

**The Interaction between Foreign Direct
Investment and Small and Medium-sized
Enterprises in Latin America and the
Caribbean:
A Look at Regional Innovation Systems**

Lucas Ferrero
Alessandro Maffioli

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Lucas Ferrero is a Ph. D. applicant at Bocconi University and a research fellow at the Institute of Latin American Studies and Countries in Transition (ISLA) in Milan, Italy; lucas.ferrero@uni-bocconi.it.

Alessandro Maffioli is a research fellow at the University of Insubria in Varese and at ISLA of Bocconi University in Milan, Italy; amaffioli@eco.uninsubria.it

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FOREWORD

The growth of innovative small and medium enterprises (SMEs) and the establishment of networks of SMEs, such as clusters, are seen as contributing to the creation of jobs and increasing competitiveness. Interaction with inward foreign direct investment (FDI) can provide SMEs with access to information, know-how and technologies, increasing their innovative capabilities and improving their positioning on international markets. In many Latin American and Caribbean countries, weak institutions and an inadequate business environment impede the development of innovative SMEs and of clusters, and the relatively high inflows of FDI over the past years have not, to a sufficient extent, led to the establishment of linkages with the local economy nor produced desired spillover effects.

This report looks at the situation in this respect in Latin America, and at the role of regional innovation systems, as well as at possible policy indications for countries in the region, with a view to fostering the interaction of SMEs with inward FDI. The Special Office in Europe (SOE) has for a number of years systematically analyzed the flow of FDI, in particular of European origin, to Latin America and the Caribbean, and this study represents a continuation and extension of this work.

The study is the result of a consultancy carried out by the Institute for Latin American Studies and Countries in Transition (ISLA) of the Bocconi University from Milan, Italy, for a joint research initiative of SOE and the Bank's Micro, Small and Medium Enterprise Division of the Sustainable Development Department. The Micro, Small and Medium Enterprise Division contributed its comprehensive research experience in the fields of SME linkages, clusters and value chains in the Latin America and the Caribbean region. The consultancy was financed by the Italian Cooperation Fund, and focused on the interaction of local SMEs, operating in clusters, with foreign investors in the region. In this regard, three case studies were undertaken.

The study reflects the work of two visiting fellows, Ph.D. candidates at Bocconi University, who spent in our Office an extended period of time during the academic year 2003/2004.

We hope that the paper will contribute to the discussion on this topic that is of increasing importance for Latin America and the Caribbean.

Carlo Binetti
Special Representative in Europe

The Interaction between Foreign Direct Investment and Small and Medium-sized Enterprises in Latin America and the Caribbean: A Look at Regional Innovation Systems

Introduction

Governments in developing and emerging countries are increasingly looking for best-practice policies in an effort to improve small and medium-sized enterprises' (SME) performance. The interaction between clusters of firms and inward foreign direct investment (FDI) offer the prospect of coping with traditional constraints in business development in Latin American countries.

While it is true that FDI can have both positive and negative effects on host countries, many applied studies have pointed out the potential benefits of FDI for emerging countries: "FDI triggers technology spillovers, assists human capital formation, contributes to international trade integration, helps create a more competitive business environment and enhances enterprise development" (OECD, 2002a, pp. 9).

In most Latin American countries, the existence of weak institutions and overall business environment determine severe limitations on innovative activities and clusters development. Even more than larger firms, SMEs need access to external sources of information, knowledge, know-how and technologies, in order to build their own innovative capability and reach their markets. Multinational enterprises (MNEs) usually have the potential to generate the external stimuli necessary to enhance learning and innovation locally (UNCTAD, 2001). The overall impact on welfare depends on several factors subsumed in the degree to which the MNE is embedded in and linked to the local economy.

Developing countries, however, have been unable to participate to the same extent as developed and certain emerging countries in the vast increase of FDI flows that has occurred in the past decade. Moreover, since the late-1990s the trend has been downward. These circumstances suggest a need for host Latin American countries to develop a broader set of policies, institutions and organizations so that they can screen, select and attract FDI while trying to absorb and maximize its potential benefits.

SMEs, on the other hand, have been quite vulnerable to recent processes of trade liberalization and economic integration, characterized by increasing global and regional pressures. These forces intensify the structural problems already faced by firms at an individual, country and regional level in developing countries. In this context, the ability of most SMEs to survive, achieve efficient scale levels and create new jobs depends on a number of factors, including their capacity to innovate and engage in collective activities.

In order to build their innovative capabilities, SMEs need to engage in innovative activities, which are fostered by the mass of (explicit/tacit) information, knowledge and technology exchanges (Pietrobelli and Rabelotti, 2004). Clustering and interconnections among SMEs can be considered major facilitating factors. In this sense, the role of clusters in determining SMEs' sustainability and in contributing to the vitality of regions has been widely documented

(Rabelloti 1997, Nadvi and Schmitz 1999). Interactions with global sources of information and knowledge are also regarded as potential stimulating factors. These sources belong to different categories, ranging from simple exposure to international trade (through, for example, an increase in the variety of products and inputs), to interactions with MNEs, universities and multilateral organizations.

Industrialized countries are responding to increasingly open markets by purposefully seeking competitive advantage in general knowledge infrastructure, integrating different public policy areas and acknowledging that a strong basis in science, technology and innovation is essential for sustained economic prosperity. Given the consequent greater complexity in policy action (design, implementation, coordination and enforcement) the region's prospects again seem dim in view of the low level of capacity, meager trust in public officials, and other forms of poor governance.

Unsurprisingly, common indicators of knowledge intensity (research and development [R&D] as a share of GDP, patent rates, relative employment or value added in knowledge intensive sectors, educational attainment), as well as of joint actions and interconnectivity among firms, suggest that Latin American and Caribbean (LAC) countries are far behind their counterparts in the Organization for Economic Cooperation and Development (OECD). These features are not exogenous, however, and nor are they the single most important obstacle to SMEs' development. Rather, a highly volatile environment (both economically and politically), limited access to factor services (credit, skilled labor and so on) and overall governance (including the quality of regulation, dispute settlement, property rights and so forth) are often cited as the main barriers to firms' development in the region (Lora *et al.*, 2002). Thus, as we will mention repeatedly throughout this study, the approach presented here should be viewed as complementary to strategies oriented towards improving the general business environment and SMEs' competitiveness.

Some important questions arise at this point: To what extent can attracting and embedding MNEs in local economies reverse vicious cycles and improve local socioeconomic conditions? What effects are MNEs expected to have when they are attracted to an endogenous developing cluster? What should be the role of local-regional and national governments in these heterogeneous processes? We address these questions in the following sections. First, the introduction concludes with a description of some recent features of FDI and SMEs' performances in the region.

FDI and SMEs in Latin America

Throughout the 1990s, the relative importance of economic actors operating in Latin American industrial systems underwent substantial changes. Large domestic firms, be they public or private, progressively lost their central significance, while large MNEs and domestic SMEs increasingly gained in importance. While the former have generally acquired a leadership role in many fields of the manufacturing and services sectors, however, the latter did not undergo a dynamic development process (IDB, 2002; Mortimore and Peres, 2001).

FDI inflows into the region, which had averaged \$7.4 billion a year for the period 1980-1990, rose to an annual average of \$27 billion for the period 1991-1996 and grew further in the second part of the 1990s, when inflows peaked at \$108 billion in 1999 (ECLAC, 2002; IDB, 2001). This impressive growth can be explained by internal and external factors. Among the latter, the most relevant have been sustained international economic growth and the concentration processes that characterized several industries worldwide, yielding impressive levels of crossborder merger and acquisitions (M&A) operations in the late-1990s. Factors internal to Latin America include the stability programs pursued by Latin American countries, such as the Brazilian real plan and the Argentinean convertibility plan, which helped raise trust among international investors; and privatization and deregulation processes, which undoubtedly increased business opportunities for international firms.

On the other hand, the performance of SMEs in the last decade did not meet the expectations of policy-makers and advocates of reform (Peres and Stalling, 2000; Kuczynski and Williamson, 2003). Broadly speaking, this relative stagnation stemmed from the interaction between slow dynamism and competitiveness, on the one hand, and a hostile economic environment on the other. Nonetheless, SMEs have played a crucial role in many Latin American countries because of their capacity to absorb employment, especially during downturns in the economic cycle. This phenomenon has attracted renewed attention to SME and business-promotion policies, particularly in light of current concerns about delicate social conditions and other post-stabilization “side-effects”.

A factor that has received less attention from policy-makers is the impact that MNE location decisions can have on the competitive development of domestic SMEs, especially in terms of improved access to best management practices and technology. Despite overall acknowledgment of the positive effects that interaction with foreign firms can have on the competitiveness of domestic companies, including smaller firms (Dunning, 1993; UNCTAD, 2001; Altenburg, 2000), only Mexico, Chile, Costa Rica and Nicaragua have adopted specific instruments to promote such an interaction (Dini, 2001; Dini and Stumpo, 2002).¹ Furthermore, attempts to coordinate instruments designed to attract MNEs with those geared to increasing SME competitiveness have been few and sporadic and, with a few exceptions, they have not been institutionalized. Public intervention has been ineffective, especially in comparison to what happened in the 1990s in other emerging areas affected by a massive production internationalization process – Asian countries such as China and Malaysia, for example, and Eastern European countries such as Poland, Romania and Hungary (IDB, 2001).

Such scant attention might be explained by two factors. First, the impressive FDI inflows of the 1990s have been viewed as a success of liberalization strategies. Given its strong correlation with privatization processes, moreover, that success has often been evaluated by governments in purely financial terms (Hoffmann, 2001). Hence there has been a delay before economists and policy-makers began considering an appraisal of the consequences that such investments have for the domestic industrial system, as well as an assessment of whether (and to what extent) part of the income generated by FDI might be used to maximize the benefits of such consequences. Second, the initial conditions for domestic firms operating in sectors more

¹ With the exception of the Chilean case, all the programs have been developed in cooperation with the IDB and UNDP.

heavily affected by FDI inflows, as well as the strong emphasis placed since the start of the 1990s on the distortionary effects of sectoral policies, convinced many national governments that there was no room to promote the positive effects attendant on backward and forward linkages and on demonstration and imitation phenomena. In the first case, domestic firms seemed unable to provide the high qualitative standards that MNEs ask of their suppliers (Brugnoli and Maffioli, 1999; Maffioli and Marafioti, 1999). Thus interference in the supplier selection process probably limited the level of investment. In the second and third cases, the huge technological gap and the different orientations in terms of final markets called for enormous structural changes if domestic firms were to be able to benefit from the positive externalities generated by localized MNEs.

Today, there has been an appreciable decline in optimism about the potential FDI effects in the region because of the sharp fall in FDI inflows during the last two years (ECLAC, 2003). Hence the debate on knowledge transfer effects from MNEs to local firms (especially the smaller ones) has become increasingly relevant; a deeper analysis of the specificities of the process in Latin America is required. Further questions have been raised by recent reinterpretations of FDI flows into Latin America, which distinguish at least two distinct phenomena: the localization of most of North American, efficiency-seeking MNEs in Central America; and the concentration of European, market-seeking MNEs in South America (Hoffmann, 2001; Mortimore and Peres, 2001). Since the first model seems to have had disappointing local impacts, growing attention has been paid to analysis of the second model, the European one. Such an alternative raises a number of problems, not only in shaping industrial policy interventions but also in defining optimal integration strategies. Very often, Latin American countries face the trade-off between regional integration – which will strengthen the “internal” market, thus attracting market-seeking FDI – and bilateral agreements with close, highly developed areas in order to attract efficiency-seeking investments.

Despite that, it is important to acknowledge the potential of efficiency-seeking FDI. As long as FDI outsourcing takes place and linkages develop, MNEs can help foster innovation and opening opportunities so as to access external markets. We will discuss recent experiences in Mexican clusters that support this argument, as well as the general determinants of the net benefits of FDI in developing countries.

Thus far, FDI policies have focused on attracting investment, mainly through tax-subsidies incentives. The idea of integrating endogenous initiatives, regional decentralization and a renewed approach to FDI and cluster policies holds enormous promise as well as risks. The increased degree of sophistication and coordination requirements in policy-making looks more than challenging for Latin American profiles.

A thorough context-assessment and tailoring of initiatives to local conditions are *sine qua non* in successful experiences in the region. Additionally, an understanding of the interplay between the global and local dimensions has become crucial, not only for corporate managers and governments concerned with alternative local development strategies, but also for policy advisors and scholars. The new role of the foreign affiliate within the corporate network, as well as its greater interaction with the local environment (Birkinshaw, 1996) can be exploited fully only if local geography is appreciated correctly.

Overview

In this paper we focus on the interaction between FDI-clusters of SMEs and regional innovation systems (RIS). The main goal is to establish a background framework that can be used to guide future research. Following recent theoretical developments (Cooke, 2002 and 2004; UNIDO, 2003), we uphold the notion that clusters and RIS can provide a better environment to exploit linkages and spillovers between firms. Assessment of governance structures, however, both in public policies and inter-firm relations, is a key precondition for successful policy-oriented analysis.

From a policy standpoint, we address a particular dimension of FDI-related policies: embeddedness policies. Thus the concern is with improving the capacity of local firms to absorb spillovers and develop linkages with MNEs. The embeddedness dimension of FDI-related policies has received less attention in the region. Such meager attention can be explained by two factors. First, the impressive capital inflows of the 1990s have unanimously been viewed as a success of the new policy paradigm, marked by the withdrawal of state interference and an attendant aversion to pursue industrial policies. Moreover, governments have often evaluated these inflows in purely financial terms (Hoffmann, 2001). Second, the lag in the initial conditions for domestic firms operating in sectors more heavily affected by FDI inflows, and the strong emphasis placed since the start of the 1990s on the perverse effects of sectoral policies, convinced many national governments that there was no room to promote positive effects.

From a broader perspective, we consider two salient aspects of the current debates in Latin America. The first relates to the current concern about the local business environment and the role of supporting policies; the second relates to public policy governance. Schmitz (1999) points to the obstacles facing Latin American clusters in view of the complete lack of government responsiveness. Similarly, Pietrobelli and Rabellotti (2004) stress that even when there is upgrading in Latin American clusters, despite government inaction and the virtual absence of business support systems, there is substantial evidence that the development of external economies and cooperation mechanisms is still minimal.

In addressing the issue of governance we recall the crucial importance of identifying the potential and constraints facing firms and government officials alike when they devise their strategies. Hence we remain at a prudent distance from well-known experiences of clusters and regional innovation systems that emerged in completely different contexts (such as Silicon Valley, Third Italy and so on).

The issues are discussed in four sections. The first three address the potential channels through which FDI and clusters can foster local firms' development. We isolate key conceptual aspects and theoretical implications of FDI linkages, spillovers, and agglomeration economies, present a review of the empirical evidence, and suggest policy guidelines. We then address the role of clusters and regional innovation systems in regional development. Using theoretical and empirical reviews to drive the discussion, we assess the potential and constraints facing clusters in the region.

Finally, we introduce some elements of governance in public policies and their effects on MNEs, clusters and their linkages. We focus briefly on three matters: first, the effects of the different forms of governance on modes of interaction between firms (viewed mainly through the lens of transaction costs and related hazards); second, the effects on the modes of interaction between firms and public agencies, covering the responsiveness of public officials and the organization of cluster members in coordinating and channeling their demands; and third, the constraints on and capacities of public officials in recognizing, internalizing and responding to firms' needs.

In Section 2 we present a conceptual discussion of global clusters and systems of innovation. Naturally, we do not attempt a thorough review of the theoretical literature; instead, the section is structured to inspire further analysis and to stress various aspects that will prove useful in an examination of interactions between MNEs and SMEs and the potential role of public policies. In Section 3 we address the potential role of MNEs as an external stimulus for innovative activities at firm- and cluster-level interactions. Finally, in Section 4 we explore recent policy experiences and assess the role of governance structures as binding constraints on policy interventions.

