance industries, these industries' participation in services FDI stocks dropped from 65% in 1990 to 49% in 2006[6]. Accordingly, infrastructure –including telecommunications– and businesses services increased their share in services FDI from 19% to 40% during the same period (UNCTAD, 2008).

2.1.2 First and second waves of FDI in telecommunications

The evolution of telecommunications FDI has been consistent with global FDI tendencies. Until the mid-1980s, this type of investment was negligible since national companies mostly provided telecommunications services on a monopoly basis. Since the mid-1980s, this model has been challenged by the increasing globalization of the economies, by the technological development, and by the generalized changes in sector regulation. Hence, telecommunications became a multiplayer global industry mainly dominated by large corporations from developed countries[7] that diversified their home businesses by entering new markets with high growth potential, many of them located in developing countries. Accordingly, telecommunications FDI flows into the developing world increased drastically, reaching an average of $23 billion a year between 1996 and 2000[8].

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[5] Sources: UNCTAD (2004), UNCTAD (2008).
[6] Source: UNCTAD (2008).
[7] From 1990 to 2003, the ten largest foreign investors in telecommunications were all from Europe and the United States (World Bank, 2006).

Two waves of FDI in telecommunications took place in developing countries during the late 1980s and 1990s (World Bank, 2006): The first wave started with privatizations of national incumbents in more than 80 countries[9], which created numerous opportunities for the entry of foreign investors. Incoming foreign companies were expected to bring the capital, technology and expertise required for the expansion and modernization of the existing telecommunications networks. In some cases, these companies operated in consortium with local partners that brought their knowledge of local conditions, including how to deal with labor and their relations with government (Ramamurti, 2000). Between 1988 and 2006, foreign investors paid $57 billion to the governments for –partial or total– control over incumbents, and invested $137 billion in the privatized facilities[10].

The second wave of telecommunications FDI arose in the mid-1990s with the expansion of mobile services, originated in the development of digital cellular technologies. The boom in demand for these new services, as well as the governments' pro-competitive approach to mobile markets resulted in the massive entry of foreign mobile companies into more than 100 developing countries building completely new mobile network infrastructures (World Bank, 2006). Consequently, 38% of the FDI inflows in telecommunications –and 54% of the projects– during the period 1990-2003 corresponded to mobile telephony[11].

As a result of these waves of investment, telecommunications FDI became an important driver for sector growth[12] in developing countries. Nevertheless, by the end of the 1990s most of the developed-country telecommunications multinationals that had been main investors in the developing world started to slow down their investments[13]. This tendency was part of the generalized reduction in private investment in emerging markets after the

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[8] Source: World Bank (2006).
[9] Ibid.
[10] Ibid.
[11] Ibid.
[12] Contessi (2003) estimated an econometric model on the determinants of telecommunications performance based on information about 46 transition and emerging economies during the period 1989-2000. The results show that privatizations are correlated with increases in teledensity and that the share of foreign ownership in the incumbent has a positive impact in sector indicators.
[13] For example AT&T, BellSouth, France Telecom, MCI and SBC retreated from Latin American markets (World Bank, 2006).

East Asian financial crisis (Harris, 2003). In the case of telecommunications, according to the World Bank (2006), this phenomenon was also associated with: 1) The bursting of the telecommunications bubble in developed countries in the late-1990s; 2) the large operators' compromised balance sheets following major investments and bids for 3G mobile licenses in Europe, as well as 3) disappointing returns from some projects, which resulted after these companies' accelerated growth in multiple markets. Moreover, macroeconomic and regulatory risks in host countries induced these companies to reconsider additional investments and to withdraw from a number of markets where they were having returns below expected (World Bank, 2006).

2.1.3 The rise of South-South FDI in telecommunications

Amid the expansion of FDI flows around the world, a number of companies from developing countries accumulated enough capital and knowledge to invest abroad, becoming multinationals. These companies commonly came from large developing countries with growing importance in the world economy (UNCTAD, 2006). This phenomenon became more frequent over time; for example, the number of Fortune 500 companies headquartered outside United States, Europe, Japan and Oceania, rose from 28 in 1988 to 61 in 2005[14]. As a result, the share of developing countries in global outward FDI flows increased from a negligible amount in the mid 1980s to 15% in 2005[15].

In the case of telecommunications, since the late 1990s, certain companies from developing economies emerged as significant investors as they started to fill the gap left by the withdrawal of some international providers from the developed world (Aykut and Goldstein, 2006). The retreat of large multinationals allowed emerging companies to acquire assets at low prices, and gave them better chances to obtain new licenses.

The larger role of emerging companies in the telecommunications markets generated two main effects. First, developing countries saw an important rise of domestic private

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[14] Source: Aykut and Goldstein (2006).
[15] Source: UNCTAD (2006).

funding in this sector[16] and second, a number of companies headquartered in these countries became multinationals, as they started to operate in foreign developing-country markets.

A number of emerging telecommunications companies, therefore, became important players within their regions. Telmex Group, for example, turned into the largest mobile provider in Latin America, South African companies became dominant providers in Sub-Saharan Africa, Orascom from Egypt invested in markets in the Middle East and North Africa, Telekom Malaysia entered various countries in South Asia and Africa and both Russian and Turkish companies expanded into the former Soviet Union countries. Accordingly, the share of emerging companies in telecommunications FDI in developing countries (South-South FDI) increased from 20% in the period 1990-1999 to 36% in 2001-2003; in addition, by 2002 four companies[17] from developing countries took part of the Top-30 list of largest multinational telecommunications companies (World Bank, 2006).

Despite the recent expansion of South-South FDI in telecommunications, however, only 25 of 145 developing countries have become source of such investments. Most of these countries are relatively large and their telecommunications companies have tended to invest within their own regions (World Bank, 2006). As I explain below, the exploration of the country-level drivers of the emergence of multinational telecommunications companies in a small number of developing countries, as well as the factors affecting their investment paths, is the primary objective of my thesis.

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[16] The participation of local investors in telecommunications investment in developing countries rose from 23% in 1998 to 37% in 2003. Source: Ettinger *et al.* (2005); own calculations.
[17] Datatec (South Africa), América Móvil (Mexico), MTN Group (South Africa) and Telekom Malaysia.

2.2 Conceptual framework

2.2.1 Motivations, competitive advantages and drivers of internationalization

The international business literature has explored extensively the factors driving the internationalization of firms. Specially, two main topics have been studied: The motives that domestic firms have to become multinationals and the factors that make possible for these companies to become competitive in the international markets (Lessard and Lucea, 2008). According to this literature, companies usually have four main motives to explore foreign markets: Entering new markets (*market-seeking motives*), exploiting more efficiently the firm's existing assets (*efficiency-seeking motives*), gaining control over scarce resources (*resources-seeking motives*) and acquiring new strategic assets *(strategic asset-seeking motives)*.

In addition, firms operating in foreign (host) markets need to have distinctive advantages that enable them to compete under less favorable conditions and higher transaction costs than their domestic competitors. International business theories explaining these firms' advantages were first developed in the 1960s and 1970s when large, product-oriented corporations dominated international investment (Lessard and Lucea, 2008). Perhaps the most influential framework developed in this period is the *eclectic paradigm* proposed by John Dunning in 1981, also named OLI theory (*Ownership, Location, Internationalization*) (Amighini *et al.*, 2009). In his model, Dunning (1981) argues that firms are able to expand their operations into foreign countries if they possess some of these advantages: 1) *Ownership advantages* that refer to the control of specific assets, such as brand or proprietary technologies, that may be exploited by operating in foreign markets; 2) *location advantages* associated with the integration of activities across countries with different factor costs and resource costs, and 3) *internationalization advantages* related to scale and scope economies reached through internalizing activities across borders (Bonaglia, *et al.*, 2007).

Ownership advantages play a central role in this classical approach, since they are the primary assets that firms use to respond to internationalization opportunities. These

advantages are generally attributed to a set of both home-country and firm-specific factors that influence their firms' competitiveness in the international markets. Home-country factors include endowments, such as labor, skills, capital, demand and supply conditions and institutions (Porter, 1990). Firm-specific advantages favoring internationalization consist of proprietary assets such as patents and governance capabilities (Lessard and Lucea, 2008). Still, companies with limited firm-specific advantages may also engage in *"asset augmenting"* strategies, in order to acquire strategic assets abroad, such as technology, brands, distribution networks, managerial skills or special facilities (UNCTAD, 2006).

The OLI theory, however, has been criticized because of its limited capacity to explain the internationalization processes of companies from developing countries. First, this theory is based on the experience of large, Anglo-American, international firms that could easily own the resources and capabilities required to invest abroad (Aykut and Goldstein, 2006); therefore, it does not explain why these companies may become globally competitive without having any significant advantages at their first stages of internationalization (Goldstein, 2007). Also, as developing countries may have poor institutions, this theory predicts that it is unlikely that companies from these countries become multinationals, unless they operate in specific sectors associated with unskilled labor or natural resources (Lessard and Lucea, 2008). In addition, critics argue that this model is static and neglects companies' strategic factors as well as the context surrounding their investment decisions (Goldstein, 2007).

In 1996, Dunning and Narula responded to these critics by proposing the revised version of the Investment Development Path (IDP) model, originally developed by Dunning in 1981. This revised model connects, in a dynamic fashion, the economies' FDI patterns with structural attributes like production structure and institutions. It also incorporates concepts of path-dependence, idiosyncrasy, and the dynamic interaction between FDI, growth and governments; in addition, it considers the increasing role of strategic asset seeking strategies (Dunning *et al.*, 1997).

The IDP theory predicts that the inward and outward FDI position of a country is related to its level of economic development. Accordingly, this theory sees incoming FDI as an initial spur for growth (Barnard, 2008) while outbound FDI is originated only when a country has reached certain development stage, reflecting the evolution of ownership advantages among firms in that country (UNCTAD, 2006). However, the IDP theory's prediction of a sequential internationalization process in developing countries has also been criticized. New studies have pointed out that emerging companies participating in advanced networks of firms may, through a "leapfrogging" process, reduce the time needed to enter global markets, catching up with developed-country multinationals (Amighini *et al.*, 2009; Mathews, 2006).

Researchers, therefore, have attempted to understand the causes of the increasing emergence of multinational companies from developing countries. There is a general consensus that this phenomenon reflects the rise in capital stock in these countries, the increasing openness of the economies, the larger levels of competition, and both the growing scale and sophistication of emerging companies (Aykut and Goldstein, 2006). These companies, however, present unique features that indicate they may have distinctive drivers of internationalization: First, they tend to expand into foreign markets early in their corporate life, lacking enough resources like technology, financial capital, brands and experienced management. Second, their paths of international expansion are incremental, with frequent feedback from experimental learning. Third, most of these companies achieve internationalization through organizational –as opposed to technological– innovation adapted to the host markets' conditions (Aykut and Goldstein, 2006). In addition, a number of these emerging companies either operate in sectors different from natural resources (Lessard and Lucea, 2008) or are headquartered in countries with deficient business environments (Goldstein, 2007). These trends suggest that emerging companies tend to internationalize in order to build critical competitive advantages (Aykut and Goldstein, 2006).

By studying the emerging companies' distinctive features, researchers have found that these companies commonly derive special competitive advantages from their home

country contexts (Aulakh, 2007). Ramamurti (2009) argues that they are likely to rely on home country-specific advantages in their early stages of internationalization and that these advantages become less important in later stages, when the companies' operations have expanded into many countries and they have acquired more firm-specific advantages. Some sources of advantage at the country level are the markets' size, the availability of low-cost labor and the existing social networks with ties with foreign countries; also, some companies have received benefits from home governments' industrial policies (Ramamurti, 2009).

Certain companies' characteristics have been also found to be relevant for emerging companies' internationalization. Idiosyncratic governance structures, for example, might substitute poor institutions in developing countries (Lessard and Lucea, 2008) since they may generate alternative sources of capital, gain access to political power and solve informational and agency-related problems (Khanna and Rivkin, 1999). Other relevant factors at firm-level are the presence of strong leaders as well as the technological and organization leapfrogs resulting from the purchase of key knowledge or from companies acquisitions (Lessard and Lucea, 2008).

Scholars have also studied how emerging companies are able to sustain their competitive position over time. These studies commonly indicate the importance of mechanisms for knowledge creation, integration and diffusion within the organizations (Lessard and Lucea, 2008). Mathews (2006), for example, based on the experience of firms from the Asia Pacific region, proposed a model denominated LLL in which companies' internationalization is mainly driven by three factors: First, as latecomers, these companies build links with incumbents and partners in the host markets (*linkage*); second, they use these links to *leverage* their resources; third, in this process, they learn about new sources of advantage and how to improve their performance in international markets (*learning*).

Lessard and Lucea (2008) propose a model, based on the experience of CEMEX from Mexico, to illustrate how multinational companies from developing countries achieve

sustained success in foreign markets. Initially, companies develop a set of capabilities, named *capability platform*, that result from the interaction between home country and firm specific advantages. This original set of capabilities not only enables companies to compete in their home markets but also allow them to expand internationally; the model defines three necessary conditions, also named as the RATs test, for this to happen. First, the original set of capabilities must be *relevant* to customers in foreign markets. Second, these capabilities need to be *transferable* across markets, that is, companies must be able to move these capabilities into host markets regardless of existing entry barriers. Third, profits resulting from the exploitation of these capabilities in foreign markets need to be *appropriable* by the company. In addition, these companies need to adapt and renew their capability platform in order to maintain or improve their competitive position. Common sources of capability renewal are either the access to special resources in the host countries or the insights from the responses of subsidiaries to challenges in foreign markets. According to these authors, this vision differs from the classic theories of internationalization that argued that capabilities are originated and adapted at the companies' headquarters.