Summarizing our final discussion, we argue that FDI-oriented policies are meaningful only if seen as a complement to a broader and coherent set of strategies geared to stimulating and improving regional economic performance. In other words, attracting and embedding MNEs should be matched to address the particular weaknesses of a cluster (for example, in the value chain), with local institutions and associations playing a crucial role in the process of FDI selection, information transmission and so on.

Global Clusters and Innovation Systems

Motivations

In recent years, a branch of the literature on industrial organization referred to as *industrial cluster development* has received increasing attention from scholars and practitioners. Such revived interest stems from different elements of the academic and political milieu. In what follows, we take some time to try to convey a clear idea of the general forces underlying the renewed concerns in clusters and regions, extending the discussion to the potential role of regional innovation systems and MNEs in the context of Latin American countries.

From an empirical viewpoint, there has been a persistent tendency for firms to agglomerate and concentrate activities geographically. This long-standing feature of the organization of production (Marshall, 1919; Schumpeter, 1912) pointed to the spatial dimension associated with agglomeration forces as key features of modern socioeconomic organization. Recently, improved databases and comparative studies indicated the apparent superior performance of clusters relative to other forms of organization (such as Fordist ones). For instance, Porter

(1998) shows that along three dimensions of competitiveness (productivity, innovation and firm creation) clusters reveal better indicators than hierarchically organized firms.²

Two stylized facts are worth mentioning: first, the positive correlation between agglomeration and the growth of economic activities; and second, the strong similarity between the geography of production and the geography of innovation (Martin and Ottaviano, 2001). The latter is best illustrated by the role of cities in economic growth and technological progress, which has been emphasized by urban economists as well as by economists of growth (Fujita and Thisse, 1996).

Similarly, recent empirical work has shown that innovative activity tends to cluster where production activities concentrate, and that is more spatially concentrated than production itself (Martin and Ottaviano, 2001). The literature, however, has not overcome a clear *identification problem*. Nonetheless, the “causality runs both ways” argument and renewed-formalized “centripetal forces supremacy” provide what thus far is a convincing explanation based on theoretical modeling and simulations.

From a theoretical viewpoint, the most used and developed explanation for clustering have been *agglomeration economies* (Baldwin *et al*, 2003). The main idea is that growth and geographic agglomeration are mutually self-reinforcing processes, in that growth brings spatial agglomeration which itself fosters growth.

The models addressing agglomeration economies share some features with the *new economic geography*; which focuses on the presence of circular causation mechanisms to explain the spatial concentration of economic activities. In these models, the mechanisms that allow centripetal forces to overcome the centrifugal forces (dispersion of economic activity to avoid competition) arise either from the migration of workers or from the presence of intra-sectoral vertical and horizontal linkages (Venables, 1996). The role of imperfect competition, driven by economies of scale, transport costs, and Dixit-Stiglitz’s *love for variety* framework, are key assumptions and driving forces in these models (Krugman, 1981 and 1995). The presence of other forms of external economies and spillovers from agglomeration reinforce this supremacy. Martin and Ottaviano (2001), merging new economic geography and endogenous growth theory, add a new determinant for agglomeration of economic activity: *innovation*. According to their model, the sector at the origin of innovation and growth (which they call the R&D sector) uses goods from imperfectly competitive industries as inputs; then, because of increasing returns; these industries will be drawn to the location where the sector at the origin of growth operates. This, in turn, further lowers the costs of innovation, adding to the traditional centripetal forces.

In short, increasing returns to scale, technological externalities and spillovers (involving inter-firm linkages) lead to structures for the organization of production that give a competitive advantage to regions with *clusters*.

² In general, we refer to clusters as the geographic concentration of business activities (OECD, 2004). However, we further discuss more sophisticated versions, such as places where inter-firm communication, common social and cultural patterns and the institutional environment stimulate socially- and territorially-embedded collective learning and continuous innovation (Asheim and Isaksen, 2002). We adhere to the general concept in order to encompass broader forms of inter-firm interactions.

A second theoretical block useful for clusters analysis can be found in overlapping elements of new institutionalism, transaction cost theories of economic organization, and evolutionary economics. A distinctive motivation relies on the idea that clusters tend to provide appropriate means of facilitating knowledge-creation, spillovers and (collective) learning that enhances information flows and innovation.

Transacting is fraught with hazards, and the problem of “efficient” social organization is one of creating governance structures to constrain unproductive rent-seeking and opportunistic behavior. In short, the higher the transaction costs, the less likely is the emergence of market-governed interactions and networking (*ceteris paribus*). That is, either there are no transactions or more vertically integrated organizational forms emerge as more profitable alternatives (Grossman and Helpman, 2003).

The literature has suggested several categories of contractual hazards affecting decisions on the organization of production. The most prominent is *asset specificity* – that is, “the degree to which an asset can be redeployed to alternative uses and by alternative users without sacrifice of productive value” (Williamson, 1996:59). Other categories follow, such as the risks of technological leakage or the hazards of free riding on brand name and reputation (Oxley, 1997). All of them point to the effects of a partner’s opportunistic behavior (the hold-up problem) and potential technological leakage (protection of property rights) on organizational forms and performance.

According to North (1990), institutions and technology play a dominant role in determining these economic transaction costs and, therefore, in shaping the prevalent forms of social interactions, organizations and the path of economic change. The interpretation of institutions as a means of structuring interactions and determining incentives not only include formal institutions and associated enforcement mechanisms (laws, regulations, the judiciary and so on), but also informal norms and conventions. By governing the way interactions are conducted, institutions affect information flows, the development of networking activities and, hence, the pace of learning and innovation in a given society (North, 1990; Williamson, 2002).

North has pointed out the inevitable trade-off in the historical growth process, between economies of scale and specialization on the one hand, and transaction costs on the other. In small, closed, face-to-face communities, for example, transaction costs are low, but production costs are high, because specialization and the division of labor are severely limited by the extent of the market defined by the personalized exchange. In large-scale and complex economies, the potential for opportunistic behavior is higher. As a result, over time western societies have developed a complex set of institutions and organizational structures to constrain participants and reduce the uncertainties of interactions. These include elaborately defined and enforced property rights, formal contracts, trade marks and patents, limited liability, bankruptcy laws, large corporate structures to limit agency problems and like.

The related *evolutionary* approach focuses on processes of growth and change. It accepts that path dependence and disequilibrium are inherent to socioeconomic organization, and emphasizes the importance of a spatial, institutional and organizational dimension in addressing the determinants of growth (Cooke, 2002 and 2004). Innovation and learning are

matters of crucial concern, as are their individual and group determinants, which latter are embedded in cultural and institutional networks.

Finally, *trust and social capital* are important (positively correlated) components of the latter framework. Social capital is a community-specific stock that generates reciprocity, cooperation and trust in interactions. It favors information flows and learning, and is bounded by geographic proximity, shared culture and *embeddedness* – understood as personal ties and relationship networks (La Ferrara, 2001). In our line of reasoning trust and social capital can be viewed as factors (contained in norms and conventions) that lower transaction costs and help overcome coordination and cooperation failures. High flexibility and widespread linkages in business relationships characterize dynamic, efficient clusters. In these contexts, the necessary contract incompleteness is sometimes offset by “the mutual confidence” between individuals and organizations, thereby helping communities deal with the latent trade-off posed by North.

Networks and clusters are seen to be modes of economic organization that emerge to take advantage of and “appropriate” potential returns on social capital. Thus regions “endowed” with high levels of social capital manifest high levels of trust in interactions, giving rise to more *associativism* and inter-firm cooperation, information flows and learning. The gains accrue from a reduction in transaction costs and increases in information economies and associated knowledge effects. Moreover, subcontracting, networking, supply chains, joint ventures and other complex, contemporary patterns of inter-firm interaction that are not easily governed by formal, costly-overregulated contracts, can be sustained by more *flexible governance*, provided the appropriate environment is present (John, 2001).

A reverse casualty is also of interest. The agglomeration of economic activity implies potential gains for joint-collective activities and specialization, even more so for firms constrained by size, financial resources and the like. It pays to engage in collective activities, develop trust-based and cooperative norms of behavior and, in general, *be part of the cluster* (Cooke, 2002). This is of particular interest for less developed regions characterized by weak and poorly implemented formal institutions, and by a general distrust of social interactions.

A number of caveats also deserve attention. From a general viewpoint, the whole body of work is still immature, and further efforts are needed on both theoretical and empirical grounds. An example is the debate in Rodrik *et al* (2002) and Sachs (2003) on the supremacy of institutions relative to geography. The new evolutionary approach poses another unsolved problem, displaying some conceptual ambiguity towards, in particular, *knowledge appropriability, leakages, and inter-firm cooperation* versus individual incentives to innovate and collective actions (Cooke, 2002).

The use of social capital and related concepts conveniently closes some gaps, and also ameliorates conflicts with more traditional views of rationality and innovative activities. The danger, however, lies in stressing a concept that is little understood and is still treated as a black box.

Our theoretical discussion then pointed to the benefits (and costs) of agglomeration and interconnectivity as relevant features of potentially dynamic forms of economic organization. We stress the role of agglomeration economies, institutions and social capital in shaping them.

Next, we close our motivating section by exploring the current strength of clusters and knowledge economies in the public policy debate.

Several political motivations explain the increased attention to industrial clusters. First, widening regional disparities have spurred political pressures. They have triggered, on the one hand, a national or local concern for the region *per se*, particularly for those that are relegated or relatively less favored by a process of geographical concentration. On the other hand, developed regions and countries worry about the massive factor movements (migration) attendant on expulsion and attraction forces (unemployment, wages differentials and the like).

In a recent paper, Markusen and Campolina (2003) documented a generalized trend towards regional economic concentration and a worsening of regional and income disparities during the 1980s and 1990s. The authors focus on four Latin American countries (Argentina, Brazil, Chile and Mexico) and argue that they all exhibit several common features in this process. They show that recent transformations have reinforced the traditional centripetal forces of major financial and manufacturing cities at the expense smaller cities and outlying regions. “Resulting regional disparities contribute both to regional political unrest (particularly strong in federal countries) and to growing concentrations of urban poverty even in the more prosperous regions” (Markusen and Campolina, 2003).

The recognized failure of the withdrawal of the state, particularly strong in Latin America, has called for a critical view of regional sustainability without a reassessment of government participation (Markusen and Campolina, 2003). Inequality, de-industrialization and rising political and social unrest are common terms in applied studies describing a robust tendency in region (World Bank, 2003). Widespread acknowledgement of the relative superiority of SMEs in generating employment and ensuring the vitality of regions tends to make policy-makers seek strategies to protect and stimulate them.

Well-known successful international experiences likewise play an important role. Policy-makers seeking responses to their constituencies’ demands are increasingly aware of the potential benefits of policies related to SME clusters and network via “demonstration effects”. There are many internationally renowned clusters, including, for example, dynamic clusters in affluent regions such Emilia Romagna in Italy, Silicon Valley, and financial services in New York, London and Frankfurt, offer a strong rationale for the greater attention. Cluster development initiatives are particularly important in Europe, though they are being adopted in other developed and developing economies. Even in more reluctant traditions, such as the United Kingdom, the disappointing results of regional economic development strategies based on attracting large-firm investment have also spurred interest in clusters-oriented policies (Enright, 2000).

Third, the new focus on knowledge economies and innovation as important elements for sustained economic growth are becoming shared beliefs among policy advocates (UNIDO, 2003; OECD, 2004 Cooke, 2002). Initiatives supported by multilateral organizations, MNEs and NGOs carry weight in public debates and reduce coordination costs through joint and lobbying activities, thereby helping to disseminate these interests and spread positive perception of the issue. Overall consideration of FDI and cluster-related policies as “market friendly” fosters their appeal and helps secure further support.

Finally, endogenous political and economic movements (sometimes reinforced by *regionalist* sentiments) are key driving forces; they have been important in successful experiences in Italy and Spain, although there have been only a few examples in Latin America. Some of these processes have been triggered by the recent intergovernmental and governance “re-engineering” that is particularly strong in Europe and Latin America – albeit, of course, with different motives and features. The active interest in the development and reorganization of public governance underlies much of the aforementioned forces. While its potential should be acknowledged, however, a thorough assessment is far from complete. Rigorous research is required to improve the accuracy of policy prescriptions, which must be based on context specificity and the acknowledgement of internal forces and institutional embeddedness.

In the following section, we tackle the elements and (potential) interactions between the motivating factors in the context of SME clusters. Broadly speaking, we argue that the nature and scale of knowledge flows, as well as the innovation potential in a geographically bounded cluster, depend on three inter-related dimensions:

- i. *internal* characteristics of the cluster;
- ii. *external* linkages of the cluster; and
- iii. *policy* and the *economic environment* faced by the cluster.

Each of these dimensions encompasses a variety of characteristics that distinguish one cluster from another. Naturally, the internal-external distinction is less precise in practice because all interactions are, to varying extents, locally embedded. However, it helps us to identify the different channels that might affect local SMEs’ performance.

Elements of Clusters and Innovation Systems

As already mentioned, SMEs have been quite vulnerable to recent processes characterized by increasing global and regional pressures. These forces drive structural problems already faced firms at an individual, country and regional level in developing countries. The ability of most SMEs to survive, achieve efficient scale levels and generate new jobs depends on a number of factors, among them their capacity to innovate and engage in collective activities.

Innovation is a key determinant of firm competitiveness. Naturally, in order to build their innovative capabilities, SMEs need to engage in innovative activities, which are fostered by the mass of (explicit/tacit) information, knowledge and technologies exchanges (Pietrobelli and Rabelotti, 2004). As explained above, SME “clustering” and interconnection can be considered crucial facilitating factors that tend to vary directly with the degree of agglomeration and specialization measures. Rephrasing our theoretical motivations, these factors are:

- *Human resource pooling*. The development of markets for specialized skilled labor gives rise to benefits for the division of labor and specialization (absolute and relative).
- *Localization economies*. The development of specialized markets for inputs and machinery – greater variety at lower cost.

- *Access to information, performance benchmarks, and specialized knowledge on technologies and markets.* Firms in close proximity can more closely monitor and gauge the performance of horizontal and vertical interactions.
- *The availability of infrastructure and the business environment.*
- *Complementary products and market access.* The product of one firm may have an important influence on the activities of other firms.

These benefits accrue both directly (through market and contracts) and indirectly (through public good-externalities-spillovers type of mechanisms) to individual firms within a regional industrial cluster. However, there is also an incentive to engage in inter-firm and private-public interactions deliberately – namely, a *consciously pursued joint action*, which can take at least four general forms (Nadvi and Schmitz, 1999; OECD 2004):

- Joint action within *vertical linkages*, including backward ties and networks with suppliers and subcontractors, and forward ties with traders and buyers.
- Joint action within *bilateral horizontal linkages* between two or more local producers. This can include joint marketing of products, joint purchase of inputs, order sharing, common use of specialized equipment, joint product development, and the exchange of know-how and market information.
- Joint action within *multilateral horizontal linkages* among a large number of local producers, particularly through cluster-wide institutions. This includes cooperation in business associations and business development service centers.
- Public-private partnerships.

To capture the overall positive impacts of interactions on the competitiveness of firms located in clusters, Schmitz (1995) introduced the concept of *collective efficiency*, defined as the competitive advantage derived from local external economies and joint action. These general benefits present in clusters manifest themselves with different intensities and nuances; they vary greatly, both geographically and across sectors.

External linkages comprise other facilitating factors that impinge on innovation performance in a cluster. These include firms' participation in global value chains, the introduction of global players in the local economy, interactions with research centers, the extent of trade openness, and effective policies and supportive institutions (such as development agencies, universities and so on). We will return to this matter in Sections 3 and 4.

The existence of a critical mass of specialized clustered activities does not necessarily imply that clusters share common characteristics and exploit the same benefits in the form of external economies, networking and the like. In fact, clusters are rarely similar; they generally diverge along several dimensions. Most studies on clusters refer to their different and increasingly complex typologies. Here, instead, we argue that the classification should be empirically and motivationally driven, and thus simply illustrate a few general dimensions of interest.