In their model, Lessard and Lucea (2008) also consider the mechanisms for the transference of locally developed new capabilities into the rest of the organization. They argue that emerging multinationals need to establish processes to assess the relevance, transferability and appropriability of the new capabilities into the rest of the markets; that is, they need to evaluate the new capabilities according to the criteria of the RATs test, which means to apply this test in reverse. Finally, companies need to incorporate mechanisms to integrate these capacities within the rest of the organization. In this regard, the continuous process of capability platform *exploitation – enhancement – exploitation* enables emerging multinationals to build sustainable businesses.

Knowledge acquisition, therefore, is another crucial element in the internationalization of emerging companies. In the same line, Johanson and Vahlne (1977) explored how companies commonly learn and how their new knowledge affects their investment decisions. A number of firms handle risk problems through an incremental decision-

making process, where information gathered through foreign operations in one phase is used in the next phase to take further steps; their path of expansion, therefore, is slow and incremental, with loops of experimental learning (Bonaglia *et al.*, 2007). This strategy enables firms to build up its knowledge of how to conduct international businesses (Goldstein, 2007). As a result of this incremental behavior, the distance between home and host markets, as well as their cultural and institutional differences, becomes a strong driver of FDI flows, as it increases costs of coordination and uncertainty (Sarkar *et al.*, 1999).

2.2.2 Internationalization of telecommunications companies

The literature has also identified special drivers of internationalization in the telecommunications industry. As I mentioned, since the mid-1980s the increasing globalization of the economies and the generalized changes in sector regulation created new business opportunities for telecommunications companies. Technological development further facilitated liberalization by reducing both entry and operation costs and by introducing new services like mobile telephony and Internet (World Bank, 2006). As a result, telecommunications became a multiplayer global industry dominated by large multinational companies.

In this context, host countries' market potential has been a primary driver of FDI. This potential depends on economic factors such as market size, economic growth and income per capita. Also, multinational telecommunications companies prefer to operate in foreign markets where they find some degree of affinity derived from geographical or cultural proximity, commercial links and political ties (World Bank, 2006).

Sarkar *et al.* (1999) studied the internationalization processes of telecommunications carriers during the 1990s. These authors argue that both firm-level factors and environmental forces have driven these processes. Firm-level factors involve strategic considerations such as arbitrage opportunities across government policies, strategic interdependence of global telecommunications markets and systemic ownership advantages from international presence –better access to financial institutions and

standard-setting agencies–. These factors also include scale considerations like efficiencies reached through international aggregation of markets. Environmental forces driving internationalization in this sector include the institutional changes –privatizations and liberalizations– defined by host governments, and the resulting market opportunities for multinational companies. Similarly, Kim *et al.* (2009) point out at factors like competitive pressures in home markets and the regulatory environment in host countries.

Nevertheless, as I explain in the next section, sometimes these competitive forces have been constrained by actions of governments or incumbent providers. For example, Sarkar *et al.* (1999), Ramamurti (2000) and Kim *et al.* (2009) argue that early entrants in global telecommunications markets gained important first-mover advantages such as monopoly benefits and the potential to influence regulatory processes. Accordingly, these companies implemented strategies of preemption of both markets and partners, in order to capture these advantages and improve their competitive position; their strategies included making preemptive investments, leveraging political connections and deterring the entry of potential competitors (Ramamurti, 2000).

2.3 FDI and governments in developing countries

Governments usually shape the business environments in which companies operate. They set the "rules of the game" in the markets and affect the supply and demand of resources; they also influence the capabilities and motivations of citizens and companies as well as their participation in international commerce (Dunning, 1992). In this regard, governments incorporating tough competition regimes may force some companies to be more efficient and competitive in international markets. For example, Aykut and Goldstein (2006) argue that the increasing competition in Latin American markets due to liberalization in the 1990s acted as a selection mechanism where relatively few companies survived, but those that did were able to compete in the global markets.

Scholars agree that government interventions have also played a key role in compensating developing-county firms' lack of competitive advantages (Goldstein, 2007). Governmental support in these countries has taken the form of preferred access to markets, subsidized capital, preferential regulations (Ramamurti, 2009) or public investments in research and human capital (Goldstein, 2007). Also, some governments have granted monopoly rights to their domestic companies and these companies have used the extra profits to invest abroad (Goldstein, 2007). I addition, some governments have granted fiscal incentives for outward FDI (Aykut and Goldstein, 2006): For example, China has provided preferential loans and tax rebates for their outward-investing companies; Malaysia and Thailand actively promote their firms' investments in nearby countries, and Brazil has provided special credit lines to support outward FDI.

State support, however, may incorporate competitive distortions in the markets as well. This possibility may create a policy conflict for governments since they generally also have responsibilities of promoting market competition and of preventing the emergence of monopolies (Goldstein, 2007). The likely tradeoff between market competition and industry competitiveness, therefore, has become a major determinant of policy-making in developing countries.

State support sometimes has been regarded as an unfair advantage in international competition (Ramamurti, 2009). The World Trade Organization (WTO), therefore, has promoted the development of FDI regimes that encourage competition and avoid government-created advantages for domestic companies. Consequently, most developing countries have continued to liberalize their investment regimes during the last years and only a number of them have taken actions to either protect their industries from foreign competition or to increase the control of the state in some companies[18] (UNCTAD, 2006).

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[18] UNCTAD identified 205 policy changes in FDI regimes implemented in 2005 around the world. Most of them (sector liberalization, privatizations, promotional efforts, operational measures and FDI admissions) made conditions more favorable for foreign companies. Some others (nationalizations, taxation, new requirements) made host countries less favorable to FDI.

In addition, developing-country governments have also shaped their domestic companies' business opportunities by signing preferential agreements that have encouraged intra-regional trade and investments; these arrangements include the South African Development Community, the South East Asian Nations (ASEAN), MERCOSUR, the Andean Community, and a number of bilateral investment agreements and double taxation treaties (Aykut and Goldstein, 2006). In this regard, developing countries have seen South-South cooperation as an additional mechanism to overcome development challenges; one of the reasons is that the emergence of multinational companies from developing countries may generate additional benefits for home and host countries in terms of regional integration, new sources of investment capital –mainly for low-income countries– and domestic firms' competitiveness (Aykut and Goldstein, 2006).

2.3.1 Telecommunications FDI and governments in developing countries

Telecommunications has traditionally been regarded as an important sector in the economies because of its role in communications and information dissemination; these activities, in turn, are important factors of countries' competitiveness and socioeconomic development (Wang, 2003). Many developing countries, however, have traditionally had difficulties to finance projects in these sectors, given governments' fiscal constrain and/or private sectors' lack of expertise and capital sources. In these countries, therefore, telecom FDI has been seen as the solution to reduce existing gaps in technology and financial resources.

As I mentioned, in a context of increasing globalization and technological development, since the 1980s most developing countries have implemented structural reforms aiming to bring the benefits of competition as well as new financing sources, including FDI. The reforms have included privatization of state-owned providers, introduction of competition in the markets and creation of regulatory institutions. Countries have implemented these reforms in different ways. In some cases privatization has been partial and the government has retained partial ownership of the incumbent (Wallsten, 2001). Also, in a

number of countries introduction of competition has been gradual or its emphasis has been in different services: Either in fixed-line or in mobile telephony. In addition, various countries have liberalized their foreign investment regimes in telecommunications. For example, in 1998, 72 countries, including 39 developing countries, signed the Agreement of Basic Telecommunications Services of the World Trade Organization (WTO). In this arrangement, all signatories agreed to open their telecommunications markets to operators based in other WTO countries, on a most-favored-nation basis (Wang, 2003).

Governments in developing countries, however, have faced conflicting objectives concerning the role of telecommunications FDI. Regarding incoming FDI, Wang (2003) points out that policies on sector liberalization are often regarded as indicators of the governments' position on trade opportunities and economic growth *vis-à-vis* sovereignty. The reason is that, although FDI has traditionally been recognized as a driver of sector growth, in some cases it has also been seen as a factor undermining countries' independence and control over communications channels and content (Wang, 2003). Consequently a number of developed and developing countries have defined restrictions to foreign investment in the telecommunications sector. For example, during the WTO negotiations on telecommunications services, 24 countries, including 8 high-income[19] and 12 developing countries[20], signed a clause that allows them to keep restrictions on foreign ownership in these sectors[21]. Likewise, in the fist half of the 1990s, motivated by expected revenues from privatization transactions, many governments granted the privatized companies exclusivity periods (5-10 years) in basic services that, according to the World Bank (2006), conflicted with the mentioned WTO commitments. Multilateral development institutions have criticized such constraints to incoming FDI. According to the World Bank (2006), in most cases, foreign ownership restrictions limit takeover risk and management accountability and reduce investment incentives, inhibiting effective, profit-oriented management. In addition, this Bank argues, with the generalized opening

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[19] Canada, France, Japan, Korea, New Zealand, USA, Singapore and Israel. Source: Wang (2003).
[20] Mexico, Brazil, South Africa, Malaysia, Colombia, Indonesia, Morocco, Philippines, Tunisia, Ghana, India and China. Source: Wang (2003).
[21] According to UNCTAD (2008), by 2007 foreign ownership restrictions in telecommunications in some developing countries were: China 49%, India 74%, Indonesia 35%, Malaysia 30%, Mexico 49% (fixed operators), Philippines 40%, and Thailand 49%.

up of the markets, foreign investors increasingly reject these limitations, since they have less possibilities of operating as monopolies.

Additionally, developing countries have made policy decisions with diverse effects on outward FDI in telecommunications; these policies have ranged between, on the one hand, incorporating high levels of competition in the markets, or, on the other, incorporating certain limits to competitive forces in order to promoting the development of strong national companies, capable of operating in foreign countries. In this regard, the World Bank (2006) states that most of the emerging multinational companies in telecommunications come from developing countries that not only implemented early reforms, forcing these companies to become more efficient, but that also protected them from full market liberalization.

Mariscal and Rivera (2005), for example, studied the dissimilar telecommunications reforms implemented in Latin America, which incorporated different levels of market liberalization. According to these authors, the divergence in policy implementation comes from the countries' heterogeneous interaction between policy constraints, groups of interests and ideologies; in general, policy-makers designed reforms that minimized political friction, allowing interest groups to increase their potential influence. Therefore, different policies arose in this region: In Mexico, for example, policy-makers attempted to create "National Champions" from their privatized companies; Brazil, on the contrary, developed a more competitive market structure and renounced to keep a vertically-integrated telecommunications incumbent. As policy outcomes, in a decade Mexico developed a strong telecommunications industry that reached regional dominance while some large Brazilian operators faced bankruptcy; however, Brazil reached higher welfare gains in terms of lower tariffs and higher penetration of telecommunications services (Mariscal and Rivera, 2005).

The mentioned heterogeneity of the telecommunications reforms, as well as the governments' diverse approaches to incoming and outward FDI, probably have been important factors driving the flows of South-South FDI in this sector. In this context,

domestic telecommunications companies facing favorable regulations in both home and host countries probably have developed additional advantages that have enabled them to become multinationals. As I explain in the next chapter, one of the objectives of my thesis is to infer to what extent government regulation in home and host countries has had an active role in these companies' internationalization.

3. Research objectives and methodology

This chapter describes the thesis problem and research objectives; it also explains both the data and methodology used. In addition, based on the collected data, it presents the main trends of South-South FDI in telecommunications during the period 1990-2007. Finally, the chapter introduces the econometric model and describes its variables.

3.1 The problem

As mentioned in Chapter 2, since the 1980s telecommunications companies around the world have faced external forces like technological development and increasing competition that have encouraged them to expand their networks, to become more efficient, and to look for new markets abroad. In this context, during the last years South–South FDI in this sector has increased substantially, gaining increasing attention. This type of FDI not only currently represents nearly one third of foreign capital inflows in telecommunications into developing countries, but it also reflects the emergence of a number of telecommunications companies from such countries venturing abroad and becoming multinationals. South-South FDI, therefore, may have important implications for the expansion of telecommunications infrastructure as well as for the competitiveness of the domestic telecoms industries in developing countries.

However, despite the recent expansion of this wave of FDI, only a small number[22] (25) of developing countries have become source of such investments and, consequently, a few

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[22] Source: PPI Database; own calculations.

domestic companies have emerged as successful players in the international telecommunications markets. These companies tend to be headquartered in relatively large countries and they tend to invest primarily within their own regions.

The relatively high concentration in sources of South-South FDI in telecommunications is probably explained by distinctive advantages that have enabled a few domestic companies to become competitive in the international markets. As explained in Chapter 2, scholars have argued these advantages are commonly derived either from firms' indigenous characteristics or from certain country factors like the size of the domestic markets and the institutional context in which they operate. In the case of telecommunications, the regulatory environment of home and host countries has traditionally been regarded as one of the primary factors driving these companies' investment decisions in the international markets.

Governments in developing countries, however, have faced conflicting objectives when implementing reforms in their telecommunications sectors. On the one hand, for most of the countries telecom reforms have been an opportunity to bring into domestic markets the benefits of competition and private participation. On the other hand, by incorporating certain restrictions into sector liberalization or into privatization, some governments have attempted to develop strong national companies capable of competing in the global markets, to keep some control in the provision of services or to obtain additional revenues. In the case of sector liberalization, the dissimilar reforms implemented by developing countries, therefore, have probably incorporated additional conditions for the emergence of multinational telecommunications companies in some of these countries.

The purpose of this thesis is to explore the country-level drivers of the recent wave of South–South FDI in telecommunications and find how these drivers have shaped emerging companies' competitive advantages. Specifically, I address two research objectives: First, to determine what country-level factors have enabled a few domestic companies from developing countries to emerge as successful players in the international telecommunications markets. Second, to identify the role governments have played in the

rise of this type of investment. Second, considering the influence that regulatory environments have traditionally had in the telecommunications sectors, I address the role that governments have played in the rise of this type of investment.