It is clear, for instance, that the upgrading of SMEs in the context of clusters and value chains exhibits different features across different economic sectors or industries, and according to the number of potential (vertical and horizontal) local partners. It is less clear, however, whether

sectoral specialization or diversification is better, not only in terms of regional development (including local risks), but also in terms of the relative importance of intra-sectoral *vis-à-vis* inter-sectoral linkages and spillovers. This is not a trivial issue from either a positive or a normative perspective, and we shall return to it in the following sections. Table 1 presents a simplified classification based on sector heterogeneity with a simplified characterization of the prevalent sources of innovation in each one.

Table 1. Sectors, Technology and Innovation

Sector	Industries	Main Sources
Resource-based industries.	Processed food, wood and leather, refined petroleum and rubber products.	Generally generated from upstream suppliers (chemicals, machinery, etc.) and regulations/quality standards.
Low-technology industries.	Textiles, garments, footwear, furniture, glassware, toys.	Opportunities for innovation are concentrated production methods and inputs, as well as product design.
Medium-technology industries.	Automotive industry, chemicals, metal products, machinery.	Design, construction and operation of complex production systems or products. Value chains. Corporate R&D.
High-technology industries.	Electronics, pharmaceuticals, biotechnology, precision instruments, aerospace.	High-intensity of corporate R&D interacting with research agencies and universities.

Source: Authors based on Malerba (2000) and Richard (2003).

The relative economic strength of firms within clusters of sectors and industries is important in shaping bargaining positions, and thus the way in which interactions are governed – including information and knowledge flows (for a traditional taxonomy see Markusen, 1996). For example, in *hub-and-spoke clusters* a number of non-locally embedded key firms act as anchors (hubs) with suppliers and related activities spread around them. The dynamism of the region is dependent on the position of hub organizations in national and international markets. Suppliers and hub firms engage in substantial trading. Intra-district cooperation, however, is driven by the willingness of hub firms, which is generally low and of a vertical nature. Internal scale and scope economies are relatively high, whereas labor market flexibility is low. Fear of specific knowledge leakage is a clear constraint on interactions.

More specifically, clusters can be distinguished across the scale of international embeddedness, not simply by the presence and strength of MNEs but also by the extent and nature of linkages between them and local actors. This depends both on the “willingness” of the multinational firms to participate in mutual learning-adaptation processes – that is, the degree to which a multinational is responsive and interacts with local actors (Rugman and Verbeke 2003) – and on local conditions in terms of capabilities, governance and the overall business environment.

As regards the nature of firms’ interactions, two important matters are how authority is distributed among participating firms, and the extent to which externalities and spillovers are internalized. *Market led governance* is characterized by decentralized decision-making, a relatively low internalization of spillovers and externalities. Innovation is enhanced mainly by

strong competition that is conditional on the workings of the legal and property rights framework, while knowledge exchanges also take place mainly through the labor market (human capital), demonstration effects and other channels influenced by the quality of social capital and supporting institutions. *Networks* usually entail some stronger formalization of cooperation between firms of more or less equal power, which share their competencies within a production chain or a joint venture. In *quasi-hierarchical relationships* between legally independent firms, each is subordinate to the other, although a leader establishes the rules for all to follow. The ruler is usually determined by size, position in the value chain and relative technological advantage. This mode, like the hub-spoke one, is particularly relevant in the FDI-RIS interplay because of the role played by global value chain leaders, and particularly the buyers, in transmitting knowledge along the chains (Humphrey and Schmitz, 2000).

Transaction costs and *social capital* frameworks entail another source of heterogeneity, since they shape perceived hazards and expected returns under different governance structures. We have argued that potential gains are derived from agglomeration, which are exploited by inter-firm connectivity and *associativeness*. As has been emphasized in the extensive literature on Italian industrial districts, common membership to business and labor associations as well as various community-based institutions, sometimes overlay purely commercial inter-firm exchanges. Opportunities are thus provided for frequent interactions and associations that can facilitate lowered transaction and other business costs, as well as information and knowledge flows. Putnam's (1993) research on Italy concludes that social capital, measured by the associative practices of communities in Italian regions, explain why the *Mezzogiorno*, with a low level of associative organization, was economically less accomplished and administratively less efficient than northern regions where both were high.

Other important factors affect firms and clusters' heterogeneity and their receptivity to new information and knowledge. One lies in the extent to which supporting institutions develop (within the community or exogenously) to offer effective backing to business, entrepreneurial and innovative activity. We explore this matter in the next subsection.

As discussed above, clusters' potential and the channels through which it could be realized are not unique. In particular, SME agglomerations generally depend on external sources of information, knowledge, know-how and technologies that enable them to build their own innovative capability and reach their markets. Although different types of SMEs have different knowledge needs and face different constraints, they must be connected with other firms and organizations to attain sources of new knowledge and expertise – either directly, through cooperative joint projects, or through the different *governance* mechanisms for firms' interactions as discussed above. Both link innovative firms, not only within the cluster but also with other regional and global actors (OECD, 2004).

Firms have to overcome a number of challenges to successfully exploit the advantages of inter-firm interaction; some of them will be discussed later. One is particularly relevant in this context – namely, the problem of managing existing and new knowledge effectively. One way of doing this is through formal institutions: intellectual property rights, patenting and licensing have emerged as key instruments for managing innovation and preventing undesired leakages

and free-riding.³ Alternatively, the accepted notion of Cooke's "knowledge is on the networks", more suitable for the so-called *knowledge economies*, determines a sort of collectively-owned input to innovation, with its traditional under-provision as the market outcome. Paradoxically, in this last approximation, conventional means of appropriation tend to hamper knowledge and information flows (Cooke, 2002). How, then, is the free-rider problem overcome under this alternative interpretation? In short, continuous flows of knowledge and information through networks, linkages and worker turnout entail constant exchanges between actors that are sustainable through different forms of cooperative behaviors.

Theoretical and empirical studies have yielded ambiguous results so far (Breschi and Lissoni, 2001; Feldman, 1999), particularly as to how knowledge is created and disseminated (technological spillovers, pecuniary externalities, local tacitness and so on). At a general level, however, a number of patterns appear regularly. For instance, OECD (2002a) confirms that collaborating firms are more innovative than non-collaborating ones. It also shows that a number of variables affect the propensity to engage in such activities; in particular, firms' size is negatively correlated. Other variables are sectors and technological content, and openness to external markets.

Another variable (see, for example, Edquist and Johnson, 1997) refers to the positive influence of embedded organizations interacting with firms in the process of knowledge generation and dissemination. There follow two interpretations of their role, which do not necessarily conflict. According to one, organizations and institutions simply follow, supporting and helping firms to overcome coordination failures. An alternative interpretation stresses their crucial role in governing key stages of the innovation process, including knowledge creation, that allow firms to overcome the quoted *knowledge is on the networks – public good incentives dilemma*.

The whole bundle of innovative firms, clustered geographically and surrounded by a set of supportive organizations, leads us to the RIS concept. To restate, an RIS is built on industrial clusters, supported by an adequate infrastructure made up of (i) universities, colleges and technical institutions that provide appropriate levels of human capabilities; (ii) research institutes and agencies, whether public or private, which provide R&D systems and S&T infrastructure; (iii) *meso-institutions* (chambers of commerce, associations, consultancy systems), providing appropriate communication channels between firms, and between firms and the public sector; (iv) business incubators, which stimulate entrepreneurial activities; and most importantly, the overall regional system exhibits a dynamic path in terms of both innovation and business startups.

There is a complex two-way relationship of mutual embeddedness between these institutions and organizations within an RIS, which govern the innovation processes (Edquist and Johnson, 1997). International success in advanced industries is interpreted as a direct function of the conduct and the articulation of the RIS.

³ Despite the legal provisions, however, the appropriability of an innovation and knowledge is never complete. Whatever is not appropriated by the innovating enterprise leaks, shaping determining the potential for imitation and externalities.

Naturally, RIS, as clusters, can be quite different from each other along several dimensions – for instance, in their specialization of production, governance, and the like. More specific dimensions of heterogeneity can be grouped into two categories: regional and business innovation structures. The first includes the amount of resources spent on R&D and its origin (public, corporate, MNE-led), initiation and concentration of innovative activities, role of support systems, governance of R&D and the science and technology infrastructure (funding, responsiveness to firms' demands) and so on. The business-innovation category refers to firms' attitudes towards innovation and its governance structure, addressing the characteristics of interactions between firms, with customers, R&D and development agencies (Cooke, 1998). Other aspects must be taken into account, such as the characteristics of the labor force, labor mobility, financial assistance, hard infrastructure, knowledge leakages, institutions regulating dispute-settlement and property rights protection, and so on.

What is the importance of the RIS framework for less developed countries? Are Latin American countries well-placed to actively pursue strategies based on innovation? Or, should they instead focus simply on learning and catching-up policies, following external technological paths?

Relevance for Latin American Countries: Clusters, Innovation and Learning Systems

After the initial studies of clusters in Italy and the United States, a growing body of applied research has been developing. This trend has reached those interested in developing countries, guided by the appealing idea that clusters have the potential to improve local economic performance and provide innovations that also help drive countries' economic growth. Today, a well-known finding in this literature is that clusters are not confined to advanced industrialized countries, although they tend to be smaller and much less mature in less developed countries.

Latin America, in particular, has been the subject of much attention. Bortagaray and Tiffin (2000) attempt a systematic identification of innovation clusters across the region, concluding that while firms within clusters seem to grow faster and generate more profits than those outside of clusters, no Latin American innovation clusters can reasonably be described as mature. The authors, however, do identify a number of significant developing and potential innovation clusters in Argentina, Brazil, Chile and Mexico, the last three of which have received most of the attention in the literature (Giuliani, 2003; Melo, 2001; Pietrobelli and Rabellotti, 2004).

A number of problems shared among clusters have been addressed in the literature. At the firm level, financial constraints and low investment capital stand out. Other factors often cited are: meager entrepreneurial activities and dynamism, modest flexibility and adaptability, and low levels of human capital. At the cluster level, weak inter-organizational networking, the absence of adequate business development services, and low absorptive capacity are cited as the main obstacles to the further development of innovation clusters in the region. User-producer vertical linkages, not to mention horizontal linkages and joint projects, are weak, and firms tend to exhibit uncooperative behavior towards innovation (CEPAL, 1992). There are various examples of low joint commitment in inter-firm relations: in traditional

manufacturing, the cluster of Gamarra in Peru (Visser, 1999) is one in which firms have very poor relations; and the furniture cluster of Ubà (Minas Gerais) in Brazil (Crocco and Horacio, 2001); this is also typical of the northern regions of Mexico, where production based on *maquilas* is a disincentive to cooperation. See Bair and Gereffi (2001) for garments; Dussel (1999) for electronics; and Carrillo, Mortimore and Estrada (1998) for audio-visual equipment.

Linkages with universities are another matter of concern. These have historically been very poor (Plonsky, 1993). During the import-substitution period, there was little interest in cooperating because protected market conditions did not require firms to innovate and be competitive with imported products. At the same time, universities had little incentive to generate or transfer technologies to business.

At an aggregate level, clear patterns distinguish Latin American countries from their more developed counterparts in terms of innovation systems. First, overall expenditure on R&D as a share of GDP is quite low in Latin America relative to OECD and East Asian countries. Japan, South Korea and the United States devote as much as five times more of GDP to R&D (Figure 1). In particular, there is a clear divergence relative to China. Second, as regards sources of funding, there is a remarkable dominance of public sources in Latin America, whereas business R&D is much more important in the OECD countries (Figure 2). Both characteristics are consistent with the often-cited poor matching of R&D programs and overall S&T structure with business needs in LAC (Melo, 2003).

Besides businesses themselves, the other building block of innovation systems are central government agencies such as industrial and technological research institutes, universities, and policy-making bodies.⁴ A centralist culture and structure still prevails, hindering responsiveness to local needs and demands. In short, the problem is not only that the linkages between firms and research institutes are weak. It is that the linkages are weak, in part, because the research institutes often have little to offer to businesses. We will return to this point in the discussion of the governance framework.

Overall, two main issues arise when considering RIS in the context of less developed countries. The first concerns the limits of the applicability of the narrow concept of RIS to developing nations, because, as stressed by Lundvall *et al.* (2002), “a narrow innovation system concept focusing on the research and development system and on high-tech and science-based innovations makes [limited] sense in the South” (Lundvall *et al.*, 2002; p. 226). The second refers to the fact that developing countries depend very much on technologies and systems of innovation of other, more advanced countries. Intarakumnerd *et al.* (2002) stress that “the effective utilization of foreign technology is more important than doing a lot of R&D in some East Asian NIEs such as Hong Kong and Singapore” (Intarakumnerd *et al.*, 2002; p. 1,446).

⁴ In most Latin American countries, the organizational component of the innovation system is formally structured along the following lines: (i) a central government agency in charge of defining science and technology policy; (ii) a set of executing agencies; (iii) institutions (including both public and private universities) in charge of basic and applied research; (iv) institutions responsible for defining technical norms, standards, quality control and certification; (v) institutions in charge of technical and vocational education, as well as short-term training of the active labor force; and (vi) financial institutions and funding agencies.

Recent findings (Intarakumnerd *et al*, 2002; Lundvall *et al*, 2002) suggest that the systems of innovation in developing countries are generally (and redundantly) *less developed*, lacking the technological and institutional properties necessary for modern industrialized growth. Incomplete and haphazard processes of industrialization and related structural problems remain a deep constraint on RIS development. Most importantly, in contrast to what happens in developed countries, capital accumulation, rather than innovation, is still the main contributor to technical progress and growth in developing countries.

Table 2. Innovation in Latin America
(*In number of patents*)

	European patents		US patents	
	1995 (%)	1995 (1990 = 100)	1995 (%)	1995 (1990 = 100)
Western Europe	47.4	91	19.9	78
Central and Eastern Europe	0.4	101	0.1	43
North America	33.4	125	51.5	108
Latin America/Caribbean	0.2	204	0.2	122
East Asia	16.6	87	27.3	108
Oceania	1.3	163	0.6	84
World total	100	n.a.	100	n.a.

Source: Barre (1998).

No doubt this line of argument deserves serious attention, but it also requires some qualifications. Clusters and RIS vary greatly in the region and, though scarce, front-line applied research and technologies are evident in a few countries. Furthermore, some experiences have been outstandingly positive even in the absence of adequate support systems (see section 3).

To conclude this counter argument, it is worth noting that developing countries have emerged as leading producers and exporters of high-tech products. Developing countries' share of total world exports of such goods rose from just 8% in 1988 to 21% in 1998, with a similar pattern for patents granted, measured by the number of patents (Mani, 2000). It is true that 95% of these exports are concentrated in Asian countries, namely Singapore, Malaysia, the Philippines, Thailand and South Korea. The relatively superior performance of these countries, however, is often attributed to economic policies followed by their governments, including previous policy shifts in terms of innovation policy. Even in current circumstances, the performance of Costa Rica, Cuba, Mexico and Brazil has been dynamic; in 2002 they accounted for more than 20% of high-tech exports relative to total manufactured exports.

In general, experience shows that different stimuli have played an important role in the development and catch-up of clusters in the region; among these stimuli there is clear positive potential for policies and FDI.

Summary

In recent years clusters have attracted growing attention from national and sub-national governments. A distinctive motivation stems from the notion that clusters tend to provide appropriate means of facilitating knowledge-creation and (collective) learning that enhances information flows and innovation.

In the late-1990s, there was a growing interest in the analysis of clusters in developing countries. Following the successful experience of Italian industrial districts, several scholars have studied clusters in less advanced countries. In those contexts, clusters are conceived mainly as geographically agglomerated firms operating in the same or interlinked industries, and are believed to be a viable way of fostering the development of a small local (informal) industry and eliminating the growth constraints of small circumstances: “...*such clustering opens up efficiency gains which individual firms can rarely attain*” (Schmitz, 1995, p. 530).

FDI has a potential role in fostering the development of clusters and the innovations therein. Increasingly, governments in developing and emerging countries are looking for best-practice policies on investment. FDI can bring both positive and negative effects on host countries, the overall net benefits being a variable that depends on the socioeconomic environment of the recipient country.

In Latin American countries, the capacity of clustered firms to interlink with external sources of knowledge is therefore critical. Hence clusters ought not to be viewed in isolation from the context in which they operate. More specifically, the capacity to *absorb* extra-cluster knowledge and diffuse it at the local level is important for fostering development and improving local performance (Giuliani, 2002).

The next section further examines two issues centered on FDI-SME interactions. The first concerns the channels through which local firms could benefit from the presence of a multinational in the cluster. Thereafter we add empirical evidence and comparative case studies. This last component includes descriptive, policy-oriented explorations.

The Role of Foreign Direct Investment

In general, the capacity to absorb and implement external knowledge is higher for a cluster than for a firm, and once a few firms in a cluster assimilate external knowledge its diffusion within the cluster becomes easier. There is evidence to suggest that even in very underdeveloped countries such as Nigeria or Ghana, international links provide access to information that did not exist in the country clusters (Conley and Udry, 2002).

MNEs usually have the potential to generate the external stimuli necessary to enhance learning and innovation locally (UNCTAD, 2001). The literature (see, for example, Blomstrom and Kokko, 1998; Markusen and Maskus, 2001) points to four main ways through which FDI affects (positively or negatively) local firms: the entry effect, competition, knowledge spillovers, and linkage effects. All these channels are close cousins of trade concepts –another source of external linkages.

Linkage effects and knowledge spillovers are the channels most likely to have long-term implications for productivity growth, since they might improve the firms' ability to innovate. From a microeconomic viewpoint, linkages might be seen as pecuniary externalities (Alfaro and Rodríguez-Clare, 2003), since they take place through market transactions. In fact, FDI basically has two opposite effects on the existing linkage structure. On the one hand, FDI might positively affect a host economy's productivity and wages, generating investment opportunities and production variety in both the upstream (*backward linkages*) and downstream (*forward linkages*) industries. On the other hand, the competitive pressure exerted by FDI on local producers might "crowd out" domestic firms, thus negatively affecting the preexisting structure of linkages (Melitz, *et al*, 2004 ; Markusen and Venables, 1999). Horizontal linkages can also be a form of interaction with local firms – for example, through joint ventures in export and R&D projects, though these are far less common in less developed countries.

In contrast, knowledge spillovers can be classified as technological externalities since they "materialize through non-market interactions that directly affect the production sets of firms or the utilities of individuals and stem from their physical proximity independently from any market interaction"(Ottaviano and Thisse, 2001).⁵ MNEs possess different assets: long-term finance, new technologies, skills, management and market access (UNCTAD, 1999; Lall, 2000). Some scholars point out that backward and forward linkages might be a powerful channel through which FDI knowledge might spill over to host economy (Smarzinska, 2002). The main spillover channels are: imitation, competition, worker turnouts and exports (Görg and Greenaway, 2002).

FDI knowledge spillovers are said to take place when local firms increase their productivity by copying the technology of affiliates of foreign firms. Given the foreign firms' strong interest in protecting their competitive edge and, therefore, minimizing technology transfer, spillovers would most likely be "vertical" (among their clients and suppliers) than "horizontal" (among their competitors) (Kugler, 2000). FDI is also believed to generate positive pecuniary externalities (linkages effects) to local firms by improving the local supply (quality and variety) of intermediate goods (see, for example, Markusen and Venables, 1999). We explore the last two channels in the next section. It worth pointing out, first, that linkages and knowledge spillovers act as complementary inputs in raising productivity and innovation rates. Additionally, in practice it is quite difficult to measure spillovers properly, or to disentangle them from the linkages that might cause them.

Linkages

The work on linkages was pioneered by Hirschman (1958), who suggested that the importance of forward (backward) linkages in an economy could be approximated by the percentage of output sold (input bought) to other industries. In general, distinguishing between backward and forward linkages is simply a matter of perspective from a given point on the value chain.

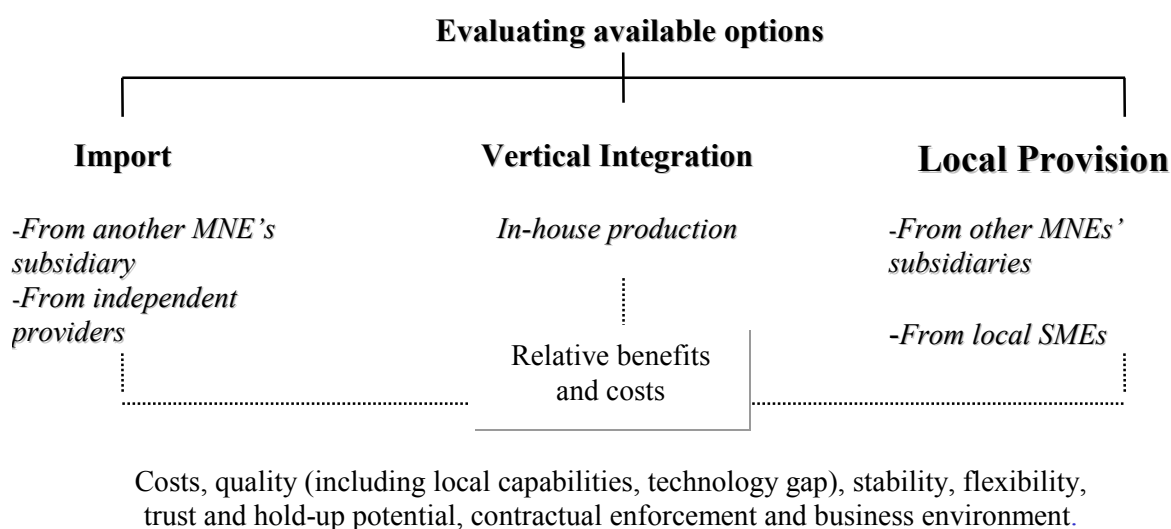
⁵ For example, a positive technological externality arises in a certain location if the inflow of new firms increases the efficiency of local firms because they enhance the productivity of labor through a social learning process.

The most relevant form of linkage for FDI is the backward one – that is, the link between MNEs and local upstream suppliers. To evaluate the net FDI effect on linkages, Rodriguez-Clare (1996) develops an indicator called the *linkage coefficient*: focusing on backward linkages, this measures the ratio of employment created in upstream industries by a firm to the labor hired directly by that firm. A positive linkage effect occurs when multinationals have a higher linkage coefficient than domestic firms. Thus, an increase in the number of multinationals leads to a greater variety of intermediate goods produced locally, and this may increase the productivity of domestic firms and domestic wages. More recently, this indicator has been slightly modified in order to consider the quality of labor hired by a multinational.

Various factors can affect the development of backward linkages in a given economy. In the traditional approach (Hirshman, 1958), the *position in the production chain* has been identified as a key determinant of the occurrence of backward linkages. This issue is also strongly related to studies that analyze the difference in backward linkage potentials across industries (UNCTAD, 2001). According to this approach, it is easier to source externally when the technology is divisible into discrete stages and services than when it is a continuous process. Thus, in the primary sector, the scope for linkages between foreign affiliates and local suppliers is often limited, since production processes tend to be continuous and capital-intensive, while in the manufacturing sector there is a wide range of linkage-intensive activities. Some service industries such as retailing, hotels and construction offer considerable potential for linkages with a physical input supplier (Dunning, 1993).

Dahlman (1979) suggests that three types of transaction costs are attached to links external to a firm: search and information costs, bargain and decision costs, and policing and enforcement costs. Clustering tends to reduce all these costs; however, a number of technological and institutional factors, as well as policies, shape incentives that favor or hamper their development.

Figure 1. MNEs' Outsourcing decisions



Source: Adapted from UNCTAD (2003).

Another variable related to the creation of backward linkages concerns the technology adopted by foreign affiliates and the *technological gap* between foreign firms and local providers. According to some scholars, the complexity of production processes, relative to the skills and capabilities of local producers, strongly affect the propensity of foreign firms to source locally (Rodriguez-Clare, 1996; Glass and Saggi, 1998; Alfaro and Rodriguez-Clare, 2003). In particular, it seems (UNCTAD, 2001) that foreign affiliates making standardized products with mature, non-proprietary technologies tend to prefer externalized, arm's-length procurement. Where products are specialized and technologically advanced, affiliates tend to prefer in-house production or to retain relationships with a few selected suppliers. In addition, MNEs in price-sensitive segments respond more to wage differences than those in markets where innovation and quality are important. On the other hand, Rodriguez-Clare (1996) and others show that positive linkages arise when the good that MNEs produce is more complex.

The overall strategy and the nature of the FDI might also significantly affect the sourcing decisions. When foreign affiliates are market-seeking and mainly oriented towards the domestic market, they seem more disposed to use local suppliers and they purchase more locally (Yoon, 1994; UNCTAD, 2001). In addition, the direct involvement of a local firm in the investment, as in M&A operations and joint ventures with local partners, significantly increases the probability of using local suppliers (Brugnoli, 1999; UNCTAD, 2000b; Zanfei, 2000).

The entry mode is also constrained by local conditions and the overall business environment. For example, MNEs evaluating the potential technological gap between foreign firms and local providers make reference to the development gap between the home and the host countries in terms of technology, structure, reliability, regulation, trust relationships and the flexibility of local suppliers relative to suppliers abroad (Rodriguez-Clare, 1996; Findlay,

1978). As will be discussed later, long-term contractual sustainability in user-producer relations is strongly influenced by the institutional environment, including the workings of property rights, corruption and related regulations.

A related factor that might significantly affect the creation of backward linkages is the degree of *autonomy* of the foreign affiliates from their headquarters and, thus, the overall international organization of the MNE. Foreign affiliates that are part of international production systems are more dependent on global corporate sourcing policies, and therefore are less able to choose suppliers freely. As the core suppliers are expected to be able to manufacture and supply complex systems, to have an independent design capacity and to solve problems jointly with the assembler, it is more difficult for domestic suppliers in host countries to enter the supply chain. Consequently, domestic firms in developing countries provide relatively simple inputs (Yoon, 1994; UNCTAD, 2001).

There are a number of other factors, such as, the size of foreign affiliates' plants, cultural proximity and several dimensions of the business environment framework (local characteristics, hard infrastructure and so on). The business culture of foreign affiliates and local firms is very important; this includes a range of elements, from loose cultural proximity to approaches to procurement (US market relationship *versus* Japanese cooperation, for example).

Many empirical studies have looked for evidence of FDI's positive effects on the host economy through the creation of *linkages*. Often these studies approach the issue by comparing measures of *backward linkages* between domestic firms and foreign affiliates, so as to evaluate the potential effect of FDI.

Not surprisingly, empirical studies point out that foreign affiliates show a significantly higher propensity to import intermediate goods than their local counterparts in Ireland, (McAleese and McDonald, 1978) South Korea (Jo, 1980), India (Kumar, 1990), Hungary (Tóth, 2000) and Nigeria (UNCTAD, 2001). This feature is widespread in LAC. For example, in a sample of 12 foreign-owned firms in Costa Rica "over 95% of physical inputs are supplied 'in house' through their respective MNE networks" (UNCTAD, 2000a). Distinguishing not only between locally produced and imported input, but also between *inputs produced by domestic and foreign firms*, only makes things worse. The relevance of this distinction is strictly related to the increasing agglomerations of foreign firms in some localities (Wheeler and Mody, 1992). In 2001, foreign affiliates in the color television industry in Tijuana, Mexico, sourced 28% of their inputs locally, of which Mexican-owned firms only supplied a very small proportion – around 3% (UNCTAD, 2001).

In some developed host countries, affiliates source between 10% and 20% of their inputs locally (UNCTAD, 2001). The average percentage of local sourcing observed in studies of various regions of the United Kingdom, for instance, ranges from 10% to 25% (UNCTAD, 2001). In Wales, for example, MNE plants with over 100 employees sourced only 14% of inputs on average from within Wales (Phelps, 1997).

In developing countries, counting the number of relationships between foreign affiliates and domestic suppliers (mainly considering monetary and contractual transactions) has been the most common indicator of linkages. It was used, for instance, to evaluate Singapore's Local

Industry Upgrading Program (LIUP)⁶ (Mathews, 1999) and the Subcontractors' Target Program (by monitoring the share of domestic firms in the number of suppliers to affiliates). It has also been used in Malaysia and Costa Rica to estimate linkages between local suppliers and free zone firms, and many others. This indicator shows the importance of local sourcing but does not indicate the role of indigenous firms in such sourcing.

As expected, the share of locally-sourced inputs by foreign affiliates varies by industries and regions. Naturally, it is easier to source externally when the technology is divisible into discrete stages and services than when it is a continuous process. In the primary sector, the scope for linkages between foreign affiliates and local suppliers is often limited. As regards regions, as mentioned earlier, local environments and the clustering of specialized firms can provide the proper conditions for outsourcing. Generally, it takes time for MNEs to become embedded, to become familiar with local conditions, and to "trust" potential local suppliers. We will return to this point in section 3.3 and provide some examples.

Spillover Effect

Knowledge spillovers may be related to several areas, including technology, management skills, business practice, know-how, information, and enhanced social and environmental standards. MNEs can generate spillovers by transferring technology directly or indirectly.

The transfer of product technology may occur through the provision of proprietary product know-how, the transfer of product designs and technical specifications (Wong, 1992; Ismail, 1999), technical consultations with suppliers (to help them master new technologies), feedback on product performance (to help suppliers improve performance), and collaboration on R&D by involving local universities or research institutes.

The transfer of process technology may occur through the provision of machinery and equipment to suppliers; technical support on production planning, quality management, inspection and testing; visits to supplier facilities to advise on layout, operations and quality; the formation of "cooperation clubs" for interacting with or among suppliers on technical issues (quality control presentations, value analysis and cost reduction activities); assistance to employees to set up their own firms; organizational and managerial know-how (assistance with inventory management and the use of just-in-time and other systems, assistance in implementing quality assurance systems, including ISO certification); the introduction of new practices (management, financial, marketing) and so on.

The types of training through which knowledge pass can range from training courses in affiliates for suppliers' personnel, by offering access to internal training programs in affiliates or abroad, or sending teams of experts to suppliers to provide in-plan training, to promoting

⁶ Singapore's Economic Development Board added a linkage programme to its FDI targeting strategy in 1986, when it established the Local Industry Upgrading Programme (LIUP) to upgrade, strengthen and expand the pool of local suppliers to foreign affiliates by enhancing their efficiency, reliability and international competitiveness.

cooperative learning among suppliers. Information-sharing is fundamental to accelerating innovation, rapid market changes and intensifying competition. Some modes of sharing information between local suppliers and foreign affiliates are: informal exchanges of information on the business plan and future requirements, the provision of annual purchase orders and market information, and the promotion of initiatives such as business associations for suppliers.

There are different channels for disseminating the spillover effect so as to spread knowledge from the multinational to the local firms. Imitation is the classic transmission mechanism for new products and processes. One common way to imitate is so-called reverse engineering, which differs from replication in that it might completely destroy MNEs' rents. There may be the so-called demonstration effect if there are arm's-length relationships between the MNEs and the domestic firms learn superior production technologies from MNEs (Das, 1987; Wang and Blomström, 1992).

Second, we consider the *acquisition of human capital* and worker turnover. MNEs tend to demand relatively skilled labor in the host country, and to invest in training. The movement of labor from MNEs to existing firms or the start-up of new firms can generate outflows of specific knowledge, and the localization of MNEs in a particular area generates new training opportunities for local workers and can be spread through two mechanisms: a direct spillover to complementary workers, and the fact that workers who move may carry with them knowledge of new technology or new management (Motta *et al*, 1999; Blomstrom and Kokko, 1998).