3.2 Methodology and data

I performed an econometric estimation of the economic and policy determinants of the South-South wave of FDI in telecommunications. The estimated model regresses two dependent variables associated with the FDI flows between home and host countries on a set of variables representing such countries' economic, regulatory and geographical characteristics.

The data I used in the estimation comes from different sources. First, I collected yearly economic information about 145 developing countries during the period 1990-2007 from the Word Bank's *World Development Indicators* (WDI) dataset. General economic data include these countries' yearly GDP, GDP per capita, GDP growth, population, exports, and imports. Second, I utilized data about the countries' participation in preferential trade agreements from the World Bank's *World Trade Indicators Report* (WTR), as well as information about each country's business environment from the World Bank's *Doing Business 2009 report* (DB). Third, I gathered yearly information about developing countries' telecommunications sectors from the International Telecommunications Union's *World Telecommunications Indicators* (WTI) database. This data contains telephone services penetration, levels of competition in the markets, barriers to entry, degree of privatization of state-owned providers, and existence of separate telecommunications regulators. Fourth, I collected additional information about the characteristics[23] of the reforms in telecommunications, from the *Paul Budde Communications*' Research Reports (PBC).

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[23] Years in which reforms were implemented, whether the government granted mobile licenses to main fixed line operators, and initial mobile standards.

The information about the countries' FDI flows in telecommunications comes from the World Bank's *Private Participation in Infrastructure* Database (PPI). This database includes information[24] on 806 telecom private projects executed in 134 developing countries since 1990, which corresponds to the 85% of the total telecoms FDI amount in these countries (World Bank, 2006). From this database, I used each project's specific information on total investment and foreign contribution, including the investing companies and source countries. A limited number of projects in this database contains incomplete information on foreign sources; in these cases, I estimated the FDI component based on the existing information for the project, as well as on information about company or project available in electronic sources such as Business Monitor, ISI emerging markets, and the companies' WebPages.

It is relevant to mention that World Bank's methodology to record the PPI database includes a review mechanism by which project information is updated each year; because of this method, although the investment flows are presented on a yearly basis, the information about sources does not include previous investors who have sold their participations in the past[25]. Considering this limitation, I built my analysis on the total, instead of the yearly, FDI flows between home and host countries during the analyzed period[26]; total flows can also be interpreted as a proxy measure of the accumulated stock of capital in each project at the end of the period (2007). Considering this characteristic of the existing data, as I describe below, I used a cross-section methodology in my research.

Based on the collected information, therefore, I assembled a cross-section dataset including 402 observations where each point corresponds to a relation between a source country i (home) and a recipient country j (host). Each observation represents the total flow of telecoms FDI from i to j during the analyzed period and it is associated in the

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[24] The main variables included in this database are: Type of project, location, contract period, percentage private, government payment commitments, investment in physical assets, total investment, capacity, technology, sponsors including participation (%), and multilateral support.
[25] Accordingly, the PPI database does not include sources information regarding emerging multinationals that have retreated from developing countries.

dataset with a number of economic and regulatory variables from both countries *i* and *j* during the same period. Of the total 402 observations, 134 correspond to pairs of developing countries that had actual FDI flows during the mentioned period, according to the PPI database. The remaining 268 observations are randomly selected pairs of countries with no FDI flows during the mentioned period.

3.3 Main trends in telecommunications South-South FDI

Before presenting the econometric model, this section describes in more detail the main trends of the wave of South-South FDI in telecommunications between 1990 and 2007, estimated from the above-mentioned cross-section dataset. During the mentioned period, 25 developing countries generated FDI in this sector and 87 developing countries received investments from other developing countries. South-South investors participated in 164 telecommunications projects that correspond to 29% of the projects in developing countries (561) receiving any type of FDI during the mentioned period.

Table 1 presents the estimated distribution of the total investments in developing countries' telecommunications sectors during the period 1990-2007, discriminated by receiving region. Total investments are classified into national investments (public and private) and FDI, which in turn includes South-South FDI and North-South FDI. Receiving regions are defined according to the Word Bank's geographical classification of developing countries. This classification divides these countries in six regions: East Asia and Pacific (EAP), Europe and Central Asia (ECA), Latin America and Caribbean (LAC), Middle East and North Africa (MENA), South Asia (SA) and Sub-Saharan Africa (SSA).

As shown in Table 1, during the period 1990-2007 developing countries received $617 billion in total investment in telecommunications; of this amount, $269 billion (43%)

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[26] In this manner, in case a given project had previous investors not recorded in the database, their investments should be reflected in the purchase-value registered for current investors.

correspond to telecoms FDI, which represent 11% of the total FDI flows,[27] received by these countries in all sectors during the period. South-South FDI flows in telecommunications reached $63 billion, which represents 10% of the total investments in this sector in developing countries; this relatively low participation is consistent with the fact that South-South FDI was embryonic until the end of the 90s[28].

In terms of regions, two of them received about 70% of the overall FDI flows in telecommunications: Latin America and the Caribbean, and Europe and Central Asia. This finding is consistent with the World Bank's (2006) calculations of telecommunications FDI during the period 1990-2003. This Bank (2006) points out that some privatization transactions in Latin America included requirements of foreign participation while countries in Europe and Central Asia, when transitioning from planned economies, opened their telecommunications markets to foreign providers; on the other hand, domestic investors, including family groups, have had an important role in other regions such as South Asia, and East Asia and Pacific. Geographical differences can also be seen in terms of the participation of FDI in the total telecommunications investment in each region; whereas in Latin America and the Caribbean and in Europe and Central Asia, FDI represented 49% of total investment in telecommunications during 1990-2007, this fraction was only 20% and 26% in the cases of East Asia and Pacific and South Asia, respectively.

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[27] Developing countries received $2,540 billion of FDI during the period 1990-2007. Source: World Bank's WDI Database. Own calculations.
[28] South-South FDI represented only 8% of the investment flows in telecommunications in developing countries during the period 1990-1999. Source: Word Bank PPI Database, Author's own calculations.

Table 1: Investment flows in telecommunications in developing countries, 1990-2007

	South FDI (Mill.)	North FDI (Mill.)	National Investment (Mill.)	Total Investment (Mill.)	% Total FDI	FDI as % of total investment
East Asia & Pacific	3,824	12,254	63,713	79,792	6%	20%
Europe & Central Asia	7,108	66,252	77,268	150,628	27%	49%
Latin America & Caribbean	31,251	82,303	119,974	233,528	42%	49%
Middle East & North Africa	4,452	17,047	16,970	38,469	8%	56%
South Asia	8,062	14,999	41,870	64,930	9%	36%
Sub-Saharan Africa	7,952	13,476	28,124	49,551	8%	43%
Total	62,649	206,332	347,917	616,898	100%	43%
%	10%	33%	56%	100%		

Source: World Bank's PPI Database. Author's analysis and calculations.

As I mentioned, from the data, South-South FDI in telecommunications during the period 1990-2007 was generated by 25 developing countries located across the six world regions. Table 2 presents a regional breakdown of the total flows ($63 billion) of this wave of investment, discriminated by source and host regions. As shown, most of these investments (84%) were intraregional, which suggests that both physical and cultural distance between home and host countries may be relevant factors explaining South-South FDI.

Table 2 also shows that Latin America and the Caribbean is the region with the biggest amount of intraregional South-South FDI, $31 billion; this value represents almost half of the overall FDI flows originated in developing countries during this period and corresponds mainly to the regional expansion of the Telmex Group (Mexico) into 13 Latin American countries. Intraregional FDI in East Asia and Pacific ($3,8 billion) corresponds to the internationalization of telecommunications companies from China (including Hong Kong), Malaysia, Thailand, and Korea. Intraregional flows in Europe and Central Asia ($7 billion) represent the expansion of companies from Russian Federation, Turkey, Serbia, Hungary and Kazakhstan. In Middle East and North Africa, intraregional FDI flows are associated with companies from Egypt, whereas in South

Asia only companies from India generated FDI flows into nearby countries. In addition, intraregional FDI in Sub-Saharan Africa is mainly explained by the internationalization of companies from South Africa (e.g. MTN and Vodacom).

Table 2 shows as well that East Asia and Pacific, and Middle East and North Africa are the two regions with the highest values of outward FDI into other regions; these values are associated with the international expansion of companies from China (Hong Kong) and Malaysia into countries in South Asia and Sub-Saharan Africa, by Egyptian companies going into South Asia and by companies from Lebanon, Morocco and Tunisia expanding their operations into countries in Sub-Saharan Africa.

Table 2: Telecommunications South–South FDI by regions, 1990-2007

To \ From ($ Millions)	EAP	ECA	LAC	MENA	SA	SSA	Total
East Asia & Pacific	3,824	-	-	-	-	-	3,824
Europe & C. Asia	56	6,956	-	96.7	-	-	7,108
Latin Am. & Caribbean	-	225.9	31,025	-	-	-	31,251
M. E. & N. Africa	80	1.8	-	3,652	-	718	4,452
South Asia	4,361	33.1	-	3,476	68	125	8,062
Sub-Saharan Africa	332	-	-	484	106	7,030	7,952
Total	8,652	7,216	31,025	7,708	174	7,874	62,649

Source: World Bank's PPI Database. Author's analysis and calculations.

The wave of South-South FDI in telecommunications can be subdivided by type of project and market segment. The World Bank classifies telecommunications projects into three types (World Bank, 2006): 1) *Divestures*, which refers to privatization of state-owned telecommunications companies; 2) *Greenfield projects*, that is, operations involving new licenses and investments in new companies, and 3) *Concessions*, which involves fixed-term management and operation contracts with major capital expenditures. Figure 1 shows that most (77%) of the South-South investments between 1990 and 2007 were made in Greenfield projects. This reflects that emerging investors have mainly purchased either licenses for new operations or participations in former entrants, rather than shares in state-owned incumbents. In addition, as Figure 1 also illustrates, a large fraction of these investments (63%) are associated with exclusive operations in the

mobile market, which suggests that South-South investors have taken advantage of the momentum generated by the recent mobile growth in developing countries.
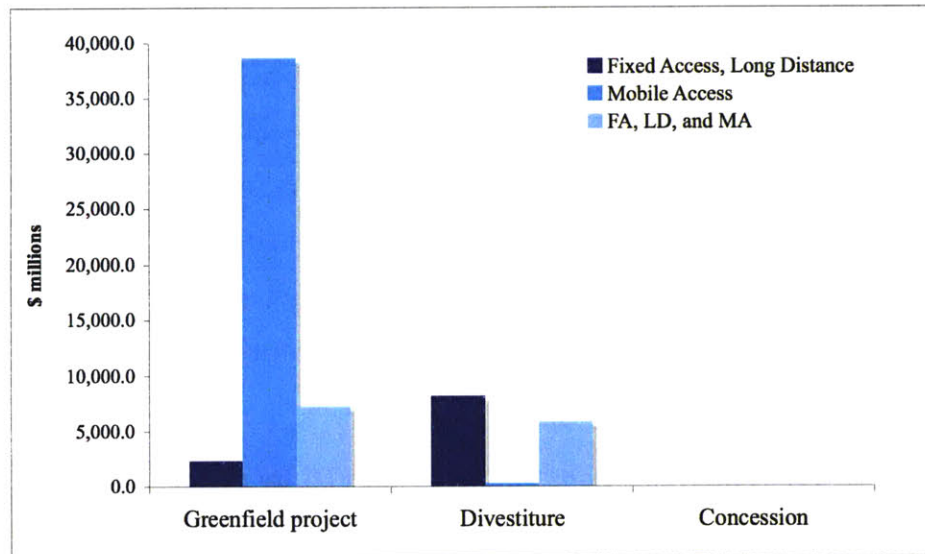
Figure 1: Telecommunications South-South FDI by type of project, 1990-2007

Source: World Bank's PPI Database. Author's analysis and calculations

South-South FDI in telecommunications can also be analyzed according to the profile of investors and their size of investments. From the dataset, I categorized the investors into three broad groups: 1) Fixed and/or mobile telecommunications companies, 2) Holding companies with branches providing telecommunications services, and 3) Financial investors such as banks and investment funds. As shown in Table 3 telecommunications and holding companies originated 99% of South-South FDI flows. These companies have usually invested in new operators or have purchased major participations in existing providers; accordingly, a large fraction (92%) of this South-South FDI wave was associated with majority participations in telecommunications providers. Conversely, although financial investors have increased their participation in telecommunications in developing countries since the late 90s, these investors have usually looked for short-term investments, preferring the role of minority shareholders in sound companies (World Bank, 2006).

Table 3 also presents the amount of FDI flows by each group of emerging investors, considering three possible sizes of investments: 1) Large investments (more than $1 billion during the period), 2) medium investments (between $100 million and $1 billion), and 3) small investments (less than $100 million). The Table shows that telecom South-South FDI between 1990 and 2007 was generated by a large group (68) of emerging investors. Among these investors, 40 telecommunications companies are responsible for 89% of the FDI flows, whereas 22 holdings and 6 financial investors originated 10% and 1%, respectively. Considering the size of investments, 10 investors (7 telecommunication companies and 3 holdings) with investments above $1 billion each, concentrated 88% of the wave of South–South FDI in this sector.

Table 3: Telecommunications South–South FDI by investor profile, 1990-2007

Investment Size ($ Millions)	Telecom Company		Holding		Financial Investors		Total	
	Inv.	# Investors	Inv.	# Investors	Inv.	# Investors	Inv.	# Investors
>=$1,000	50,053	7	4,844	3	-	-	54,897	10
>=100, <1,000	4,915	11	1,207	4	170	1	6,292	16
<100	744	22	563	15	154	5	1,461	42
Total	55,712	40	6,614	22	324	6	62,649	68

Source: World Bank's PPI Database. Author's analysis and calculations.

Table 4 summarizes the investments paths of the 10 largest investors of this wave of FDI. As shown, these companies' home countries[29] are located in different world regions and tend to be among the biggest and more developed countries in their continents. Consequently, these companies have located their foreign investments primarily within their continent, and once they have reached regional dominance, some of them have decided to expand gradually into other world regions. Examples of this trend of regional expansion are Group Telmex from Mexico that currently operates in 13 countries in Latin America; Orascom from Egypt has presence in 4 countries in the MENA region and has gradually expanded into other 4 countries in Asia; MTN Group from South Africa has

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[29] Group Telmex is headquartered in Mexico (Latin America and the Caribbean), Orascom in Egypt (Middle East and North Africa), MTN Group in South Africa (Sub Saharan Africa); Telekom Malaysia and

invested in 15 countries in Sub-Saharan Africa and 4 additional countries in the MENA region and South Asia. Also, Telekom Malaysia operates in 6 Asian countries and has expanded into 3 countries in Sub-Saharan Africa, although this company has been gradually pulling out of this region (Word Bank, 2006).

Governments are the majority shareholders of four of these 10 investors: Telekom Malaysia and the three companies from Russian Federation[30]. These companies from Russian Federation seem to have a distinctive path of investment; although almost all of their investments have been within the Europe and Central Asia region, these intraregional flows have gone only to the countries of the former Soviet Union. This path suggest that these investments may have also been affected by existing cultural and ethnic ties between Russian Federation and these host countries, as well as by other considerations such as strategic criteria defined by the government.

Table 4: Telecommunications South–South FDI 1990-2007, large investors

Home Region	Home Country	Company	Estimated Investment ($ Millions)	# Host Countries	Host Regions
LAC	Mexico	América Móvil Telmex	30,939	13	LAC
MENA	Egypt, Arab Rep.	Orascom	6,917	8	MENA, SSA, SA
SSA	South Africa	MTN Group	6,246	19	SSA, MENA, SA
EAP	Malaysia	Telekom Malaysia	3,428	9	EAP, SA, MENA, SSA
EAP	Hong Kong, China	Hut. Whampoa	1,866	5	EAP, SA, SSA
ECA	Russian Federation	AFK Sistema MTS	1,628	2	ECA
ECA	Russian Federation	Vimpelcom	1,372	6	ECA
ECA	Russian Federation	Alfa Group	1,349	4	ECA, LAC
ECA	Turkey	Turkcell	1,151	5	ECA
			54,897		

Source: World Bank's PPI Database. Author's analysis and calculations.

Hutchison Whampoa are from Malaysia, Hong Kong–China, respectively (East Asia and Pacific). The remaining four companies are from Russian Federation and Turkey (Europe and Central Asia).
[30] Sources: Paul Budde Communications Pty Ltd., "Russia – Key Statistics and Telecommunications Market", 2008. Paul Budde Communications Pty Ltd., "Malaysia – Key Statistics, Telecommunications Overview and Major Players", 2008.

In addition, as I mentioned, 58 medium and small investors from developing countries also generated FDI in telecommunications during 1990-2007. Table 5 summarizes the investment paths for these investors, which include 40 emerging telecommunications companies. As seen, these investors are headquartered in 24 countries; they tended to invest in a smaller number of countries and their investments were primarily intraregional or located in nearby regions.

Two main investment trends for these medium and small investors can also be inferred from Table 5. First, these investors when coming from large countries such as China, Malaysia, Russia and Turkey, tended to internationalize into the same regions –and in some case countries– where these countries' biggest investors were also operating. This trend supports the premise that there may be specific economic, administrative or geographical factors in home and host countries, influencing companies' foreign investment decisions. Second, in contrast to the case of major investors, a number of small investors are headquartered in countries that are neither the biggest nor the most developed in their regions. For example, various emerging companies from countries in Sub Saharan Africa and East and Central Asia expanded their operations into a few nearby countries with similar size and economic conditions. This fact suggests that these small companies may have specific internationalization strategies associated with reaching minimum scale of operations by entering nearby countries.

Table 5: Telecommunications South–South FDI 1990-2007, small investors

Home Region	Home Country	# Companies	Estimated Investment ($ Millions)	Average Investment ($ Millions)	# Host countries	Host Regions
EAP	China	10	1,409	140.9	2	EAP, SA, SSA
EAP	Malaysia	4	1,361	340.2	4	EAP, SA, SSA
EAP	Korea, Rep.	4	458	114.4	3	EAP, ECA
EAP	Thailand	3	131	43.6	3	EAP, SA
ECA	Hungary	1	641	641.3	2	ECA
ECA	Serbia	1	597	596.9	2	ECA
ECA	Russian Fed.	2	216	108.1	3	ECA
ECA	Turkey	3	163	54.3	2	ECA, MENA
ECA	Kazakhstan	2	98	48.9	2	ECA, SA
LAC	Ecuador	1	86	86.4	1	LAC
MENA	Libya	2	301	150.5	3	SSA
MENA	Egypt, A. R.	1	233	232.5	1	MENA
MENA	Lebanon	3	122	40.5	4	ECA, SSA
MENA	Morocco	1	81	81.0	2	SSA
MENA	Jordan	1	33	32.7	1	MENA
MENA	Tunisia	1	23	22.5	1	SSA
SA	India	5	174	34.7	5	SA, SSA
SSA	South Africa	6	894	149.1	9	SSA
SSA	Sudan	1	237	236.5	2	SSA
SSA	Botswana	1	202	202.3	4	SSA
SSA	Senegal	1	145	145.2	2	SSA
SSA	Nigeria	1	69	69.0	1	SSA
SSA	Côte d'Ivoire	1	44	43.8	5	SSA
SSA	Mauritius	2	37	18.4	3	SSA
		58	**7,752**			

Source: World Bank's PPI Database. Author's analysis and calculations.

3.4 Econometric model

I employed two alternative cross-section econometric models to estimate the country-level determinants of the South-South wave of FDI in telecommunications. For the analysis, I chose the 10-year period 1998-2007, when a significant portion (90%)[31] of this wave of investment took place. In the models, I suppose a causal relationship between FDI flows and a number of control variables associated with the countries' economic, institutional and geographic characteristics. I also included a number of variables reflecting the characteristics of governmental intervention in the telecommunications

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[31] Source: Word Bank PPI Database, Author's own calculations.

sectors in home and host countries. The equation's functional form follows the basic gravity framework commonly used in the FDI literature[32]. This framework assumes that the flows of commerce or investment between two countries should increase with size of the economies while decreasing with the physical distance between them.

I first tested a Logit model of the probability of existence of a positive FDI flow from home country i to host country j during the mentioned period. As presented in Table 6, in this model I used a dummy variable, which takes a value of 1 if country i generated a positive FDI flow to country j, and a value of 0 otherwise. Alternatively, I estimated a Tobit model where the dependent variable corresponds to the total amount of FDI flows between source and host countries during the mentioned period; this variable is continuous, positive, and truncated at 0 —there are no negative values for the FDI flows form i to j–.

Equation (1) represents the basic specification of the two mentioned cross-section models. fdi_{ij} represents the two alternative dependent variables (dummy and continuous) associated with the FDI flows from home countries to host countries during the period. CV_{ij} is a vector of control variables related to structural characteristics of the home and host economies. The equation also includes 8 variables associated with the regulatory environment in home and host countries. I estimated equation (1) two times, using as dependent variable each one of the two measures of FDI. Variables definition, data sources and expected signs are presented in Table 6.

$$fdi_{ij} = \alpha + \theta\,(CV_{ij}) + \beta_1\,(compdum_i) + \beta_2\,(compdum_j) + \beta_3\,(privdum_i) + \beta_4\,(privdum_j)$$
$$+ \beta_5\,(earlypriv_{ij}) + \beta_6\,(exclusiv_i) + \beta_7\,(maxforeign_i) + \beta_8\,(maxforeign_j) + \varepsilon_{ij} \quad (1)$$

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[32] Head and Ries (2008) developed a theoretical model of FDI based on the international market for corporate control (mergers and acquisitions). According to their model, FDI flows should depend on three main determinants: geographic and cultural distance between bilateral partners, origin-country (outward) effects and destination-country (inward) effects.

Table 6: Determinants of telecommunications South-South FDI

Variable	Variable Group	Justification	Description	Exp. Sign	Source
fdi_{ij}	Dependent		*Logit Model*: 1 if positive telecommunications FDI flow from source country i to host country j during period 1998-2007, 0 otherwise. *Tobit Model*: FDI value, if positive telecommunications FDI flow from country i to country j during period 1998-2007, 0 otherwise. Values listed in US million	.	PPI
pop_i *(pop$_j$)*	Control	Market size	Country i (country j) population in 1998, measured in million inhabitants	+ (+)	WDI
$gdpc_i$, *(gdpc$_j$)*	Control	Dev. stage, market size	Gross Domestic Product per capita of country i (country j) at the beginning of the 10-year period (1998). Values listed in US dollars	+ (+)	WDI
$rgdpgrow_{ij}$	Control	Relative market growth	Dummy: 1 if country i presented a larger average GDP growth rate during the period 1998-2007 than country j, 0 otherwise	+	WDI
$openness_i$ *(openness$_j$)*	Control	Economy's propensity to globalization	Average yearly exports as a percentage of GDP during 1998-2007	+	WDI
$tradedum_{ij}$	Control	Commercial affinity between home and host countries	Dummy: 1 if home and host countries had reciprocal preferential trade agreements notified to the GATT/WTO during the period, 0 otherwise.	+	WTR
$urbanpop_j$	Control	Costs structure in telecom business	Average yearly urban population as a percentage of total population. Period 1998-2007	+	WDI
$business_j$	Control	Business conditions, risk	Relative position of host country in the World Bank's Doing Business ranking during 2007. Limit values: 0 if country occupied the last position (#181), and 1 if it reached the first position.	+	DB
$rtotpen_{ij}$	Control	Relative market maturity	Dummy: 1 if country i presented a larger total (fixed and mobile) penetration of telecommunications services than country j, at the beginning of the period (1998); 0 otherwise	+	WTI

Variable	Variable Group	Justification	Description	Exp. Sign	Source
$distance_{ij}$	Control	Physical distance. Affinity	Physical distance between the capitals of countries i and j. Values in miles	-	Time and Date[33]
$compdum_i$ $(compdum_j)$	Main; telecom policy	Home (Host) Market Competition	Dummy: 1 if the home (host) government granted three or more mobile licenses during the ten-year period; 0 otherwise	+ (ND)	WTI (PBC)
$privdum_i$ $(privdum_j)$	Main; telecom policy	Privatization state-owned incumbents	Dummy: 1 if the home (host) government privatized its national incumbent before 2007; 0 otherwise	+ (+)	WTI (PBC)
$earlypriv_{ij}$	Main; telecom policy	Early privatization	Dummy: 1 if country i privatized its telecom sector before privatization in country j; 0 otherwise	+	WTI (PBC)
$exclusiv_i$	Main; telecom policy	Ent. Barriers at home country	Dummy: 1 if the home government granted a exclusivity period to the main fixed provider; 0 otherwise	+	WTI (PBC)
$maxforeign_i$	Main; telecom policy	Ent. Barriers at home country	Maximum percentage of foreign ownership allowed in home country during the period	-	WTI (PBC)
$maxforeign_j$	Main; telecom policy	Ent. Barriers at host country	Maximum percentage of foreign ownership allowed in host country during the period	+	WTI (PBC)

3.4.1 The variables

- **Control variables, markets' size and growth**

I initially included a number of control variables in the model in order to isolate the effect of countries' economic and institutional characteristics on the South-South FDI flows in telecommunications. First, following the gravity framework for international commerce, I included home and host countries' markets size, measured as countries' population (*pop*). I expect host countries' population to have a positive influence in such FDI flows for two reasons. First, big markets represent large business opportunities for investing companies. Second, scale economies enable telecommunications firms to reduce costs and to improve their bargaining positions. In this regard, Reynolds *et al* (2004) found that this variable is a significant determinant of incoming FDI in host developing countries. In the case of home countries, however, the size of the markets may have two contrasting effects: In small countries, the market size might encourage local companies to look for new

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[33] Source: www.timeanddate.com

businesses abroad while in large countries the size of the market might give local companies the economies of scale they need to be competitive in international markets. As I mention later, from the FDI statistics I found that the home countries have been, on average, larger than the host countries; given this, I expect a positive effect of home country population on FDI flows.

I also included the countries' real gross domestic product per capita (*gdpc*) as a control variable for the size of the markets. This variable is frequently used in FDI studies as a measure of income level and demand in the economy (Kirkpatrick *et al*, 2006) and it is fundamental in the IDP model which argues economic development is a positive determinant of outward and incoming FDI. This variable has been found significant for outward FDI in developing countries by Andreff (2003) and Pantelidis (2005) as well as for incoming FDI by Root and Ahmed (1979), Jun and Singh (1996), Reynolds *et al.* (2004) and Kirkpatrick *et al* (2006), among others. Considering this, I expect that both home and host countries' GDP per capita have a positive effect in FDI flows in telecommunications.

GDP growth has also been commonly used in FDI studies. Root and Ahmed (1979), Jun and Singh (1996) and Reynolds *et al.* (2004) obtained that it is a positive determinant for incoming FDI into developing countries. However, other authors –Agodo (1998) and Andreff (2003)– have not found this variable is significant in explaining FDI flows. In the case of telecommunications, the World Bank (2006) points out that increasing wealth in some emerging market economies have increased their supply of capital, enabling their companies to invest abroad. Considering this, I decided to test the effect of home country's GDP growth relative to the growth of host country, by including a dummy variable (*rgdpgrow*) that takes a value of 1 if home country grew at a higher average rate than host country during the period, and 0 otherwise. I expect faster-growing home countries to become, ceteris paribus, in source of telecommunications FDI for host countries.