Third, we consider the competition effect that occurs when FDI pushes indigenous firms to use existing technology more efficiently and increases the speed of adoption/ imitation of new technology (Aitken and Harrison, 1999). Further, competition between domestic firms and MNEs in both the home and foreign markets can induce domestic firms to improve their export performance. On the other hand, when the competition is too strong, this may bring about the expulsion of many industries from the market, thus causing unemployment (Rodriguez Clare, 1996).

A fourth channel is cooperation. This might be between foreign firms and their supplier – that is, through backward linkages (Matoushek 1999); it might be between foreign firms and customers – that is, through forward linkages; and it might be between foreign firms and partners (joint R&D, joint ventures and so on).

Some authors (Glass and Saggi, 1998; Kokko, 1994) point out that the adoption and/or imitation of new knowledge and technology depends on different factors. First, it depends on the difference between the two countries in terms of development, technology (technological gap), and the complexity of the technology transferred that can influence the absorptive capacity of the host firms (Findlay, 1978; Glass and Saggi, 1998).

The extent of technology transfer also depends on the size of affiliates and their export-orientation, the host economy and development level of local firms. If potential suppliers lack the minimum base of skills and know-how needed to absorb technologies and management practices, and if support institutions are lacking or weak, MNEs may find it too expensive or risky to try to raise them to the standards needed. Consequently, when an MNE establishes

substantial linkages in protected industries in which there is an inadequate incentive to invest in technological capabilities, these are clearly negative linkages (UNCTAD, 2001).

The adoption or imitation of new knowledge and technology depends on the availability of investment opportunities in the host country, as well as on that country's dynamism. Speed of adoption is also a function of contagion, or the extent to which the activities of the foreign firms pervade the local economy. On the whole, the ability of foreign affiliates' linkages to contribute to domestic supplier development depends on the market in which foreign affiliates operate, the incentives that they have to set up internationally competitive operations, and the capabilities of domestic firms.

Finally, the extent of technology transfer appears to be greater the more the affiliates are committed to long-term relationships with suppliers, the greater the technical complementarities between them, and the more specialized the inputs.

Most developing countries see FDI as a vital resource for development. The economic effects of FDI, how, are very difficult, if not impossible, to measure accurately. MNEs represent a complex package of attributes that vary over time and from one host country to another. They are difficult to separate and quantify.

Many studies, such as that by Harris and Robinson (2001 for the United Kingdom) examine the evidence of spillovers by using several measurements of spillovers: foreign presence in the sector (the proportion of capital in the industry owned by foreign firms), foreign presence in the region and in the upstream and downstream industries (measurement of intra industry spillovers). According to Harris and Robinson, inter-industry spillovers are more prevalent, and negative spillover effects can be generated by competition, especially in the short run, while some firms may increase in efficiency because of increased competition in the short and the long term.

In developing countries, a number of studies on the electrical and electronics industries have focused on the transfer of technology by foreign affiliates to their suppliers (Wong, 1992 for Singapore). In many cases it is found that significant technology transfer mainly occurs through learning opportunities, provided by exposure to foreign affiliates, through testing and diagnostic feedback. Direct transfer of technology appears to be of modest importance, such as technical support (advice or training in quality management systems and other good manufacturing practices). The types of technologies transferred are often related to processes, especially in quality-control techniques.

The empirical evidence seems to confirm the inverse relationship between the technological gap and spillovers (Kokko, 1994 for Mexico), and the direct relationship between spillovers and the absorptive capacity of the host firms (Kokko, Tansini and Zejan, 1996 for Uruguay). There is only evidence for positive spillovers from foreign presence to domestic exporters, but not to non-exporters, which may be interpreted as evidence that absorptive capacity and orientation matters: exporting firms are more exposed to international competition; they are therefore likely to use higher technologies and are more likely to benefit from positive spillovers than non-exporters.

Several empirical studies find a positive correlation between the presence of the MNEs and the acquisition of human capital – that is, the training or upgrading of workers and the transfer of knowledge that makes possible the generation of new firms via spin-off mechanisms (ILO, 1981; Chen, 1983; Djankov and Hoekman, 1999). These studies suggest that the impact of linkages on training tends to be higher the longer a relationship lasts and the smaller the size of a supplier firm relative to an affiliate (PACEC, 1995). In some cases, MNEs also extend their training assistance to potential suppliers (Saint Gobain, 2001).

Many studies provide empirical evidence of negative (Aitken et al, 1996 for Mexico and Venezuela), ambiguous (Girma et al, 2001 for the United Kingdom) and positive (Sjohlm and Lipsey, 1999 for Indonesia) correlation between the entry of an MNE and positive wages spillovers.

From different cross-sectional studies (Caves, 1974 for Australia; Globerman, 1979 for Canada; Blomstrom and Kokko, 1994 for Mexico; and Blomstrom and Sjohlm, 1999 for Indonesia), there appears to be a positive correlation between the arrival of MNEs and an increase in the host country productivity, which may be considered a consequence of knowledge spillovers and thus a proxy of them.

Most panel studies, however, (Haddad and Harrison, 1993 for Morocco; Aitken and Harrison, 1999 for Venezuela; Kathuria, 2000 for India; Barrios et al, 2001 for Spain; Girma, 2002 for the United Kingdom) find a negative or ambiguous correlation between FDI and an increase in the assets, sales and output of domestic firms. In the same line, other panel studies – Knell and Rojec (2001); Djankov and Hoekman (2000); Konings (2001); and Zukowska-Gagelmann (2002) – find some evidence of negative effects of the presence of MNEs in four countries of Eastern and Central Europe (CEECs): the Czech Republic, Bulgaria, Poland and Romania.

In general, cross-sectional studies report higher coefficients of the effects of foreign presence than panel data studies, and the definition of foreign presence variable included in the studies seem to affect the results obtained. It appears that the results of productivity spillovers studies are not affected by whether the studies use sector or firm data, but it is important whether the data used are cross-sectional or panel data: cross-sectional data may overstate the spillover effect of MNEs on domestic firms because they do not allow for other time-invariant firm- or sector-specific effects. Panel data, by contrast, allow the researcher to control for such specific factors.

The idea that knowledge spillovers may be facilitated by geographical proximity is not confirmed completely (Sjohlm, 1999b for Indonesia; Aitken and Harrison, 1999 for Venezuela). Although some authors (Girma and Wakelin, 2000) find evidence of positive spillovers from FDI located in the same region as domestic firms, they are only significant for firms that have a low technological gap relative to MNEs.

Finally, many analyses's (EBRD, 2000; Lankes and Stern, 1998; Meyer and Pind, 1999; Resmini, 2000) confirm that FDI is strongly influenced by the general development of a country or region, and the transformation process is really the driving force behind the development of FDI and its potential for generating knowledge spillovers.

MNEs and Clusters in Latin America and the Caribbean

The available evidence suggests that the success of the MNEs in the region depends to a large extent on the degree of embeddedness in the local relational fabric. Embeddedness and, in turn, the local acquisition of new knowledge cannot take place unless several requirements are met, including geographical proximity, appropriate soft and hard infrastructure, entrepreneurial activities in the private and public sector, and the like. Additionally, the entry mode and location of the MNE in the value chain are crucial.

Birkinshaw and Hood (2000) show that foreign-owned subsidiaries only contribute to cluster dynamism if they are embedded in the local economy and are autonomous enough to interact freely with entities in the cluster. In this context, further obstacles appear at least more markedly in developing countries. *Local absorptive capacity* is generally a key factor, which speeds up the rate of technology externality from multinationals. Although relations are not linear, lower limits are generally binding in LAC – that is, there appears to be a minimum absorptive capacity threshold below which the magnitudes of productivity spillovers are non-existent or even negative. *Wide technological gaps* between local and foreign firms lessen the attractiveness of outsourcing, subcontracting, and other forms of interconnections. Another important gap concerns human capital, which can make the knowledge transfer itself difficult or impossible. Both gaps are also important for the development of other more indirect forms of knowledge transmissions such as *demonstration effects* and *workers turnover*.

Technology spillovers and linkages vary with the motivation of MNEs when they enter a region (Cantwell and Narula, 2001). Sometimes, however, there is also a self-selection problem underlying motivations and the extent to which linkages are developed. In other words, MNEs' entry modes vary according to the recipient's business environment, since they might internalize both technological gaps and overall governance structures before considering entry and entry mode decisions.

Evidence based on LAC clusters supports the idea that the local effects of FDI vary according to the foregoing elements. In Chile, the salmon cluster in the Tenth (X) Region offers a good example of a dynamic global cluster with locally embedded MNEs. Montero (2003) shows how the interactions of MNEs and local enterprises, both vertically and horizontally, have proven crucial to the cluster's resumption of a dynamic and innovative path by incorporating new stages of production in the value chain and reaching foreign markets. Local capacity to associate has also played an important role in organizing actions and public support. The Association of Salmon Producers has played a leading role in the spread of technological know-how and international quality standards, as well as in defending local producers' interests generally in cooperation with public officials (for example, the charge of dumping made by producers from Ireland and Scotland before the European Commission in the context of the free trade agreement negotiations in June 2002).

In terms of the nature of public support, three aspects merit attention. First, overall and sectoral regulations have provided a stable and appropriate framework that has not hampered the development of activities in the sector. Second, a number of public promotion institutes and funds helped to stimulate innovation, cooperation among firms and between firms and universities, and the development of an appropriate infrastructure. Finally, tax credits for

worker training provides additional flexibility and capacities to the existing pool of specialized labor.

In terms of the industry structure, there has been an increased concentration in overall production, along with the share of foreign ownership. The concentration has taken place both horizontally and vertically – through M&As. These processes have impinged negatively on local SMEs, which have come to lag behind medium and large enterprises in terms of innovative activities and overall performance. Naturally, cooperation has weakened not only horizontally but also vertically, given the expansion of hierarchical forms of governance.

Again in Chile, in the wine cluster, the story of innovation and learning in the Colchagua Valley has common and distinguishing features (Giuliani, 2003). The evidence suggests again that the interaction of innovating firms, support policies and institutions (especially universities) explains the process of accumulation of knowledge and upgrading. In particular, public policies and institutions, such as universities and technical institutes, have come to play a prominent role, together with external sources of knowledge in the form of foreign market requirements and imports of new technology. Although there is no explicit treatment, MNEs do exert influence but it seems to be less crucial for local performance. Its dynamics are mainly supported by natural conditions, collective efficiency and supporting policies and institutions, which spontaneously comprise an attractive package for foreign investors.

In contrast, the setting up of Fiat's subsidiary in Brazil was exclusively the result of the state government's incentives. Thus the policies and MNEs played a central role from the outset, since the region had no previous experience of producing vehicles and auto parts, and no entrepreneurial culture in the automotive industry. Indeed, the state government incentives were high enough to offset the high start-up costs in the form of investments in physical assets and skills, as well as to offset the centripetal forces of the São Paulo metropolitan area, where the Brazilian auto industry was located. According to Lemos et al (1999), a few components suppliers have been established in the Minas Gerais since the 1970s; the establishment of an auto industry cluster in the state began in 1989, when Fiat launched the J-project. Again, the Minas Gerais state government was responsible for the provision of physical infrastructure and credit incentives. As a result, the cluster developed in a hub-spoke manner with a vertical supply chain. Fiat gradually increased its local R&D investments from the late-1980s to the mid-1990s. The most impressive achievement was that a model of car (the Palio) was totally designed and developed by local R&D teams (Cassiolato et al, 2000).

This situation changed completely as a result of the liberalization of the mid-1990s. First, one of the most significant effects of this process on the Brazilian auto parts sector was the increase of foreign firms' share of the market. The largest national firms in auto parts almost disappeared during this process, as did R&D activities, which has been transferred back to R&D departments in their headquarters. On the basis of the previous discussion, it can be said that the local vertical supply chain now has weak mechanisms for the transfer of technology among its participants, either vertically or horizontally. Moreover, innovative capability is limited, since local in-house R&D is of little significance in the development and introduction of new products. In general, the subsidiaries of both producers and suppliers receive the new design with all the specifications from their respective headquarters, and their role is simply to manufacture them in the host country according to the specification.

More generally, in Brazil the relationships developed have been mainly between users and producers, while horizontal cooperation is scarce. Examples include the footwear cluster in Sinos Valley (Schmitz, 1999; Vargas, 2001), and the high-tech and software cluster of Joinville, Brazil (Campos, Nicolau and Carios, 2000).

Cassiolo et al (2001) analyze the changes in the technological capabilities of clusters in Mercosur during the recent phase of liberalization. From a variety of clusters (especially in tobacco, auto, telecoms and other industries), they argue that in most cases the MNEs' subsidiaries have increased the import content of their products, and most important aspects of the technological learning process occur outside the local chain. Moreover, MNE subsidiaries significantly reduced their technological activities in the clusters during the 1990s and, generally, innovation- and even production-related efforts within the local clusters are on the decline. According to the authors, this has adversely affected the firms' capabilities and collective efficiency. Existing production and innovation networks are being dismantled and new foreign investments have limited links with local R&D infrastructure.

Schmitz's (1999) survey also highlights the possible conflicts between local and international cooperation. An ambitious program of multilateral (essentially horizontal) cooperation was designed in the Sinos Valley to move up the value chain. This program failed because some leading local enterprises put their alliance with a major global buyer above cooperation with local manufacturers. The state was unable to mediate and resolve the conflicts between business associations and entrepreneurial alliances. Interestingly, many of these leading and very large enterprises have integrated vertically over the years, reducing their economic interaction with the cluster. High levels of vertical integration entailed close collaboration only among themselves, and complete reliance on one or few foreign buyers gave rise to a situation wherein these politically influential buyers held up collective action for upgrading.

The situation in the Sinos Valley means that "external networks/linkages" facilitate knowledge flows to a few entities, and that conflicts between "external" and "internal" linkages may arise, constraining cooperation at the local level as a reaction to the changing economic environment. This in turn may mean that less knowledge is generated and spread within the cluster. Additionally, the way in which these conflicts are mediated is important for the final outcome. In the case of the Sinos Valley, local officials' lack of responsiveness to private demands for mediation, conflict resolution and coordination have proven costly.

Even within a country and within the same sector, industry performance can vary. The Mexican software clusters depend on the good performance of small enterprises agglomerated in a few localities. Some 92% of the firms involved in the software clusters are micro enterprises, 7% are small firms, 0.88% are medium-sized companies and only 0.20% are large enterprises (Pietrobelli and Rabellotti, 2004). Moreover, in some cases growth has also been sustained by the strong participation of large MNEs (Microsoft, IBM, Oracle, SAP) and mainly by skilled worker turnover from locally-based, high-tech MNEs. The biggest clusters are in Mexico City, Monterrey, Nuevo Leon, Guadalajara and Aguascalientes.

These Mexican clusters have followed different growth paths, but it is clear that the demand for software by the enterprises has been the factor that hastened the process. The presence of local universities and research centers providing education and training in relevant disciplines

is an important condition for the development of the clusters. Moreover, the proximity of firms is important in facilitating information exchange. Informal learning and the acquisition of know-how require the face-to-face contacts that occur through social, professional or business situations. The exchange of information is also facilitated by the common social and cultural background of many entrepreneurs, who sometimes share past work experience in large MNEs such as IBM or HP in Guadalajara, or graduated from the same local university.

In all these clusters horizontal cooperation between firms is quite common, consisting mainly of agreements on the integration of different types of software. To be able to offer their customers full systems meeting all their needs, many firms reached agreements with other firms to complement their software products. In the software clusters, the relationship with clients is mainly of a market/network type. There are only a very few cases in Mexico of local enterprises integrated in quasi-hierarchical global value chains. In all our software clusters, horizontal joint action through institutions is the most widespread form of cooperation. In the Mexican clusters of the Federal District, Guadalajara and Aguascalientes, there are very active business associations promoting various initiatives such as training courses, joint promotion and joint catalogues of the products and human resources locally available (the latter is an initiative of the Aguascalientes Business Association). Finally, in all the clusters analyzed there is very strong collaboration between firms (through their business associations) and local universities. In many cases, as in Aguascalientes, the collaboration is bringing about a curricular reorganization that seeks to meet the needs of local firms more effectively.

In sum, there is a medium to high degree of collective efficiency in software clusters. There appears to be an unexpectedly high degree of joint action, particularly in view of the fact that most of these clusters are quite recent, and that institutions and associations normally take time to become effective.

The foregoing discussion, based on selected case studies in the region, raises several important points. First, the effects of MNEs on local firms are quite variable. The final outcome depends on a number of factors, such as local collective efficiency (external economies and joint action), the entry mode of MNEs and their position in the value chain, support institutions and policies. It is true that, in general, clusters in the region are weak in terms of joint actions and the creation of linkages, the proper local conditions and a supportive environment can offer the right incentives to change this pattern.

Increased competitive pressures seem to increase vertical cooperation among cluster firms to upgrade technological capabilities. *Bilateral, horizontal* cooperation did not increase to any significant degree. Apparently, high competitive pressures within the cluster preclude such flows of knowledge among competitors. Interestingly, however, there is an increase in the horizontal exchange of information and experiences. *Multilateral, horizontal* cooperation has increased in some clusters with the help of local associations, which play a critical role in channeling external know-how to local firms. Such cooperation has been particularly important in responding to significantly higher quality demands.

Importantly, not all firms respond similarly to changes in policies and the environment. Larger enterprises and those that face a demanding market seem to strive harder for mechanisms (like cooperation) to upgrade technological capabilities. These firms may also be better placed to take advantage of the opportunities.

Efficient clusters and RIS, even weak ones, make a difference, in the sense that they are prone to develop better environments for business development, are more capable of closing technological gaps through learning and imitation, and tend to be aware of the potential of joint action. These cases confirm the idea that the level of benefits to the local economy stemming from FDI depends on the degree of assimilation in the local milieu.

A similar argument applies to policy design and implementation. Close interactions between firms, associations, policy-oriented institutes, universities and public officials tend to shape policies that match needs and capabilities. In the following section we concentrate in the policy issue.

The Role of Public Policy and Governance

In a recent survey of economic policies in the region, Melo (2001) documents two phases in the reforms that have followed the import-substitution era. In the first phase (from roughly the late-1980s to the mid-1990s) LAC countries sought to implement basic structural reforms related to export trade, privatization, domestic market liberalization, and regulation. At the same time, they curtailed explicit (sectorially targeted) industrial policies. The second phase, which continues today and is still without conclusive results, reflects a more nuanced view of government intervention. Pragmatic approaches in Chile and Brazil provide clear examples that some countries and regions are recognizing that global competitiveness ultimately entails continuous learning and innovation, processes on which the public sector can exert much influence through its role as catalyst, coordinator and supporter.

An important issue is what clusters mean for the design and implementation of innovation policy, particularly in lagging regions (even in developed countries) where technology-intensive activity and basic knowledge infrastructure are limited. Innovation policy comprises strategies to build basic and applied research capabilities, raise the rate of technology adoption and product innovation among home country firms, and generally increase the number of higher wage, knowledge- and technology-intensive industries in a country or region.

A major problem with efforts to describe “cluster policy” is that many kinds of development interventions target specific sectors, regions, or both, and thus could be interpreted as cluster-oriented strategies. Business incubators, industrial parks, targeted recruitment, enterprise zones, foreign trade zones and a large variety of other common economic development interventions could similarly be assessed as cluster policy if they aim to foster growth in specific industries or regions.

Attracting FDI can be an important element of a regional development strategy, or even of a cluster policy, particularly when FDI is seen strategically as a complement to local activities (Ögütçü 2002). Policies designed to attract FDI to the host countries, however, do not guarantee that the benefits derived from MNEs will be maximize. Instead, general policies aimed at enhancing the fundamentals so as to absorb spillovers are more important than specific policies. Education and training policies are crucial to improving the absorptive capacity of the host country and enhancing the level of technology that can be the key to

facilitating spillovers. In addition, cost-saving is not always a high priority for foreign investors; the general elements of the business environment are more important, according to many business surveys. Investors care about securing access to customers, a stable economic, regulatory and political environment (including stable exchange rates, the stability and transparency of taxes and subsidies, and good governance), non-discrimination and so on.

The important point here is that what matters in terms of FDI-related policies is not only attraction but embeddedness. Hence local conditions and the overall business environment become a central focus.

Some Aspects of FDI-related Policies

Governments and research centers are increasingly aware of this in developed and in developing and emerging countries (OECD, 2003). Looking for best-practice policies towards inward FDI is now a permanent focus. The World Investment Report (UNCTAD, 2001, 2004) offers a typology of the stages of FDI-related policies: the first refers to simple market liberalization and privatization; the second to country marketing and fiscal incentives; and the third, which is more sophisticated, refers to strategic selection and targeting, and the retention and embeddedness of foreign investments.

Given recent changes in world FDI movements (in terms cycles, scope and structure, modes of participation and composition), as well as the increasing availability of documented experiences and outcomes, practitioners and applied researchers have been considering the need to switch from mere subsidies to regional competitiveness-enhancing policies, and from a focus on the traditional sector to *place-based policies* complemented by multi-sectoral actions. This implies a need for a partnership among the different levels of government and civil society when possible (Ogutçu, 2002; UNCTAD, 2004).

Trade-specific policies and trade related investment measures (TRIMs) such as local content requirements, minimum export requirements, local hiring targets, and R&D and technology transfer requirements, are often used as a device to recapture some of the rents that accrue to MNEs. At least theoretically, it is true though that some of these policies are equivalent to an input tariff and in general are *second best*; empirically there is only little and ambiguous evidence about the effectiveness of the TRIMs measures to expand linkages and generate spillovers (Blostron *et al*, 1994).

A specific type of subsidy that host governments may give to MNEs can be linked to technology upgrading and the training of local suppliers, even though such incentives may currently be open to challenge (“actionable”) under WTO rules. Moreover, differential fiscal treatments might have undesired repercussions – politically, administratively and in terms of horizontal coordination and competition. These shortcomings are reflected in the recent trend to avoid differential fiscal treatments as much as possible. Instead, and consistent with non-discrimination clauses, MNEs can receive general or sectoral fiscal incentives on the same basis as locals. Some policies already in place in Chile, on training, R&D tax credits, joint actions and the like, have proven effective.

Beyer (2002) shows that there is no positive correlation between tax incentives and either the levels of FDI or the emergence of knowledge spillovers from multinationals. The significance of factors such as privatization policies, the general tax level, the overall environment, on the other hand, reveals that the level of FDI (and thus possible emerging spillovers) can be influenced indirectly. In particular, in this fiscal context, comparatively low levels of corporate and income tax had a more positive effect on FDI than specific tax incentives for MNEs. Moreover, the stability of the fiscal stance might signal a good environment and induce a long-term perspective, while short-term incentives can have the opposite effect.⁷

In general, therefore, the benefits of FDI tend to be maximized when foreign investors operate on an even and competitive playing field, ; a coherent, sustainable and transparent policy framework across different agencies and levels of government is central.

In the rest of this final section, we review some experiences of this approach to FDI policies and then link it to broader cluster and regional policies. To identify a meaningful framework for LAC countries, we explore the role of recent changes in governance structures and the business environment in the region.

The development of linkages and embeddedness: experiences and guidelines

As mentioned earlier, part of the difficulty for less developed economies is a lack of interdependence and linkages. Hence policy suggestions point to the advisability of governments helping industries involved in intermediate activities, since these have strong potential for creating both backward and forward linkages. In general, the goal of policy interventions is to stimulate linkages that raise the efficiency of production and contribute to the spread of knowledge and skills from MNEs to local firms.

Policies geared to encouraging linkages in general, regardless of the industries involved, seek to make the regulatory framework more conducive to linkage formation. As the linkage process is affected by a host country's overall policy environment, these policies should influence the availability of human resources, infrastructure, the degree of political and macroeconomic stability, the availability of local suppliers with competitive costs and quality, the technological and managerial capabilities of domestic firms, the absorptive capacity of a host country and its attitude towards continuous improvement (Belderbos *et al*, 2001; Altenburg, 2000). The process of linkage formation is also affected by the availability of supporting meso-institutions, such as public and private providers of financial, technological and training support.

More specifically, the effects of several country programs created and managed to promote linkages appear to be positive in various countries. Examples include the National Linkage Program in Ireland; the "Meet the Buyer Program" in the Czech Republic (meetings between foreign investors and potential Czech suppliers); Thailand's Unit for Industrial Linkage

⁷ For example, anticipating future changes in fiscal regimes, regulatory regimes and other mechanisms of expropriation.

Development (BUILD), which organizes visits to assembly plants by potential suppliers; and the fairs in Mexico's state of Baja California Norte. Some studies show that many countries, such as South Korea and Ireland, encourage big companies to help organize SME supplier associations and to participate in their training and other programs. The Welsh Development Agency's "Source Wales" Program also uses a supplier association as a forum for the exchange of skills between clients and suppliers, with the presence of major customers or consultants (Morgan, 1997). The experience of some programs (Wales, Singapore and Penang in Malaysia) suggests that the returns to well-conceived initiatives to promote learning and skills development among local suppliers can be high. Among some cluster-oriented initiatives, there are the Global Supplier Program of Penang State in Malaysia, Mexico's national and local level programs, the high-technology linkage program in Costa Rica, and the regional programs in the United Kingdom: the Source Wales program and several initiatives under the Scottish Enterprise Network.

In general, *trade policies* include, first, the *high import tariffs* required by foreign affiliates. In theory these could lead to an increase in the local sourcing of needed inputs, by affecting their relative costs from different sources, but they may generate inefficiencies and they have been used discontinuously. A second consists of the *rules of origin* that determine the national origin of a product for the purposes of granting preferential treatment. They are based on the level of domestic value-added or local content and are implemented as part of preferential trade arrangements. They may have effects on promoting linkages if the preferential margin is high and the administrative costs associated with origin compliance are low. In other words, they can lead to a relocation of activities in host countries but do not necessarily lead to more or deeper linkages with local firms in those countries. Where local supply capacity is weak, however, foreign affiliates are likely to meet local content provisions contained in rules of origin either through internalized production or host country-based foreign-owned suppliers, rather than domestic suppliers.⁸ Some rules that seem to be quite effective are the *joint venture requirements* that can lead to higher levels of local sourcing, reflecting the greater familiarity of joint venture partners with local suppliers (Moran, 1998; Driffield and Mohd Noor, 1999).

As to *export performance requirements*, it can be said that in some cases they lead to a substantial increase in better quality linkages – for example, when automotive and electronics firms incorporated production facilities in developing countries and economies in transition (Moran, 1998).⁹

Some countries provide fiscal or financial incentives to firms to *promote training and educational assistance* for suppliers' employees by buyer firms, domestic or foreign, through the provision of fiscal or financial incentives. South Korea gives tax incentives (a tax credit of up to 10%) to large firms to compensate partly for expenditures on human resource development in SMEs. Some countries provide financial support to firms, including suppliers to affiliates that send workers for training. An example is the Skills Development Fund of

⁸ Further, local content requirements, together with other trade-related investment measures (TRIMs) are now being discouraged as a result of changes in host countries' economic strategies and of international commitments. The Agreement on Subsidies forbids import-substitution subsidies

⁹ Joint venture and export performance requirements are not prohibited by the TRIMs Agreement, but some inter-regional, regional and bilateral agreements prohibit, condition or discourage them

Singapore's Productivity and Standards Board, which offers financial assistance to companies for staff training. Thailand grants a 150% tax deduction for training expenses recognized by the Ministry of Labor (Brimble, 2000).

In Malaysia, large companies participating in an Industrial Linkage Program (ILP) can claim costs incurred for the training of employees, product development, testing and factory auditing as a deduction in the calculation of income tax. Linkage creation is also used as one of the criteria for granting "pioneer" status to foreign investors. This has happened in Malaysia, where the government accorded pioneer status to select local SMEs. This entitled them to generous tax rebates, thereby strengthening their investment base to their domestic suppliers. "Pioneer" status usually entitles firms to various types of fiscal or financial incentives, or to other benefits.

Governments can also help build the conditions for sustainable interactions and balance the negotiating positions of buyers and suppliers by introducing guidelines and model contracts, by facilitating MNE-supplier meetings and negotiations, providing advice on subcontracting deals, sponsoring fairs, exhibitions, missions and conferences, by monitoring linkages and acting as troubleshooters when problems arise (Meyanathan, 1994).¹⁰ Institutions such as chambers of commerce or industry associations can be valuable sources of information for foreign affiliates that are newcomers in these countries. Matchmaking activities, however, make sense only when there are viable suppliers. Such activities have to be complemented by efforts to enhance the competence and capabilities of domestic suppliers, and should be based on close collaboration with the private sector.

Focusing on relations between MNEs and SMEs, Huggins (1998) and Morgan (1997) observe that it is easier and more effective to develop existing *networks* (mainly of potential or actual suppliers), particularly those already driven by local firms, development agencies and other institutions (for example, the Welsh Development Agency and the Regional Audit of Industry in the United Kingdom). Moreover, as linkages between MNEs and local SMEs or general firms are likely to be more established when the latter offer services (catering, for instance) or niche products (such as components, packaging systems and so on) some scholars (Crone and Watts, 2000) suggest that a policy might well be targeted to develop such capabilities in local SMEs.

Borges Lemos *et al* (2000) among others, suggest the importance of *financial measures*. These can include tax credits and other fiscal benefits to firms providing long-term funds to suppliers, co-financing supplier development programs with the private sector, providing finance to local firms to improve their capacities or transfer funds from foreign affiliates to local suppliers (Altenburg, 2000).

Finally, selective attraction based on local value chain weaknesses and linkages potential is a matter of interest. In his work on the linkages between MNEs and domestic firms in Taiwan, Schive (1990) notes the effectiveness of the Taiwanese government in attracting FDI to

¹⁰ In South Korea, the 1984 Act on Fair Transactions and Subcontracting gave the government supervisory authority to monitor buyer-supplier transactions (Meyanathan, 1994).

industries with strong backward linkages potentials. The results of this policy were highly positive, with the location of MNEs characterized by a high level of input per unit of output and a positive effect on the linkage structure.

In Latin America, an important but often neglected aspect of industrial policies is *program evaluation*. Assessment of the effectiveness of government linkage programs requires that some points be considered. First, the effectiveness of a linkage program is largely context-specific, dependent on the economic environment and institutional setting (for example, if local firms have well-functioning linkages among themselves, if there are effective domestic and international chambers of commerce in the host country or if the government is strongly involved and so on). Second, a first part of the assessment should be conducted on the basis of the contribution to an increased number of linkages, higher productivity, more local value added, and/or improved capabilities and productivity among local suppliers.

The assessment should cover the impact on linkages measured as the extent of linkages (Crone, 2001; Supapol, 1995). The simplest indicator of the extent of linkages is the number of linkages. The share of locally-sourced inputs is part of the “retained value” measure, which seeks to gauge the embeddedness of foreign affiliates in the local economy and the host economies’ share of value-added. “Retained value” is the sum of the local wages paid by a foreign affiliate, the inputs sourced locally, the profits accruing to local shareholders, and local taxes paid. A variation of this is the share of value added by local suppliers in total value added by foreign affiliates. The local content of foreign affiliate production (the inverse of the ratio of imports to production) is sometimes used to capture the degree to which affiliates link with the host economy.¹¹

General rules are of limited use and, even *in the abstract*, laudable efforts can fail if a thorough local assessment is not undertaken. For example, labor training and other endeavors emerging from public-private partnerships can have ambiguous effects, as Tendler (2002) points out in the case of northeast Brazil. In that case, a governmental focus on few large firms in building training and research networks, as well as on technical assistance, can have undesired effects if policies do not control for the position in the value change in which firms are operating. Furthermore, the author shows that this approach can work in a perverse way, excluding the surrounding world of local firms from public-private relations and R&D networks.

Summarizing, well-functioning linkage programs tend to focus on local conditions, treating MNEs as part of them, and integrating these programs into a wider strategy of enterprise development. Desirable features include coordination and a clear delineation of the lines of responsibility among actors, coherent strategies and goals, effective public-private partnerships, and readily available networks for information exchange and the spread of knowledge.