• *Control variables, additional characteristics of home and host countries*

I incorporated a second group of control variables related to additional characteristics of home and host countries that may affect FDI flows between them. First, economies' openness and integration are economic variables commonly used in FDI literature. In different studies, Jun and Singh (1996), Reynolds *et al.* (2004) and Kirkpatrick *et al.* (2006) found that either exports or imports are significant determinants of FDI inflows in developing countries. Equally, Buckley *et al.* (2007) and Banga (2007) estimated that exports and imports contribute to explain outward FDI in this type of countries. In addition, Root and Ahmed (1979) and Banga (2007) found that countries' participation in trade and investment agreements is an important factor explaining FDI flows in the developing world.

I included, therefore, countries' economic openness (*openness*), measured by the average yearly exports as a percentage of GDP during the period. A country's exports intensity reflects the outward orientation of national industry, as well as the existence of exporters that may demand telecommunications services abroad. Hence I expect that home country's exports have a positive effect on FDI flows. In the case of host countries, trade openness reflects the economy's orientation to globalization although it also may suggest higher levels of competition in these countries' markets. Nevertheless, given that –as I mention below– I am also controlling the model for competition in the telecom markets, I also expect this variable to have a positive sign.

In addition, I added a dummy variable (*tradedum*) to control for the participation in common preferential trade agreements, reflecting home and host countries' economic integration. I anticipate this variable to have a positive sign in the model: Trade agreements reduce the transaction costs associated with foreign operations, creating additional competitive advantages for companies headquartered in the signing countries.

Second, host countries' level of urbanization is another variable commonly used in the FDI literature. Root and Ahmed (1979), for example, found that this variable is highly

significant in explaining FDI flows into developing countries. Thus, I incorporated in the model the host country' average level of urbanization during the period (*urbanpop*). Telecommunications companies operating in more urbanized countries may more easily reach economies of agglomeration; the level of urbanization may also indicate a country's rollout of general infrastructure (Reynolds *et al.*, 2006), which may represent lower operation costs for these companies. I therefore expect this variable to have a positive sign in the model.

Third, host countries' political and macroeconomic stability should also have a positive impact on FDI inflows into host countries, since it ameliorates the risks associated with these operations. Kirkpatrick *et al.* (2006) found that the stability in the real effective exchange rate is significant to explain the total inflows of FDI in infrastructure during the period 1990-2002. Root and Ahmed (1979) found that the number of constitutional changes is correlated with FDI inflows in developing countries. Bevan and Estrin (2000) estimated that host country risk, as measured by countries' credit ratings, has been a significant determinant of FDI inflows into Central and Eastern Europe. Also, Jun and Singh (1996) found that qualitative indexes of political risk and business conditions are significant to explain FDI inflows into developing countries during the period 1970-1993. Considering all this, I included the host countries' relative position in the World Bank's Doing Business ranking (*business*) in 2007 as a qualitative proxy for these countries' political risk and business conditions[34].

As mentioned, the literature has found that political risk has had a negative impact in the incoming FDI flows into developing countries; however, in this case, investing countries are also developing countries whose domestic telecommunications companies may have a distinct risk perception as well as mechanisms to deal with countries' risk; Buckley *et al.* (2007), for example, found international investments of Chinese companies to be associated with high levels of political risks in host countries. In any case, I assume that

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[34] The World Bank's Doing Business Index averages the countries' performance on 10 topics associated with their general business environment: Ease of doing business, starting a business, dealing with construction permits, employing workers, registering property, getting credit, protecting investors, paying taxes, trading across borders, enforcing contracts and closing a business.

acquisitions of telecommunications companies have been highly affected by investors' risk perceptions; therefore, I expect low political risk in host countries to have a positive influence in South-South FDI flows in this sector.

Fourth, maturity of telecommunications markets in home countries should also be a factor motivating companies to invest abroad, since it may indicate limited growth potential at home. The World Bank (2006) includes maturing domestic markets as one of the factors stimulating the rise of South-South FDI in telecoms. In order to control for this effect, I used the dummy variable *rtotpen,* which takes the value of 1 if the home country had a total penetration of both fixed and mobile telecom services larger than the total penetration in the host country at the beginning of the studied period (1998). I expect this variable to have a positive sign in the model.

In addition, as I mentioned, the gravity framework includes the distance between countries as explanatory factor for FDI flows. The World Bank (2006) points out that, because the cost of gathering relevant information about foreign markets may be high, emerging telecommunications companies tend to invest in neighboring countries where they have already reached familiarity due to existing links like trade or culture. In addition, companies in services sectors –such as telecommunications– often find they need proximity with their consumers as well as cultural and ethnic familiarity with them (Aykut and Goldstein, 2006). In this sense, UNDESD (1993), Bevan and Estrin (2000), Buckley *et al.* (2007) and Hattari and Rajan (2008) have estimated that either distance or cultural proximity between host and home economies are significant determinants of FDI flows in developing countries. Moreover, in the case of telecommunications, Gerpott and Jakopin (2007) found that cultural distance between home and host countries has had a negative effect on the market value change of expanding mobile network operators. Therefore, I included in the model the physical distance between home and host countries (*distance*) as a control variable indicating both physical and cultural proximity. I expect this variable to have a negative effect in FDI flows.

• *Regulatory variables*

The objective of my thesis is estimating the drivers for the recent internationalization of telecommunications companies from developing countries, with emphasis on exploring the role played by governments in such processes. As I mentioned, existing literature points out that home and host government policies have influenced developing-country companies' outward FDI decisions: A number of home country governments have encouraged internationalization through supportive regulations and incentives; also, liberalization in host countries has created numerous investment opportunities for expanding companies (UNCTAD, 2006). Regarding telecommunications, as I mentioned, Kim *et al.* (2009), Gerpott and Jakopin (2007) and Sarkar *et al.* (1999) have pointed out that regulatory environment is one of the main factors affecting companies' internationalization strategies. In this thesis, therefore, I explore to what extent the recognized governmental influence in FDI flows also applies to the telecommunications industry in developing countries.

I included six variables to capture the effects of the reforms implemented in home and host countries' telecommunications sectors and of the resulting regulatory environments. The first two variables are associated with the liberalization of telecom markets. Competition is one of the main drivers for change in these markets: Wallsten (2001) found that the introduction of competition has been associated significantly with increases in the coverage of telecom services and with decreases in prices of calls in developing countries. Similarly, the FDI literature points out that tough competition has become a push factor that, as long as it limits profit opportunities in home markets, also motivates the internationalization of local firms (Amighini *et al.*, 2009; UNCTAD, 2006; World Bank, 2006).

As proxy for competition levels in telecommunications, I included two dummy variables (*compdum*) associated with the number of mobile licenses granted in the home and host markets during the period, respectively. These variables take a value of 1 if the government granted three or more mobile licenses during the studied period, and 0

otherwise. I choose this definition because empirical studies[35] have found that mobile markets with three or more providers have presented superior levels of competition, which resulted in larger coverage, higher investment levels and efficient prices.

Based on the existing literature, I expect competition levels in home countries to have a positive effect on South-South FDI in telecommunications. Competition at home may constitute a push factor that motivates companies to internationalize as a means to expand their businesses and to improve their competitiveness. It also may motivate processes of technological accumulation in local firms, derived from their interaction with international companies (Lessard and Lucea, 2008). The expected effect of competition in host-countries is less clear: The presence of multiple telecom providers may mean more opportunities to enter such markets and it may encourage new investments because of the larger competition; also, it may mean fewer barriers to entry created by first movers (Sarkar *et al.*, 1999). Larger competition, however, may also make the purchase of existing companies less attractive for investors; in this regard, for example, Gerpott and Jakopin (2007) found that competition in host mobile markets has had a negative effect on the market value change of expanding mobile network operators. Nevertheless, new investing companies from developing countries were able to buy telecom providers at low prices as a consequence of the previous withdrawal of developed-country investors (World Bank, 2006). Considering this fact, which implies that the negative effect of competition on investments' attractiveness could have been small, I expect the effect of host countries competition levels on FDI inflows to be positive.

Another important set of reforms implemented in a number of developing countries has been the privatization of state-owned telecom providers. In home countries, privatizations may have incorporated new business practices and managerial mindsets that may have induced companies to invest abroad –in the cases in which the investors were not yet multinational companies. Also, family groups purchasing a number of companies may have helped them to overcome home countries' institutional problems. Similarly,

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[35] Minges *et al.* (2008) found that between 2001 and 2006 mobile subscriptions in Sub-Saharan countries with GDP per capita over US1.000, have increased by 3% annually with the entry of the second mobile operator and by 11% annually with the entry of the third mobile operator.

telecoms privatizations in host countries created significant investment opportunities for foreign companies, as well as new possibilities to learn about emerging markets. Hence, I included two dummy variables (*privdum*) for home and host countries that take a value of 1 if these countries privatized their telecommunications incumbents and 0 if they did not. I expect these variables to have a positive effect in the FDI flows.

The time in which these reforms have been implemented also seems to be relevant to explain South-South FDI. The World Bank (2006) points out that emerging investors in telecommunications tend to be from countries that reformed early, given that these reforms forced companies to become more efficient in advance. In this regard, domestic companies in countries that privatized early may have incorporated new entrepreneurial mindsets and efficiency at home. They may also have had a larger likelihood of future business opportunities abroad. In addition, the may have received, as incumbents, the benefits of first-mover preemption associated with the potential to influence the home-country regulatory processes (Kim *et al.*, 2008). In order to capture these effects, I defined the dummy variable *earlypriv*, which takes the value of 1 if the home country privatized its telecom sector before privatization in the host country, and of 0 otherwise. I expect this variable to have a positive effect in telecommunications South-South FDI.

In addition, the sequence in which the reforms –liberalization, privatization– were implemented in home countries may also have had a significant effect in the internationalization of local companies. In a number of countries privatization was implemented before complete liberalization as governments granted temporary monopoly rights to privatized incumbents in certain segments –fixed lines and/or long distance–. These exclusivity periods in telecommunications may have given first entrants the opportunity to create further entry barriers even after market liberalizations (Sarkar *et al.*, 1999). Therefore, I included the dummy variable *exclusiv* to explore the effect of these periods in the internationalization of domestic telecom companies. This variable takes the value of 1 if home governments granted such periods to their incumbent providers and of 0 otherwise. I anticipate this variable to have an overall positive impact: Monopoly

benefits in fixed segments may have allowed domestic incumbents to accumulate the capital required to venture to invest abroad.

Finally, FDI studies have found that impediments of inward FDI are among the important factors affecting the location of service activities and that this phenomenon is particularly true in industries politically or culturally sensitive such as telecommunications (UNDESD, 1993). Consequently, I added the two variables *maxforeign* that correspond to the home and host countries' maximum percentage of foreign ownership in telecommunication providers[36]. In home countries, such restrictions represent entry barriers for potential foreign competitors; hence this variable's effect in internationalization should be positive (negative sign). Conversely, such restrictions in host countries constitute entry barriers for foreign companies and therefore they should have a negative effect (positive sign) telecom South-South FDI.

3.4.2 Descriptive statistics

Table 7 presents a statistical description of the variables used in the model, and the table in Appendix A presents the correlation matrix for the independent variables. Table 7 includes the variables' mean values for the complete set of observations as well as for two subsets of data associated with each one of the two values of the dummy variable *fdi* (0,1). As shown, most of the average values are in line with the premises presented in the description of the model: Home countries have larger size and GDP per capita than host countries and their economies are likely to be more open; in addition, pairs of countries with FDI flows have a larger frequency of trade agreements, and they are likely to be at a closer in distance. However, some average values are different from expected: The fraction of home countries growing at a higher rate than host countries is lower for the subset of countries with FDI flows; in addition, host countries receiving FDI in telecoms have lower average levels of urbanization and worst business conditions than countries with no FDI inflows. Regarding the main (regulatory) variables, as shown in the Table, a

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[36] In the analysis I consider the existing restrictions for fixed operators because some countries (e.g. Mexico) have defined differential constrains to foreign ownership depending on the type of telecommunications providers.

larger fraction of home countries have introduced the main telecommunications reforms – privatization, competition– in comparison to host countries, although home countries also have higher average levels of restrictions to foreign ownership. In addition, countries generating FDI have higher frequencies of early privatizations and exclusivity periods than countries with no outward FDI in telecommunications.