¹¹ Local content does not, however, capture linkages properly since it includes affiliates’ in-house production: indicators that allow this distinction are therefore preferable. It is also desirable to measure linkages with locally- owned firms rather than with affiliates of foreign suppliers. Such data, however, are often difficult to collect.

Naturally, identification of a more meaningful framework for Latin American countries requires a number of caveats. The first is that most countries tend to accept whatever is available, given their capital, external funding and employment needs. In contrast, *selection policies* gain relevance only as a careful and proactive approach, with a focus on local, endogenous forces that already internalize second-stage embeddedness policies. The second caveat is that a coherent policy framework in this context is clearly demanding in terms of expertise and resources, both of which are scarce in most Latin American countries, particularly at the sub-national level.

Recent trends in Latin America

As in Latin America, the use of cluster concepts in economic policy-making in the United States and Europe reflects local economic conditions, as well as views of appropriate industrial policy. In the United States, since there is no explicit domestic economic development strategy at the federal level, industry cluster strategies have chiefly been the concern of states, regions, and metropolitan areas. In Europe, concerns about historically rooted regional imbalances have reached the Union level, though they are still present at the regional level. Many studies (among them Porter, 1998; OECD, 2001, 2004) explore these experiences in depth. As a way of limiting the scope of the analysis, we focus more on qualitative aspects of Latin American experiences.

Some governments in Latin America are attempting to identify the right balance between the implementation of free market structural policy and activist (often local and regional) strategies designed to promote the competitiveness of strategic sectors and potential strengths in science and innovation. The search for interventions is grounded on pragmatic views that are constrained (explicitly or implicitly) by the expected approval of multinational lending institutions, key trading partners such as the United States and Canada, and international investors (Feser, 2002). Cluster promotion efforts have attained a level of legitimacy as a market-friendly industrial policy that other approaches (labeled differently but sometimes quite similar) have not.

The cluster concept is persuading some governments, including some outside the region, to place more emphasis on the diagnosis of problems and the prescription of interventions for existing industries, and to avoid focusing exclusively on the attraction of inward investment. However, a balanced attention to the needs of existing industry is especially valuable, quite apart from that industry's growth prospects, because it often exposes policy reforms and legitimate investments in infrastructure, education, and other basic factors that could improve the general business climate.

Table 3. A Typology of Policies

Generic		Cluster - RIS		
Geared to firms	Infrastructure and environment	Awareness of networking opportunities and search for partners	Support to the organization and operation of networks	Targeted at industry-science relationships
Infrastructure Training Credits Advisory (modernization, intellectual property protection, etc.)		Promotion of business associations Networking and production chain integration Joint export promotion and marketing Training Public-private partnerships for research (including universities and R&D agencies)		
Financial and institutional support Regulatory approach (improving regulation and enforcement mechanisms) Fiscal incentives (including FDI attraction) Public investment Procurement				

Source: Prepared by the authors on the basis of OECD (2004) and Fesser (2002).

The general elements of cluster policy in the region are illustrated in Table 3. Geographically, policy initiatives are very much concentrated, both quantitatively and in terms of their degree of sophistication; Mexico, Chile and Brazil are the most involved. Generally, there seems to be no dominant type of policy intervention being used to establish or expand industry clusters.¹² In particular, traditionally dynamic sectors are the most common target of interest, while high-tech sectors have received relatively less attention. There is also some bias towards SMEs.

Applied cluster analysis (the detection of the presence of clusters and/or the strengths, weaknesses, and opportunities facing clustered enterprises) probably accounts for most of current the policy effort associated with cluster concepts in the region. Multilateral organizations and foreign interests enhance this trend. In most instances, local governments are not following up cluster analyses with major cluster-building or expansion initiatives. Rather, they are using the analyses to identify various problems facing current local or future businesses that could be addressed by interventions of relatively limited scope. Moreover, the findings of cluster analyses are occasionally being used to motivate support for general shifts in strategy, such as improvements in education or the provision of infrastructure, which increasingly are viewed as key preconditions for the competitive success of industry in general (Fesser, 2002; Pietrobelli and Rabellotti, 2004).

Speculating, the evident resistance of regional governments can stem from several factors. Past (alleged) failures of industrial policies clearly affect government confidence. Accordingly, revisions of past mistakes and new scenarios require expertise that most governments lack. Most importantly, however, misaligned political and fiscal institutions seem to determine the poor incentives for public officials to respond and attend to local

¹² From the perspective of public officials, what appears to make a policy a “cluster policy” is not the economic behavior the initiative is trying to influence but rather the target of the intervention as a loosely identified set of related companies and institutions. From this perspective, deregulation and workforce training may be just as much “cluster policies” as establishing business networks or other schemes to boost inter-firm cooperation.

private needs. These issues are all part of various dimensions of positive policy analysis. In the following subsection we address some of them.

The Role of Governance in Clusters-FDI Regional Strategies

The concept of governance is rooted in the transaction costs theories currently being applied to politics, economics, finance and social organization. According to Williamson (2000), analysis of governance is a dimension of institutional analysis and, broadly speaking, it refers to the way in which relations and collective affairs are conducted, embedded and constrained by other dimensions of an institutional fabric.

The framework results in a common ground from which FDI-RIS strategies can be approached. It entails a positive approach to policy-making, identifying relevant actors, constraints and incentives. A correct assessment of governance structures is crucial for the success of cluster-RIS initiatives in Latin America, since specificities must be taken into account if governments are to find viable means of surmounting around obstacles and incentive structures that undermine development possibilities.

In general, approaches to FDI and cluster policy have focused on demand-driven issues for analysis, with immediate policy prescriptions, taken governments' capabilities and responsiveness as given (OECD, 2003; Cooke, 1998). These approaches, however, rely almost exclusively on developed countries initiatives and experiences. Notwithstanding their general use as references and sources of information, especially in comparative studies, these analyses fall short in addressing idiosyncratic forms of economic and political organization, as well as the incentives and capabilities of private and public actors in less developed countries (LDCs). Latin American countries differ significantly from their developed counterparts, particularly as regards governance-related issues (Kaufman *et al*, 2003).

The current approach to industrial policies in developed countries focuses on local and regional resources, though relying on the Stigler-Peltzman framework (Peltzman, 1982) to public policy – that is, taking demands for public policies as the key driving force. This requires close collaboration with the private sector and as close an adherence to market rationality as possible, taking for granted (to paraphrase) “an elastic and effective supply side for public policies”. Additionally, various case studies in the EU suggest an increasing sophistication in the forms of public intervention being adopted in OECD countries; they emerge as “endogenous responses to spontaneous interactions” (OECD, 2004). Not is the same problem of public sector capacities and responsiveness present, but so too is the problem of meager private trust in public officials, which leads to low levels of public-private interaction.

Top-down strategies have not proven sustainable for industrial policy, as seems to have been the case in some East Asian economies. In Latin American countries, import-substitution policies have been the quintessence of centrally-designed regional development strategies that lacked minimal responsiveness to local forces. They failed to provide dynamic efficient paths for local industries, and additionally they have been identified as a leading source of fiscal

imbalances, conducive to rent-seeking behavior and sustaining inefficient sectors and regions (see Bruton, 1998; Melo, 2001, 2003).

There seems to be an underlying trade-off in our previous discussion: namely, between the centralization and decentralization of industrial policies in LDCs. While centralization may provide more resources (including human capabilities) and a greater prospect of coordination than decentralization, it entails less adaptability to endogenous local resources and a lower potential capacity to react to and monitor local performance.

Effective public and private institutions are essential for providing a country with the self-sustaining capacity to resolve critical development problems. Furthermore, they enhance a country's ability to marshal its own human and financial resources for development. It is clear now that people rely on informal institutions in order to facilitate and structure interactions. Moreover, it is broadly accepted (Juntig, 2003, among others) that in poor countries or regions, informal rules play a much important role and tend to replace formal rules. Dualism in property rights protection, access to information and participation, neglected by formal rules, remain embedded in values and traditions (North, 1990).

SMEs' limited influence on policy decisions is a clear associated feature. *Lack of receptivity* to firms' simple demands has been already mentioned. In the Sinos cluster, for example, Schmitz (1999) shows that the local government's inability to respond to private demands for *conflict resolution* constrained the firms' interactions.

Assessment of the context of cluster and RIS development requires multiple considerations, from both theoretical and empirical standpoints. First, the overall country environment must be taken into account. Macroeconomic and political instability are repeatedly mentioned as a major constraint for firms (see Lora *et al*, 2000). Overall governance has also to account for regional asymmetries, as well as for general public incentives and governance in the context of decentralized decision-making. Second, cluster governance needs special attention. Finally, the specific dimension of RIS-related public policy should be considered. Naturally, all three sets of analysis overlap, and thus the grouping is merely for the purposes of exposition.

Traditionally, there are three main broad areas related to the definition of governance (Kaufmann and Mastruzzi, 2003).¹³ The first one refers to the process by which authorities are selected, monitored and replaced. The second tries to address governments' capacities to effectively formulate and implement sound policies. And, finally, the general respect for the institutions that govern economic and social interactions among members in the society.

¹³ It must be noted that this is not an uncontroversial clustering of concepts. We take it only as a first approximation (see Munck, 2003).

Table 4. Dimensions of Governance

Quality of Democracy	Quality of Public Policies	
	Government effectiveness	Rule of law
Voice and accountability	Policy effectiveness	Property rights
Government responsiveness	Regulatory quality	Corruption
Political stability		

Source: *Based on Kaufmann and Mastruzzi (2003).*

The first clustering has been used to assess political rights and democratic governance. While generally it focuses on “the process by which governments are selected, monitored and replaced” (Kaufmann and Mastruzzi, 2003), we are particularly interested in the interactions between government officials and private groups in exchanging information and in motivating the policy agenda (*voice and accountability* and *government responsiveness*).

The next two, on the other hand, encompass efforts to measure the ability of government to design, implement and enforce public policies. *Government effectiveness* focuses on the inputs (and technology) used by the government to design, implement and monitor (good) policies and deliver services. This includes the quality of public service provision, the quality of bureaucracy, the competence of civil servants, the civil service’s independence from political pressures, the credibility of the government’s commitment to policies, among others. *Regulatory quality* stresses the features of policies and legal frameworks, usually measured as perceptions of the burden imposed by excessive regulation in areas such as business development, patenting, foreign trade and the like.

The *Rule of law* dimension focuses on the level of confidence in and compliance with the rules of society (the incidence of crime, the effectiveness and predictability of the judiciary, and the enforceability of contracts). These indicators try to measure the extent to which the socioeconomic environment is predictable and fair and, importantly, the extent to which property rights are protected (by patents laws, for example).

Another important element is (perceptions of) corruption – understood as the exercise of public authority for private gain – which has been shown to be of particular significance in business investment decisions. This is a clear example of the role of bad governance in constraining the business environment, state capture and similar concepts. It amounts to a lack of respect for the rules governing transactions and is there for a symptom of bad governance (Kaufmann and Mastruzzi, 2003).

Empirical evidence has supported the view that *good governance* is important in shaping economic outcomes. Over the last ten years, there has been an upsurge of cross-country studies on the institutional determinants of growth. The literature on growth has focused on property rights, contract enforcement, the rule of law and so on, because of the close links between investment (and investors’ behavior) and these legal institutions (Rodrik *et al*, 2001). This empirical research has coincided with the resurgence of growth theory, in the wake of the seminal paper by Barro (1991).

Roughly speaking, the agenda can be grouped into two subsets. One of these views governance structures as endogenous, and focuses on finding robust determinants (Rajan and Zingales, 2003). In a limited number of studies, the dependent variable is some measure of the “quality of government” and the question asked is: what accounts for the *variation in governance* observed across countries? For instance, La Porta *et al* (1998) use as dependent variables various indicators of government intervention, public sector efficiency, public goods provision, the size of the government and political freedom, and regress them against such “fundamentals” as ethnic fragmentation and legal tradition. They conclude that “countries that are poor, close to the equator, ethno-linguistically heterogeneous, use French or socialist laws, or have high proportions of Catholics or Muslims exhibit inferior government performance, [and that] larger governments tend to be the better performing ones.” Knack and Keefer (1997) use trust and civic cooperation as dependent variables and adopt a similar approach to test the hypothesis that “social capital matters”.

The other subset focuses on the economic effects *of governance structures*. Usually, the dependent variable is a measure of economic performance, such as GDP per capita, investment, patent rates and the like, which are regressed against governance indicators and, of course, a host of control variables. The international indicators of governance most frequently used are somewhere in the three groups discussed above.

The analytical interpretation is grounded on transaction costs – that is, the effects of institutions on governing contracts and, more generally, transactions. Henisz and Williamson (1999) analyze the mechanisms through which political hazards and policy (in)stability affect expected returns on assets (either directly – through seizure – or indirectly – through changes in regulations, taxes, and so on). Henisz (2000) finds empirically that contractual hazards, underlying the economics of organizational decisions (Hart, 1995), are magnified by bad governance structures (the political instability dimension). Furthermore, he finds that both elements (and their interaction) play a significant role in explaining MNEs’ decisions on mode of entry.

Williamson (1991) describes security of property rights (including intellectual property) as one of a range of shift-parameters affecting the (optimal) choice between contract-based and equity alliances in the case of a worsening in intellectual property protection. Oxley (1999) focuses on the choice between equity and contractual alliance forms under differing regimes of intellectual property protection and other national institutional features. In particular, firms adopt more hierarchical governance modes when intellectual property rights protection is weak. Oxley concludes that a complete understanding of the structure of inter-firm alliances thus requires a combined focus on the institutional environment and governance mechanisms.

Another seminal work, Levy and Spiller (1994), explored the effects of the degree of judicial independence in the case of telecommunications. Comparing five countries, they assess the role of the judiciary in contractual enforcement, risk of expropriation and conflict resolution, finding that these features affect ownership structures in telecommunication companies. Publicly-owned enterprises are seen as default outcomes of a politically captured judiciary, given that private ownership fails to provide efficient levels of investment and organization because of fears of future expropriation.

In similar vein, Kuman *et al* (2002) study how industry-specific and institutional factors affect the size of corporations. They find that countries with a better institutional development, as measured by the efficiency of their judicial system, have larger firms. They also find that the efficiency of the judicial system has the strongest relationship with firm size in industries with low physical capital intensity, a finding consistent with a broad class of theories emphasizing “critical resources” as central to determining the boundaries of firms.

Overall, the stability and quality of the regulatory and policy framework have been shown to be important determinants of growth and competitiveness (Porter *et al*, 1995). In particular, property rights, trade openness and government responsiveness have been shown as particularly robust determinants of economic performance.

As pointed out earlier, the economic environment affects firms’ decisions. Market conditions and different categories of contractual hazards (asset specificity, technological leakages, free riding on brand name and reputation) interact with governance structures in shaping firms’ expected returns and the profitability of activities and alternative organizational forms.

At a firm level, Lora *et al* (2001) find that most critical problems affecting local firms in Latin America are access to financing, the quality and stability of economic policy and (soft and hard) infrastructure deficiencies. By the same token, a recent survey of the foreign investment strategies of European MNEs currently doing business in Latin American countries found that the most important determinants of investment decisions (after market size and growth) were macroeconomic, political and social stability, FDI-related legislation, and the quality of qualified labor and infrastructure.

Smarzinska and Wei (2002) analyze the impact of corruption on FDI. They find that a higher level of government corruption has two effects: it lowers the volume of investments and it affects the ownership structure of foreign firms. In similar vein, Henisz (2001) finds that political hazards directly and indirectly affect (magnifying contractual hazards) the entry and entry-mode decisions of MNEs.¹⁴ The same author shows that governance dimensions affect inter-firm relations between MNEs and local firms. More hierarchical production and minority-share in joint venture projects with local firms are more likely (in a probabilistic sense) the greater the political hazards (mainly, political control over the judiciary and corruption).