Table 7: Descriptive Statistics

Variable	Units	Obs.	Mean	Mean by *fdi* (dummy)		Std. Dev.	Min	Max
				0	1			
Depend. variables								
fdi (dummy)	-	402	0.32	0	1	0.47	0	1
fdi (values)	$ Mill.	402	138.9	0	439.6	818.4	0	14,571.5
Control variables								
pop (home)	Mill.	399	140.1	121.1	180.8	321.2	0.08	1,241.9
pop (host)	Mill.	390	45.53	46.0	44.6	143.7	0.08	1,241.9
gdpc (home)	$	399	2,293.8	2,097.4	2,714.4	1,739.8	128.2	8,280.7
gdpc (host)	$	390	1,243.0	1,306.7	1,104.8	1,682.6	128.2	8,280.7
rgdpgrow (home)	-	402	0.72	0.77	0.61	0.45	0	1
openness (home)	%	400	37.51	37.13	38.33	24.37	8.45	116.80
openness (host)	%	396	33.69	33.90	33.25	18.15	8.45	116.80
tradedum	-	402	0.19	0.08	0.43	0.39	0	1
urbanpop (host)	%	396	44.13	44.91	42.44	20.15	8.92	91.63
business (host)	-	394	0.36	0.37	0.34	0.24	0	0.93
rtotpen (home)	-	402	0.73	0.67	0.86	0.45	0	1
distance	Miles	399	3,913.6	4,774.1	2,070.6	2,426.2	18.0	11,061.0
Main variables								
compdum (home)	-	402	0.75	0.74	0.77	0.43	0	1
compdum (host)	-	401	0.66	0.65	0.68	0.47	0	1
privdum (home)	-	401	0.42	0.39	0.46	0.49	0	1
privdum (host)	-	399	0.35	0.34	0.37	0.48	0	1
earlypriv (home)	-	398	0.54	0.50	0.61	0.50	0	1
exclusiv (home)	-	396	0.57	0.53	0.65	0.50	0	1
maxforeign (home)	-	393	0.70	0.74	0.64	0.28	0	1
maxforeign (host)	-	379	0.89	0.88	0.90	0.22	0	1

4. Results

As I mentioned, I estimated two alternative econometric models, Logit and Tobit, on the country-level determinants of the wave of South-South FDI in telecommunications. The dependent variable in the Logit model is dummy and it is associated with the existence of positive FDI flows between home and host countries during the analyzed period. The dependent variable in the Tobit model is continuous and represents the total FDI flows between countries. In this regard, the Logit Model results may be interpreted as the factors explaining the probability of entry of home-country companies into host markets whereas the Tobit model results are also associated with companies' sustainability in the host markets along the period.

Since I defined three different variables associated with privatization reforms (*privdum home, privdum host* and *earlypriv*), I combined these variables in different equations to check the results' consistency. Therefore, in each model I estimated three alternative equations: The first equation includes the two variables *privdum*, the second contains the variable *earlypriv*, and the third one includes these three variables at the same time. Tables 8 and 9 present separately the estimation results for each of the resulting six equations.

Table 8: Regression Results – Logit Model

Probability of FDI in telecommunications from home countries to host countries

	Equation 1		Equation 2		Equation 3	
Population (home)	0.0026	(3.38)***	0.0027	(3.40)***	0.0026	(3.36)***
Population (host)	0.0002	(0.18)	-0.0001	(-0.05)	0.0002	(0.21)
GDP per capita (home)	0.0002	(1.74)*	0.0003	(2.00)**	0.0002	(1.80)*
GDP per capita (host)	0.0003	(1.98)**	0.0003	(2.16)**	0.0003	(1.83)*
Rel. GDP growth (home, host)	-1.3024	(-3.07)***	-1.2303	(-2.97)***	-1.2803	(-3.01)***
Openess (home)	0.0003	(0.03)	0.0013	(0.14)	0.0009	(0.09)
Openess (host)	-0.0183	(-1.92)*	-0.0202	(-2.08)**	-0.0189	(-1.95)*
Trade agreement (home, host)	0.9606	(2.14)**	0.8684	(1.94)*	0.9553	(2.12)**
Urban population (host)	-0.0032	(-0.27)	-0.0026	(-0.22)	-0.0019	(-0.16)
Business conditions (host)	-1.6746	(-1.75)*	-1.5218	(-1.65)*	-1.6667	(-1.75)*
Telecom penet. (home)	1.1634	(2.00)**	1.1548	(2.03)**	1.1503	(1.99)**
Distance (home, host)	-0.0009	(-6.95)***	-0.0009	(-6.77)***	-0.0009	(-6.86)***
Competition (home)	0.9810	(2.00)**	1.0144	(2.16)**	1.0764	(2.15)**
Competition (host)	0.5451	(1.38)	0.5023	(1.31)	0.5267	(1.33)
Privatization (home)	-0.0839	(-0.19)			-0.0604	(-0.13)
Privatization (host)	0.5250	(1.24)			0.4739	(1.09)
Early privatization (home, host)			-0.4055	(-0.90)	-0.2976	(-0.64)
Exclusivity period (home)	0.6912	(1.63)*	0.9168	(1.95)*	0.8286	(1.68)*
Max. foreign ownership (home)	-1.9436	(-2.32)**	-1.8112	(-2.28)**	-1.8674	(-2.20)**
Max. foreign ownership (host)	0.2456	(0.25)	0.5375	(0.56)	0.2830	(0.28)
Constant	1.5318	(0.98)	1.3281	(0.84)	1.4302	(0.90)
# Observations	345		345		345	
Wald Chi2	95.16		87.28		95.59	
Pseudo R2	0.4783		0.4761		0.4792	

Notes: z-statistics associated with robust standard errors, are presented in parentheses.
*,**,*** indicate significance at 10%, 5% and 1%, respectively.

Table 9: Regression Results – Tobit Model
FDI flows in telecommunications from home countries to host countries

	Equation 1		Equation 2		Equation 3	
Population (home)	1.42	(0.628)**	1.38	(0.627)**	1.42	(0.621)**
Population (host)	1.17	(0.719)*	1.01	(0.650)	1.16	(0.706)*
GDP per capita (home)	0.25	(0.139)*	0.22	(0.133)*	0.25	(0.136)*
GDP per capita (host)	0.21	(0.108)**	0.23	(0.124)*	0.22	(0.114)*
Rel. GDP growth (home, host)	-569.76	(273.81)**	-538.10	(257.78)**	-571.99	(275.95)**
Openness (home)	-2.28	(4.485)	-0.28	(4.013)	-2.42	(4.567)
Openness (host)	-24.24	(11.975)**	-24.89	(12.322)**	-24.13	(11.814)**
Trade agreement (home, host)	590.28	(375.43)	557.29	(357.42)	589.40	(373.65)
Urban population (host)	12.33	(8.238)	12.16	(7.888)	12.11	(7.918)
Business conditions (host)	-1251.18	(938.29)	-1135.51	(886.25)	-1248.98	(933.72)
Telecom penet. (home)	283.19	(314.25)	254.00	(319.03)	286.71	(311.03)
Distance (home, host)	-0.47	(0.153)***	-0.47	(0.152)***	-0.47	(0.150)***
Competition (home)	761.63	(366.03)**	605.89	(292.84)**	738.53	(339.09)**
Competition (host)	316.80	(195.21)*	319.43	(193.79)*	318.21	(196.24)*
Privatization (home)	-276.86	(231.73)			-281.92	(237.47)
Privatization (host)	302.75	(255.83)			311.26	(270.38)
Early privatization (home, host)			-19.39	(249.53)	63.26	(272.09)
Exclusivity period (home)	342.31	(204.12)*	287.13	(241.03)	315.24	(227.0)
Max. foreign ownership (home)	-950.28	(519.30)*	-1029.94	(516.34)**	-964.69	(538.43)*
Max. foreign ownership (host)	537.77	(529.33)	655.01	(571.21)	524.80	(531.57)
Constant	-670.66	(773.63)	-567.05	(793.27)	-646.16	(781.18)
# Observations	345		345		345	
Wald Chi2	29.02		27.18		29.73	
Pseudo R2	0.0632		0.0623		0.0632	

Notes: Robust standard errors are presented in parentheses.
*,**,*** indicate significance at 10%, 5% and 1%, respectively.

As shown in Tables 8 and 9, the results for the six equations are consistent among them and most of the variables display the expected sign. All the estimations fulfill standard tests of non-existence of specification error[37] and multicollinearity[38]; in addition, standard errors are corrected for heteroskedasticity.

Starting by the control variables, in each of the six equations home country population is positively correlated with FDI flows in telecommunications. This result indicates that the size of home markets is a predictor of outward FDI in this sector, supporting the premise that economies of scale facilitate the international expansion of domestic companies. Likewise, the GDP per capita in the home country also appears as a positive determinant in the six equations. This result, which is consistent with the IDP model, implies that economic development is a positive determinant of this type of FDI. Regarding the size of host markets, GDP per capita is statistically significant in the six equations whereas country population is significant in two Tobit equations. This indicates that host markets' economic potential, as given by both the population's purchase power and economy size, is a major driver of South-South FDI.

In addition, relative GDP growth in home countries is significant in the six equations, although its sign is negative; that is, home developing countries tend to invest in telecommunications in faster-growing countries. This result is consistent with Root and Ahmed (1979), Jun and Singh (1996) and Reynolds et al. (2004); it suggest that host market potential –as inferred by country's growth rate–, is a significant factor explaining South-South FDI in this sector.

I also found that the openness of the economies, as given by their levels of exports, is a significant factor explaining FDI, although only in the case of host countries. For home

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[37] I utilized the STATA command *linktest* to detect specification error in the six equations presented in Tables 8 and 9. This test uses both the regression linear-predicted value and the linear-predicted value squared as predictors in a new regression model (Source: UCLA, Academic Technology Services, web site: http://www.ats.ucla.edu/stat/stata). In the six estimations, the linear-predicted value is significant whereas the linear predicted value squared is insignificant. Therefore, this test did not detect a specification error in the equations.

countries, this result means that telecommunication industries' investments abroad are not aligned with the countries' general outward orientations. In the case of host countries, the exports variable is significant the six equations and, contrary to what I expected, it is negatively signed[39]. My interpretation is that emerging telecommunications companies tend to invest in relatively closed economies, where they may expect lower levels of foreign competition. I also found in the three Logit equations that the preferential agreements variable is significant and positive. This suggests that, regardless of the limited openness of the host economies, home and host countries reducing mutually their entry barriers through such agreements create favorable conditions for the entry of home-country telecommunications companies.

The control variable indicating urban population in host countries is insignificant in the six equations; therefore, there is no evidence to argue that emerging investors in telecommunications prefer to invest in urbanized countries. This suggests that emerging telecom companies may have mechanisms to deal with host countries' dispersion of population and with the commonly associated deficits of basic infrastructure. Additionally, I obtained that political risk and business conditions in host countries are negatively correlated with FDI in the three Logit equations. This result, consistent with Buckley *et al.* (2007), is contrary to what I expected; it indicates that emerging investors in telecommunications may have developed certain level of risk propensity as a result of their greater familiarity with emerging market conditions.

I also found in the Logit model's three equations that the variable associated with the relative telecommunications penetration in home countries is significant and positively related to FDI flows. This result supports the premise that telecom companies operating in mature markets tend to look for business opportunities abroad; this finding is consistent as well with the above-discussed result that these investors look abroad for markets with high growth potential.

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[38] To test multicollinearity in the model, first I calculated the correlation matrix presented in the Appendix A; as shown, none of the sets of variables present high levels of collinearity. In addition, I utilized the STATA command *collin* to detect multicollinearity and the results were negative.

In addition, the distance variable resulted highly significant and negative signed in the six equations, confirming that the intensity of South-South investments in this sector tends to decrease with the distance between home and host countries. This finding is coherent with the FDI literature and with the above-described regional nature of this type of investment; it also indicates that transaction costs and cultural proximity to customers continue to be relevant factors for telecommunications providers in developing countries.

Regarding the results for the regulatory variables, as I expected, the levels of competition in home markets are a significant factor motivating South-South FDI. As I argue below, this result indicates that competition is a push factor encouraging the internationalization of emerging telecommunications companies. I also found that competition level in host countries is relevant to explain this type of FDI, although only in the Tobit equations. As I mentioned, host competition may have two contrary effects on FDI in telecommunications –the more competition, the more businesses opportunities and the more incentives to invest in order to gain market share, but the less expected return from investments–; the positive sign of this variable as well as the fact that it is significant only in the Tobit equations, may imply that host competition creates strong incentives to invest once the companies are operating in the host countries.

I also obtained that none of the alternative privatization variables is a significant determinant of South-South FDI. This outcome may be explained by the fact that both public and private telecommunications companies from home countries have become multinationals. In the case of host countries, this result may also reflect the fact that privatization of national incumbents has been only one of the multiple investment opportunities that have existed in these markets, which have also included the possibility of purchasing fixed or mobile telecommunications licenses. Likewise, I found that early privatization in the home countries does not have a significant effect on South-South FDI either; in this sense, rather than early reforms, probably the main factor encouraging

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[39] This result is consistent with Ghura and Goodwin (2000) and Kirkpatrick *et al.* (2006) who also found a negative relationship between openness and incoming FDI in developing countries.

efficiency in domestic companies has been the intensity of competition. In the same regard, the effect of first mover-preemption at home for certain domestic companies is probably captured in the model by the variable associated with exclusivity periods in fixed segments.

The exclusivity-periods variable resulted statically significant and positively signed in the three Logit equations and in one Tobit equation. As I explain below, this result may indicate that, although competition from mobile providers has been the main driver for internationalization, a number of privatized incumbents with such exclusivities developed certain advantages from their protected segments, which they then utilized to compete in foreign markets.

Finally, I found in the six equations that foreign ownership regulation in the home countries is a significant determinant of South-South FDI flows. The negative sign of this variable indicates that home countries defining restrictions on foreign ownership in telecommunications companies have been more prone to generate outward FDI into other developing countries. I also found that restrictions on foreign ownership in host countries are not significant to explain South-South FDI flows; that is, developing country multinationals tend to invest in host markets regardless of the control they may have in the acquired companies; this suggests that controlling foreign operations may be not as important for these companies as generating profits while accumulating scale and international presence[40], and getting opportunities to learn about foreign markets. This result also suggests that foreign ownership restrictions have been effective mainly in protecting local telecommunications companies from the competition of developed-country multinationals.

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[40] Kim *et al.* (2008), for example, describe the experience of Hutchison Whampoa from Hong Kong (China) entering the Vietnamese market. Given the strict regulations on foreign investments in Vietnam, this company had to sign a bilateral contract with a local partner, in which Hutchison Whampoa receives no equity participation for its investments, but a share of the operating profits. The authors argue that the company's ultimate goal is to establish an international presence and to create business synergies in the East-Asian market.

5. Analysis

In this chapter I analyze the econometric results in the context of the research objectives I stated in Chapter 3. Also, I complement the analysis by mentioning specific internationalization experiences of companies from developing countries. My analysis is based on the recent theoretical developments in the internationalization of companies from developing countries. Especially, I consider the framework proposed by Lessard and Lucea (2008), which I described in Chapter 2. This model argues that emerging multinational companies achieve sustained success through the development of capacity platforms resulting from the interaction between home country and firm specific advantages. These companies also need to adapt and renew their capability platforms through the exploitation of the resources and knowledge accumulated from foreign operations.

Nevertheless, it is relevant to mention that in line with the scope of this thesis, my analysis is limited to those FDI drivers that can be estimated at the country level. As I mentioned, the literature has found that emerging companies are likely to rely on home country-specific advantages in their early stages of internationalization. Nevertheless, besides country-level drivers, other factors at either the industry or the firm level may also affect emerging companies' internationalization decisions. For example, as I mentioned in Chapter 2, Sarkar *et al.* (1999) state a number of strategic considerations at industry level that motivate telecommunications companies to look for new markets abroad. These considerations include: 1) The strategic interdependence of global telecommunications markets, which implies that companies' competitive position in one market may be affected by their position in other national markets; 2) internationalization pressures from major customers, which encourages cross-national linkages and presence; and 3) systemic ownership advantages developed through international presence, such as access to international financial markets as well as the ability to influence standard-setting institutions. Also, from the Latin American experience, Mariscal and Rivera (2005) point out that those companies that competed in the fixed telephone segment were able to consolidate strong competitive positions in home countries. Similarly, factors at

the firm level like corporate governance or strong leadership may have played important additional roles in the internationalization of domestic telecommunications companies.

Table 10 summarizes the analysis I present in this chapter; it shows the proposed categorization of the country-level drivers of international expansion of emerging telecommunications companies. As shown, I classify these drivers into country-level firms' sources of competitive advantage and countries' factors of internationalization.

Table 10: Drivers of telecommunications South-South FDI at country level

	Home Countries	Host Countries
Sources of Advantage	Scale of operations Knowledge of emerging markets Limited exposure to full liberalization	Proximity Political risk/business conditions Favored market access
Push/Pull factors	Market maturity Increasing competitive pressures	Growth potential

5.1 Initial advantages and push factors in the home countries

Regarding the first research question of my thesis, a number of factors in the home countries are the primary explanation for the emergence of multinational telecommunications companies in developing economies. The first factor (source of advantage) for a number of firms is their *scale of operations*; I infer the relevance of this factor from the significance in the model of both the size of the home economy and the home market's relative penetration of telecommunications services. Large telecommunications companies in developing countries, therefore, may develop competitive advantages –associated with their lower average expenditures– that can be

leveraged in the foreign markets. These companies' cost advantages may arise from their lower average expenses of building networks and managing traffic (Kim *et al.*, 2008). They are also related to the economies derived from marketing activities and financial expenditures. An example is the case of Orascom from Egypt, which has been able to leverage brand name recognition, technologies and financial resources to operate in developing-country markets where local players are often weak competitors (Goldstein, 2007).

However, smaller companies also seem to have reasons to pursue foreign operations, as a means to achieve size; as I mentioned, a number of small and medium sized companies have expanded into nearby countries, with the probable objective of reaching a minimum scale of operations. For example, in 2007 Globalcom from Nigeria won a mobile license in neighboring Benin and in the same year the company had further expansion plans into Morocco, The Ivory Coast, Cameroon and Ghana[41]. Similarly, by 2007 Sonatel from Senegal operated in three nearby countries: Mali, Guinea and Guinea-Bissau[42]. Other examples of a small companies becoming multinationals are MT from Morocco that expanded into Mauritania, Burkina Faso and Gabon, and Sudatel from Sudan, which has operations in Mauritania, Senegal and Nigeria[43].

A second source of competitive advantage for emerging telecommunications companies is their superior *knowledge of emerging market conditions*. As I explain below, I infer this driver from the significance in the model of both the distance between home and host countries, and of the host countries' market conditions. This advantage is developed at home and then it is exploited and enhanced through the companies' foreign operations in other developing countries.

A third source of competitive advantage for a number of domestic telecommunications companies seem to be their *limited exposure to full market liberalization*. As I mentioned,

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[41] Source: Paul Budde Communications Pty Ltd., "Telecoms, Mobile and Broadband in Africa", 2008.

[42] Sonatel is 57% owned by the government and private domestic investors, and 43% by France Telecom. Source: Paul Budde Communications Pty Ltd., "Telecoms, Mobile and Broadband in Africa", 2008.

[43] Source: Paul Budde Communications Pty Ltd., "Telecoms, Mobile and Broadband in Africa", 2008.

the two variables associated with these limitations –restrictions on foreign ownership and exclusivity periods in fixed segments– turned out to be significant predictors of telecommunications South-South FDI.

Limitations on foreign ownership may have created advantages for domestic providers since, as a result of these restrictions, potential foreign competitors have either abstained from entering these markets, or needed to operate, under a minority-stake condition, in conjunction with a local partner. Also, domestic investors in countries with these constrains surely had better chances to purchase privatized state-owned companies. Similarly, exclusivity periods in countries with foreign ownership restrictions may have created advantages for incumbents –probably controlled by domestic investors–, since these periods enabled them to accumulate profits that then they have used to invest abroad. The fact of being the first private movers in certain segments at home may have also allowed a number of domestic incumbents to preempt their home markets by creating additional entry barriers to competitors; these additional barriers may have included delays in new licenses' processes, impediments to interconnection, key customers lock-in and cross-subsidies among different services (Ramamurti, 2000).

Examples of domestic incumbents protected from full liberalization are Telmex from Mexico and Telekom Malaysia. Mexico has kept a foreign ownership restriction of 49% for fixed-line operators. Accordingly, Telmex was purchased in 1990 by an international consortium led by the Mexican financial conglomerate *Grupo Carso*. This company received monopoly rights in the long-distance sector until 1997, when this market was opened to competition; in addition, when the cellular market was initiated in 1987, this company was granted the only nation-wide mobile license (Mariscal and Rivera, 2005). Likewise, Telekom Malaysia, the major player in the Malaysian telecommunications market, was partly privatized in 1990, with the government retaining 77% of the stakes – the foreign ownership restriction[44] in Malaysia is 30%–; this company has been partially

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[44] Source: World Bank (2006).

protected since the government has allowed competition in all the telecom markets, except in basic services[45].

Additionally, besides the sources of advantage in home markets, two "push-factors" in home countries seem to have a special role in motivating a number of companies to exploit their existing advantages abroad. The first factor is the *increasing competitive pressures* at home —as measured by the level of competition in mobile markets–; that is, the threat of losing market participation at home seems to be a primary factor that motivates these companies to look for foreign markets. In South Africa, for example, telecoms markets have been characterized by tough competition among a few large firms that became dominant under apartheid. In this context, Vodacom initially dominated MTN in the home market, which encouraged MTN to invest aggressively in regional expansion (Goldstein and Prichard, 2009).

The second factor is the relative *maturity* of the telecommunications markets in the home countries. In an international-oriented industry such as telecommunications, companies operating in mature markets tend to look for business opportunities abroad. In addition, these companies tend to look for emerging markets with high growth potential. An example of market maturity's relevance is the case of South Africa whose telecommunications markets are relatively mature; consequently, South African companies have expanded into countries with higher growth potential, some of them located in Sub-Saharan Africa[46]. Similarly, facing the maturity of Turkey's mobile market[47], Turkcell has expanded internationally into various former-soviet-union countries[48].

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[45] Source: Paul Budde Communications Pty Ltd., "Malaysia – Key Statistics, Telecommunications Overview and Major Players", 2008.
[46] In 2007 the mobile penetration in South Africa was 89% whereas the average penetration in host countries in SSA was 23%. Source: World Bank, World Development Indicators.
[47] In 2007, Turkey had 83.9 mobile subscribers per 100 inhabitants. Source: World Bank, World Development Indicators.
[48] Source: Paul Budde Communications Pty Ltd., "Turkey – Mobile Market – Overview & Statistics", 2008.

5.2 Transferability of advantages and pull factors in the host countries

Emerging companies' internationalization also depend on the business opportunities generated by the potential-host countries, as well as on particular conditions in these countries that allow companies to exploit, in a sustainable fashion, their competitive advantages. Therefore, emerging companies need to locate their foreign operations in host countries in which they are able to transfer their advantages and appropriate the benefits from their exploitation.

The estimation results suggest that four drivers associated with the host markets are especially relevant. The first driver is the host country's *proximity* from home, which may represent a source of advantage in relation to other international competitors. A short physical, cultural or administrative distance between home and host countries indicates lower transaction costs[49] from foreign operations; it is also associated with a greater similarity between domestic and foreign markets. In this regard, telecommunications markets located in closer countries allow emerging companies to transfer and exploit their understanding of emerging market conditions, including distinctive institutions and customer profiles. Operations in nearby countries also enable telecommunications companies to benefit from scale economies and from the synergies associated with joint network operations[50]. There are a variety of examples of companies that have developed advantages by locating their foreign operations in neighboring countries. Russian firms like MTS and VimpelCom have expanded into former-soviet countries, by buying out local operators and consolidating the domestic industry (MacCarthy *et al.*, 2009). MTN from South Africa began investing in African markets before exploring other regions like the Middle East (Ramamurti, 2008). Group Telmex first acquired privatized fixed companies in Central America and then expanded its mobile operation into various countries in South America[51]. Likewise, Orascom and Turkcell have invested primarily

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[49] For example, travel time, travel frequency and communications difficulties due to time shifts between working hours (Gerpott and Jakopin, 2007).
[50] For example, the number of communications between subscribes in neighboring countries may be larger than between distant countries; this proximity allows companies to attract customers with special "on-net" tariffs and to generate additional revenues (Gerpott and Jakopin, 2007).
[51] Source: Mariscal and Rivera (2005).

within their own regions and Telekom Malaysia, after expanding to Sub-Saharan Africa, has decided to keep only its investments in countries close to Malaysia[52].

The second source of advantage is the host country's *political risk and business conditions*. The results suggest that emerging companies tend to enter developing countries with less developed institutions, reflecting certain level of risk propensity. Therefore, countries with deficient business conditions also represent an opportunity for these companies to exploit their superior knowledge of developing-market conditions, such as customers' profiles and regulatory systems. Egypt's Orascom, for example, by 2006 was the only foreign telecommunications company operating in Iraq (Aykut and Goldstein, 2006)[53]. Likewise, UNCTAD (2004) points out that some of Africa's smaller and riskier markets have attracted emerging multinational companies; it mentions the examples of the Lebanese Investcom operating in Burundi, Congo, Ghana, Guinea and Liberia, and Telkom Malaysia providing mobile services in Guinea.

The relevance of the institutional factor in host countries may also reflect that, as latecomers in these countries, emerging companies' main business opportunities abroad have been the purchase of operations in markets where other companies –probably from developed countries have failed. From this interpretation, I infer what can be a relevant difference between the sources of advantage of developed and developing-country multinationals in telecommunications: Whereas various developed-country companies gained early-mover advantages from host markets' preemption (Sarkar *et al.*, 1999; Ramamurti, 2000), emerging multinationals probably developed latecomer advantages in host markets from the lower price of assets as well as from the accumulated knowledge of other companies' previous operations.

The combination of distance and institutions as significant drivers of South-South FDI also indicates the importance for emerging companies of the transferability of the

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[52] Source: Word Bank (2006).
[53] Nevertheless, emerging companies' expansions into developing countries with deficient business conditions has not been without difficulties; Goldstein (2007) mentions certain problems that Orascom had with its local partner in Syria, which apparently had close connections with this country's regime.

knowledge accumulated in foreign operations. In this regard, in line with Lessard and Lucea's model (2008), host countries may represent not only an opportunity to exploit these companies' understanding of emerging markets but also a chance to enhance their capabilities. Especially, by operating in foreign developing-country markets, emerging companies gain a better understanding of customer profiles and of regulatory processes. This improved knowledge enables them to design better marketing strategies; it also allows them to have a larger influence on governments' decisions, in order to obtain additional privileges or licenses for new services.

The experience of MTN from South Africa is an illustrative example of an emerging company that augmented its capabilities platform by operating in foreign developing countries. This company started investing in nearby Sub-Saharan countries like Uganda, Rwanda, Swaziland and Nigeria. In these countries, the company developed innovative approaches to overcome the institutional deficiencies; for example, it introduced pre-paid cards to undermine credit risk, plan structures better adapted to local customers and mobile infrastructure where no previous fixed networks existed. Based on its success in these countries, MTN then expanded into Middle Eastern markets. (Goldstein and Prichard, 2009). Similarly, Mexico's América Móvil (Telmex Group) has been successful in adapting its marketing strategy across Latin America and gaining dominance in these markets over competitors from the United States and Europe (Aykut and Goldstein, 2006).

A third source of advantage in host countries is the *favored market access* in the host countries, in relation to their potential competitors. I infer the relevance of this factor from the significance in the model of the variables indicating preferential trade agreements and host countries' economic openness. Trade agreements may reduce existing entry barriers in host countries while enabling incoming companies to decrease the transaction costs from their operations; preferential agreements may also allow these companies to find local partners in an easier manner. I also found that emerging companies tend to invest in relatively closed economies, where potential foreign

competitors may find additional barriers to entry. Therefore, I infer that emerging telecom companies look for host countries where they may find favorable policies that create additional advantages in relation to other international competitors.

In addition, the econometric results indicate that host markets' *growth potential* is a "pull factor" for emerging multinational telecommunications companies. I deduce this factor's relevance from the significance in the model of four variables associated with host countries: telecommunications penetration, population, income per capita and the host economy's GDP growth. This factor reflects the market-seeking behavior of emerging companies, as well as their likely long-term commitment to their foreign operations. Kim *et al.* (2008), for example, point out that Hutchison Whampoa from Hong Kong, China, entered emerging markets[54] in developing countries that have high growth potential given their low penetration rates; this company's strategy has been to generate revenues through mobile operations and to earn capital gains by rising market values or through Initial Public Offerings (IPO) of the companies owned in these markets. Likewise, Curwen and Whalley (2008) argue that African markets have been attractive for Middle Eastern investors because these markets have been growing faster than those in the Middle East.

5.3 The effects of government intervention

I now consider only the factors associated with government intervention. As Chapter 2 mentions, telecommunications reforms in developing countries have been complex processes in which governments have usually been subject to conflicting policy objectives as a result, in many cases, of the participation of strong groups of interest. In this context, governments have usually tried to minimize political frictions in order to make the reforms viable.

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[54] In 2008, Hutchison Whampoa had operations in the European market, as well as in Israel, Indonesia, Thailand, Sri Lanka, and Ghana.

The main policy conflict faced by a number of governments has been the apparent contradiction between, on one hand, incorporating both competition and private capital in the telecommunications markets and, on the other, promoting the competitiveness of the national industry, keeping state control over the provision of basic services or obtaining additional revenues. Most of the countries opted for a model of privatization, tough competition and minimum government intervention. Other countries, however, took certain distance from this model; some of them, preserved government participation in the national companies' ownership while others kept restrictions to foreign ownership in these companies; some countries also preserved a vertically integrated incumbent. In addition, aiming to make state-owned companies attractive for private capital, some countries granted temporary monopoly rights to the privatized incumbents in certain market segments.

Amid this variety of regulations and reforms, a number of companies developed distinctive competitive advantages both at home and in the international markets. According to the econometric results, these government-created sources of advantage were their limited exposure to full liberalization, in terms of foreign ownership restrictions or exclusivity periods, as well as the signature of trade agreements with certain countries. However, the results indicate that another variable controlled by the government –the levels of competition in the market, has also been a relevant push-factor of these firms' internationalization.

I deduce, therefore, that governments in developing countries have had an active role in the internationalization of domestic telecommunications companies in two seemly contradictory ways: On the one hand, they have created additional sources of advantage for these firms in both home and international markers; on the other, they have incorporated levels of competition that have created pressures for these companies' efficiency and internationalization. As a result, emerging companies facing certain levels of competition –small enough to keep their operations at home but large enough to be encouraged to gain efficiency and competitiveness in the international markets– were more likely to become multinationals. An example is the case of South African

companies that have traditionally faced high levels of competition in the domestic markets but, at the same time, have been protected from full liberalization since the government has kept a limit –between 30% and 49%– to foreign ownership in telecom providers. The coexistence of these two contrasting roles of government, therefore, seems to be one of the main determinants of the emergence of multinational telecommunications companies in these countries.

In addition, host governments have also had a role in companies' internationalization. Not only emerging companies have found attractive business opportunities in host countries, such as low-priced assets, but also they have probably found special conditions in terms of lower barriers to entry or lesser administrative costs. Therefore, emerging multinationals have also benefited from regulatory arbitrage among their home and host countries; that is, the coincidence of both stringent and favorable regimes of foreign participation in telecommunications in different countries, seem to have also motivated the emergence of multinational companies in the countries with the more stringent regimes.

6. Summary and Conclusions

Since the late 1990s, South-South investment has increased substantially its participation in the total telecommunications FDI in developing countries. The rise of this type of investment reflects not only changes in the countries' economic conditions but also the emergence of a number of domestic telecommunications companies from these countries that are becoming multinationals and gradually increasing the magnitude of their foreign operations.

This thesis has explored the country-level drivers of the wave of South-South FDI in telecommunications and how these drivers have shaped companies' competitive advantages. Using economic and regulatory information from 145 developing countries, collected from different sources such as the World Bank's PPI and WDI datasets, I built a cross-section econometric model to estimate the determinants of this wave of FDI during

the period 1998-2007. I divided these determinants into control variables and regulatory variables. By including control variables, I attempted to isolate the effect of countries' economic and other structural variables in FDI flows; I included the regulatory variables to identify the role that government intervention has played in the rise of this type of investment.

The results indicate that the emergence and sustainability of multinational telecommunications companies from developing countries are explained, at the country level, by distinctive economic and structural characteristics of the home and host countries that have shaped these companies' special advantages and investment paths in the international markets. In this context, government intervention in home and host countries has created particular sources of advantage and business opportunities that have resulted in additional incentives for these companies' internationalization.

According to the results, emerging multinational companies in this sector tend to originate in relatively large countries with maturing telecommunications markets. Also, these companies are more likely to emerge in countries that have incorporated both competitive forces and certain protection for them from full liberalization. These companies' operations tend to be located in nearby countries, whose telecommunications markets exhibit large potential, where barriers to entry are lower in relation to other foreign competitors, and where they are able to exploit their superior knowledge of emerging market conditions.

From this picture I infer three main conclusions. First, the relative rarity of the coexistence of special economic and regulatory conditions in both home and host countries explains why multinational companies have emerged in only a relatively small number of developing countries. In order to be competitive abroad, domestic companies need to reach a certain scale, to face certain sources of pressure such as competition and market maturity, and, in some cases, to operate under favorable governmental regulations. They also need to find attractive business opportunities in host markets as well as special conditions such as proximity, similarity, and low barriers to entry. These

companies, therefore, operate in an industry in which economies of scale, proximity, and governmental regulation are still fundamental.

My second conclusion is that these companies exhibit distinctive internationalization drivers in relation to their developed-country competitors. Mainly, they tend to enter countries that have less favorable business environments. This tendency may be explained by the fact that a number of emerging companies are latecomers that have purchased low-priced assets in host markets from which other companies have exited. A complementary explanation is that these firms look for markets where they can exploit their superior knowledge of emerging market conditions. Therefore, from their initial operations in their domestic markets, which include dealing with local governments and customers and particular infrastructure conditions, these companies gather relevant knowledge that enables them to adapt better to similar circumstances in host markets. In addition, these companies also take advantage of their operations in foreign emerging markets to improve their adaptability to this type of markets. In this regard, for emerging telecommunications multinationals, foreign operations are also an opportunity to enhance one of their main global competitive advantages: their adaptability to the special conditions of developing-country markets.

My third conclusion concerns the role of governments in these companies' internationalization. Governments in home countries have incorporated signs of efficiency and an international perspective in their domestic markets by opening them to foreign competition. In addition, a number of governments have attempted to level the playing field for their domestic companies vis-à-vis the foreign competitors, while others aiming to improve the attractiveness of their state-owned incumbents have defined monopoly conditions in certain market segments for the privatized companies. As a result, domestic companies' operation in a general competitive environment while having certain protection either in specific segments or from foreign competitors, along with other factors, has resulted in these companies' internationalization.

In addition, governments in host countries have played a role in the rise of this wave of FDI. They have created new business opportunities in their markets and they have generated favorable conditions, in terms of commercial preferences, for certain emerging companies in relation to other foreign competitors. These favorable conditions probably have resulted from the administrative, cultural and political proximity between home and host countries, and surely some home countries have played a role in negotiating privileges for their companies abroad. In addition, through their interaction with host-country governments, some incoming companies may have influenced the policy processes in order to obtain access to markets or favorable conditions for their operations.

Emerging telecommunications multinationals, therefore, seem to have taken advantage of favorable regulatory conditions in both home and host markets. In this regard, the dissimilar levels of liberalization implemented by developing countries in their telecommunications sectors, specially the coexistence of rigid FDI regimes in home countries and favorable access conditions in host countries, have created regulatory-arbitrage opportunities that have facilitated the internationalization of a number of national telecommunications companies.

From this thesis I derive two policy implications. First, in line with the existing literature, emerging telecommunications multinationals may be key players in the performance of this sector in developing countries. Their distinctive profiles in terms of experience, capabilities, and strategies (including their knowledge acquisition and risk management practices), may make them important actors for telecommunications growth in less-developed markets. Accordingly, governments' development strategies in these sectors should consider the potential role that these companies may play. In addition, these companies' operation in nearby countries may bring additional benefits for home and host countries in terms of economies of scale from joint network operations as well as regional integration. For this reason, developing-country governments should continue promoting preferential agreements that encourage South-South investments in this sector.

Second, the fact that domestic telecommunications companies in developing countries exhibit market-seeking behavior, scale concerns and improve their capability platform by operating abroad could be an argument in favor of policies promoting their competitiveness and internationalization. However, my intention is not to make a case for protectionism in the telecommunications sectors since, as I mentioned, the literature has also found that anti-competitive policies may generate negative effects in terms of efficiency as well as in the availability and affordability of services. The policy implication that I derive, therefore, is that developing-country governments need to design informed reforms and regulations in this sector, taking into consideration all the possible trade-offs involved in their decisions. An important trade-off involving competition policies in telecommunications is the one between liberalization of markets and domestic industry's competitiveness; when designing these policies, therefore, governments need to be aware that they may generate an outcome that will probably lie between maximum welfare gains in terms of penetration and affordability of services, and the chance for domestic telecom industries to become competitive in the international markets and, in turn, to develop their capability platforms in order to satisfy local and international demands.

Finally, future work should include a deeper exploration of the firm-level and industry-level drivers of South-South FDI in telecommunications, as well as of their interaction with the country-level drivers addressed in this thesis. Specifically, further research could study the role of emerging firms' cross-border competitive strategies as well as indigenous characteristics like particular governance structures. Also, to the extent that sources of information allow complementing the existing data, a panel-data estimation of the drivers of this type of investment would make it possible to incorporate the time dimension into the analysis. In addition, future studies could further inform the debate on the different welfare and development implications of the dissimilar reforms implemented by developing countries in their telecommunications sectors.

Appendix A: Correlation Matrix

	Pop (home)	Pop (host)	GDPc (home)	GDPc (host)	Rgdpgrow (home)	Openess (home)	Openess (host)
Pop (home)	1						
Pop (host)	0.0355	1					
GDPc (home)	-0.2724	-0.0782	1				
GDPc (host)	0.006	-0.0357	0.0194	1			
RGDPgr (home)	0.1216	-0.082	-0.1176	0.107	1		
Openess (home)	-0.1721	0.004	0.1839	-0.0684	0.0317	1	
Openess (host)	-0.01	-0.1425	-0.0107	0.2462	-0.1331	0.0105	1
Urbanpop (host)	-0.0716	-0.0536	0.0367	0.6873	-0.0948	-0.0849	0.2735
rTotpen (home)	0.0051	-0.1052	0.3403	-0.499	-0.1007	0.1906	-0.1578
Compdum (home)	-0.3096	-0.0107	0.0801	0.0468	0.0244	0.1319	0.0396
Compdum (host)	0.0121	0.0735	0.0699	0.1823	0.1148	0.0788	0.0017
Maxforeig (home)	-0.1971	0.0288	-0.4301	0.0673	-0.171	-0.3279	-0.0131
Maxforeig (host)	-0.0098	-0.2209	0.0639	-0.0365	0.1832	-0.0088	-0.1874
Exclusiv (home)	-0.325	-0.0155	0.2699	0.079	0.0939	0.2486	0.0289
Earlypriv (home)	-0.2989	0.0691	0.2269	-0.1748	0.0227	0.1618	-0.044
Privdum (home)	-0.2532	0.0306	0.3683	0.0268	0.0167	-0.2428	-0.0031
Privdum (host)	0.0406	-0.138	0.1007	0.3305	0.1676	0.0155	-0.1116
Distance	0.0184	0.0372	0.0687	0.133	0.1616	0.0527	-0.0634
Tradedum	0.0235	-0.056	0.0687	0.0626	-0.0778	0.0101	0.0588
Business (host)	0.0193	0.0246	0.0531	0.3802	-0.0658	-0.0649	0.3384

	Urbanpop (host)	Rtotpen (home)	Compdum (home)	Compdum (host)	Maxforeign (home)	Maxforeign (host)	Exclusiv (home)
Urbanpop (host)	1						
rTotpen (home)	-0.3957	1					
Compdum (home)	0.1466	0.0359	1				
Compdum (host)	0.2012	-0.0648	0.0467	1			
Maxforeig (home)	0.0937	-0.2635	0.0072	-0.0732	1		
Maxforeig (host)	-0.097	0.0247	-0.0447	0.0949	-0.0603	1	
Exclusiv (home)	0.0697	0.1033	0.2962	0.0155	-0.2306	0.011	1
Earlypriv (home)	-0.0424	0.1496	0.4003	-0.0573	-0.0789	0.0461	0.5845
Privdum (home)	0.0352	0.084	0.2672	-0.0272	0.0403	-0.0413	0.3915
Privdum (host)	0.1891	-0.1226	-0.0606	0.0745	-0.005	0.2302	0.0537
Distance	0.1042	-0.0355	0.0607	0.0773	-0.058	0.0049	0.1016
Tradedum	0.0191	-0.011	0.0094	-0.0175	-0.0819	-0.0474	0.079
Business (host)	0.4062	-0.3369	0.0129	0.0363	-0.0036	-0.1192	-0.0936

	Earlypriv (home)	Privdum (home)	Privdum (host)	Distance	Tradedum	Business (host)
	1					
Privdum (home)	0.387	1				
Privdum (host)	-0.1727	0.0326	1			
Distance	0.0056	0.1117	0.0889	1		
Tradedum	0.0606	0.0033	-0.058	-0.4886	1	
Business (host)	-0.1566	0.0174	0.1356	0.0631	0.0364	1

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