As discussed earlier, hierarchical modes are more probable the greater the hazards involved in outsourcing and networking. Governance dimensions affect these hazards. First, the different levels of government pose a potential threat of expropriation, including indirect means such as changes in taxes, regulations, exchange rate regimes and the like.¹⁵ Second, bad governance in regulations, property rights and conflict resolution tends to magnify contractual hazards,

¹⁴ The paper follows Levy and Spiller (1994) to conceptualize political hazards with two components: (i) the feasibility of a policy change, as a downward-sloping concave function of the number of effective veto players (see Henisz, 2000 for the methodology); again (ii) perceived levels of corruption.

¹⁵ These subtler forms have proven an important (perverse) source of political benefits in Latin American countries, particularly referring to *utilities and MNEs*.

which already discourage more networked forms of production and knowledge-creation (Henisz, 2001).

The discussion extends to the interplay between governance and innovation at the firm level. Lederman and Maloney (2003) find that the depth of domestic credit markets, educational variables, the extent of protection offered to intellectual property rights, the ability to mobilize government resources, and the quality of complementary academic institutions influence cross-country differences in R&D, and a subset of these variables together completely eliminate the apparent effect of the level of development on R&D efforts.

There is a clear identification problem between governance and economic performance. According to Saha (1999), it seems likely to us that “causality runs both ways”. In other words, some components of governance do enhance the likelihood of higher per capita income, and higher per capita income does increase the demand for higher quality governance. It is clear, then, that governance structures affect firms’ decisions. This has direct policy implications. First, it is plain that improving the quality of the business environment should be a high priority on the public policy agenda. This again has the advantage of a local focus, plus widespread benefits that go beyond an FDI-cluster framework. Second, attempts to tackle incentive problems, so as to develop linkages and spillover through fiscal incentives and other specific mechanisms and regulations (technology transfer and so on) can lead to futile or even counterproductive efforts. Past experiences in LAC bear out these dangers.

Local and multilevel governance

A new appreciation of learning as part of the regional development process favors a regional focus (Cooke, 1998). The potential for more active interaction between relevant actors can lead to the transmission of knowledge, the growth of aggregate human and social capital, and the development of trust that improves the functioning of markets – which is particularly weak in less developed countries (Alesina and La Ferrara, 2003).

At the regional and local levels, new forms of governance and the effects of a re-allocation of authority have attracted attention. Empirically, formal authority has been dispersed from central states, both upwards to supranational institutions and downwards to sub-national governments.¹⁶ In principle, regional levels tend to acquire (at least formally) more responsibility for the detailed design of policies attuned to regions’ peculiarities. However, the federal/national levels retain major prerogatives in several policy dimensions that are locally important. Examples include macroeconomic and foreign policies (especially those related foreign trade and capital), regulations, grants, and science and technology. Naturally, this process of governance re-engineering has been quite heterogeneous, as has its consequences for the quality of public policies (Hooghe and Marks, 2001).

The question of multilevel governance thus arises for almost every form of political organization, since there is no single decision-making level affecting the economic

¹⁶ Garman *et al* (2001) point that this process has been widespread; 63 of 75 developing countries, including most Latin American countries, have been experiencing some decentralization of authority.

environment in a given locality or region.¹⁷ The distribution of policy responsibilities across jurisdictions, accounting for fiscal power – the power to tax and spend – and formal and informal relations among jurisdictions must be aggregated and weighted in the context of multilevel governance.

One strategy is to draw up a list of policy areas and assess how authority over each of them is allocated. Accordingly, some competencies are far more important than others. Constitutional authority – the authority to change formal decision-making rules – is fundamental to governance. In the case of sub-national governments, power over resources, over taxing and spending, also lies at the heart of governance. There are various ways of calculating fiscal or financial clout. The simplest measure is relative or absolute fiscal revenues or expenditures (before or after transfers). A more sophisticated measure would take into account whether a jurisdiction is entitled to raise taxes – that is, to define the tax base, rather than simply lower or increase the rate – and the extent to which transfers to and from other jurisdictions are compulsory or discretionary, and conditional or unconditional across expenditure functions. A focus on the distribution of policy responsibilities or fiscal revenues/expenditure, however, does not capture the dynamics of authoritative decision-making under multilevel governance. Except in the extreme case of a single government that monopolizes power, it must be asked how different jurisdictions interact with each other.

Intergovernmental relations can be characterized by hierarchy, mutual or asymmetrical dependence, and independency. These interactions produce rather different outcomes as regards regions' mobilization of competences so as to become significant policy actors within the country, and as regards the extent to which sub-national fields are significant. In particular, the R&D and science and technology governance structures generally involve central government participation to varying degrees (beginning with funding). The strength of hierarchical mechanisms might inhibit private-public interactions at a local level, and thus constrain the extent to which policies and programs are matched to local needs.

Effective autonomy and authority depends on other factors, such as the procedures for the appointment and removal of public officials, as well as the degree to which structures are of politicized. This is particularly relevant in assessing the potential of regional agencies and public support institutions in a given context. The incentives faced by public officials are crucial for effective task assignment and the overall design of specific policy governance.

In the rest of the section we give some context to the discussion of regional, local and multilevel governance. We follow with an outline of the process undergone by some Latin American countries and then address the effects on firms and clusters.

The last two decades have been characterized by sweeping transformations in the way countries are organized and interact with each other. Regional and local governance and economic performance have been affected. We briefly discuss three features of this process in order to highlight its importance and its implications for the purposes of our research: decentralization, intergovernmental coordination, and regional performances.

¹⁷ This is particularly pronounced in federal countries and the European Union (Cooke, 2002).

In the last two decades, countries in the region have experienced a widespread trend towards *decentralization* of (mainly) public spending and policy responsibilities. There are many reasons why local governments should play an important role in policy. An important reason is the dramatic failure of local policies that are centrally-devised and -monitored.

The most appealing, “closer to the people” argument for decentralization also underlies the call for sub-national involvement in development policies. In this framework there is a sustained belief in the efficacy of face-to-face contact to enhance cooperative efforts and promote linkages as a prime advantage of local authorities (Rallet and Torre, 1999). Local attributes, such as location, soft and hard infrastructure, and factor markets characteristics (skilled/unskilled workforce and so on) give a prior advantage-disadvantage upon which authorities have to work.

Notwithstanding the relatively robust arguments for decentralization, comparably sharp skepticism has been voiced in discussions of the applications and evidence in Latin American countries. The general characteristic of the process of decentralization has been its haphazardness, stimulated by a need to improve the national fiscal stance. Sub-national governments have faced new responsibilities, highly constrained by low capacities and meager resources, while the deep-rooted centralist culture has been a constraint on interactions between local communities and officials. Moreover, dualities and asymmetries in access to “face to face” contact may induce corruption and rent-seeking activities. Low local capacities and other pervasive institutional weaknesses enhance perverse incentives, result in benefits to dominant and opportunistic special interests, and give rise to inefficient resource-allocation.

So far, for most Latin American countries that have undergone decentralization, institutional fragmentation and the mix of old and new governance forms are widespread, with ambiguous implications for local development. Initially promoted as a means to enhance overall governability, accountability and policy adequacy, decentralization has undoubtedly had dual effects in both economic and political terms (IDB, 2002).

From a policy-making viewpoint, the attendant institutional fragmentation has undoubtedly made governance more complex and challenging. The role of local/regional authorities is still unclear in most cases, with clear effects on various dimensions of public governance, such as conflict resolution and property rights, the rule of law, judicial and bureaucratic capabilities, officials’ incentives, civic participation so on. Adding to the confusion, most countries have a long history of centralism, with most decisions being taken at the highest level of government.

A second common feature that characterizes regional performance is the widening of regional asymmetries. In the last two decades, and particularly during the 1990s, countries in the region have been increasing the pace of economic integration and openness to the global markets (trade, labor and capital) while simultaneously undermining the economic base of many regions (Castells, 1999; Brenner, 1999). Many of these regions lost their traditional regional and national market specializations to new and unexpected international competitors.

In a recent paper, Markusen and Campolina (2003) documented a generalized trend towards regional economic concentration and a worsening of regional and income disparities during the 1980s and 1990s. The authors focus on four Latin American countries (Argentina, Brazil,

Chile and Mexico) and argue that they all exhibit several common features in this process. The transformations have re-enforced the traditional centripetal forces of the major financial and manufacturing cities, at the expense of smaller cities and outlying regions. The resulting regional disparities contribute to regional political unrest (particularly strong in federal countries) and to growing concentrations of urban poverty even in the more prosperous regions. Technological and institutional changes that increase the need for skilled human resources, educational infrastructure and research act as location factors that benefit the more developed regions and large cities.

Another feature has been the generally low level of horizontal and vertical intergovernmental cooperation. In other words, the institutional fragmentation was not offset by efforts to coordinate actions and internalize the extra-jurisdictional impacts of policy decisions. This contributes to poor governance and short-termist policies, already a common pattern in most countries of the region (Spiller and Tommasi, 2003).

Naturally, as suggested earlier, there is substantial heterogeneity both across countries and regions. However, the interplay between these factors, which are embedded in the overall institutional fabric, determines differentials in governance structures among regions.

Summing up, regions and localities face some advantages relative to central governments. Thus there *might be* a case for the local development analysis if it takes account of the foregoing critiques and highlights the peculiarities of regions and their possibilities.

Within a multilevel governance approach, the embeddedness of support organizations in the local environment and the way they operate is particularly important. Our short review of case studies makes plain that there are many types of cluster organizations, and that they might impinge on local performance. Some are public agencies, such as the development arms of local governments or national institutes and universities; others are private organizations, such as industry or employers' associations or chambers of commerce; public-private partnerships play a lesser role.

The typical functions of an embedded cluster organization are to provide a forum for interaction and collaboration among firms, an interface between firms in a cluster and the government, and mechanisms for interaction between firms and other supporting institutions, such as universities, research centers, and sources of finance.

The appropriateness of the governance system will depend on the nature of the cluster organization. For example, public sector organizations must be accountable to government officials and the public, and at the same time must provide useful services and support to the firms in the clusters in question. This suggests that a private sector board of directors or an advisory board drawn from cluster participants is desirable, so as to facilitate information exchange and adapt debates to actual needs. Public-private partnerships are best set up as autonomous organizations with joint public and private oversight, which can be better for more concentrated structures.

Informal arrangements can be sustained by supporting institutions, which may have positive effects on exchange and lower transaction costs, tending to substitute for more risky and costly

formal mechanisms of governance (that is, conflict resolution through judicial intervention). Hence relatively cheap and flexible, informal arrangements can prove to be superior to formal rules implemented by the state.

These kinds of public-private relations present several challenges for sub-national governments in Latin America. As was already pointed out, governments' complete lack of responsiveness and the virtual absence of most business support systems are the norm. Local meso-institutions and supporting organizations have the potential to build interfaces and, we argue, they are the natural players capable of closing gaps between private and public sectors and between MNEs and local actors.

Regional supporting institutions can be classified into three main categories: government agencies, associations, and universities (or educational and research centers). These organizations differ substantially among regions and countries in terms of their own governance structures, the extent to which they are embedded in the local context, the experience and expertise necessary to discharge a variety of new and challenging duties, and budgetary autonomy.

Historically, associations of private actors in the regional governance field, such as business associations and chambers of commerce, have been more familiar with operating at the national level. This centralized culture does not position local organization relative to their public counterparts, and tends to be a limiting factor. Additionally, private associations have had a narrow range of participation, focusing on redistributive policies.

Greater pressure perhaps falls on universities and research centers, particularly for innovation and knowledge-based activities. This is because they tend to have – *a priori* – relative advantages to take the lead in regional economic development. An obvious advantage is that they are relatively less politicized and implicated in the process as sources of potential knowledge and in the transmission of external sources. A second consideration is that they are among the few organizations in the region with legitimate authority over science and technology and thus, it is believed, over innovation and the policies that support it (generally a high degree of autonomy). There is a tension, however, in that the overall science and technology structure is a central-level responsibility.

For the purposes of illustration, Figures 3 and 5 in the Annex show some basic measures of the science and technology infrastructure for selected countries. There seem to be an upward trend (except for Brazil) in spending and the number of researchers. These figures, however, are very limited: first, because of clear data limitations; and second, because of the omission of some very important qualitative factors that are particular to the region. Furthermore, the relative stagnation of LAC aggregates in comparison to OECD and East Asian countries is striking.

Particularly important matters to be considered are the matching of research programs to private and local needs, and interactions between private and public agencies, research and technology support organizations and venture capital funds. The structure and weight of engineering faculties and technical schools are also crucial signs of educational orientation.

A clear symptom of the currently poor matching between R&D structures and firms' attitudes to innovation is the modest participation of the private sector in overall R&D spending. This too distinguishes LAC countries from more dynamic and developed countries.

MNEs, Institutions and Regional Innovation: Some Guidelines

To what extent can cluster-MNEs make up for poor public policies? A short answer is: not enough. On the one hand, efficient clustering may signal the existence of a good business environment, with firms screening potential trading partners by relying on the information provided by social networks. The implicit acceptance of informality and institutional weaknesses leads to a search for elements of cooperative and self-enforced environments based on private governance (Dixit, 2003).

On the other hand, most clusters, particularly in LAC, are unaware of the benefits of joint actions, under-invest in joint projects and R&D activities, and are highly constrained by the economic environment (including soft and hard infrastructure). Moreover, the increasing competition for FDI among LDCs demands proactive strategies of screening and FDI-attraction – in a first stage, a conscious effort to match clusters' needs and complement the local value chains and technologies. Finally, ensuring policy coherence across different government departments and different levels of government is crucial to any successful regional development strategy, though it is particularly difficult in public policies marked by multilevel governance and by poor administrative coordination and capabilities.

As production becomes more science-based, a developed research infrastructure, a qualified workforce and an innovative culture are becoming more important than natural resources as part of development strategies. Specific institutions that help build a supportive and innovational environment must be addressed and stimulated within an endogenous approach to development. Specialized regions with developed clusters and administrative and organizational structures represent a more meaningful link among private actors and between them and public officials.

In similar vein, there is a widespread consensus (Cooke, 2002; OECD, 2004) that regional development initiatives should be tailored to local forces, particularly FDI and innovation policies. The organizational architecture to coordinate efforts, exchange information and provide a “neutral” reference for specialized advice and policy design is expected to have great potential in the region.

As mentioned earlier, universities have a privileged position in this regard. Nonetheless, it is true that in LAC they face major problems that have to be tackled if their effective potential is to be increased. Lack of resources, and of links with the private sector and public officials, are perhaps the most important obstacles. Other problems, such as the nature of horizontal and vertical coordination among departments, research centers and institutes inside and outside the university structure must also be resolved. In particular, links with sub-national governments and private associations and chambers can yield reciprocal benefits: on the one hand, involving universities' researchers and institutes in local public policy problems and interests; on the other, offering access to specialized sources of knowledge and capabilities.

Regional development agencies (RDAs) including investment promotion agencies (IPAs) also have substantial potential. An RDA that is well-designed in terms of task assignments and incentives can share some of the organizational benefits with universities while enjoying the scope to address a broader set of environmental weaknesses, such as soft and hard infrastructure and strategic planning. Institutional design is the most crucial basic step in avoiding the establishment of a source of political clientelism and inefficiency. We do not attempt to develop this concept here, but some basic desirable features are: complementarities between task responsibilities, a small number of principals, budgetary autonomy, depoliticized appointments, long-term perspectives and planning in interactions with collective bodies such as legislatures and associations, and interaction with universities and research centers (consultancies, events and the like).

IPAs, on the other hand, should focus on private incentives to develop medium- and long-term investment projects, including R&D and MNEs. Furthermore, since the latter have to choose carefully in deciding where to locate and what activities to undertake locally, IPAs can help to build a region's image, attract the attention of prospective investors, and target the "right" links in the value chain. The dissemination of information on available programs and investment opportunities can be an important stimulus for private firms' dynamism, and should be pursued actively by IPAs.

Summarizing, regional development strategies should take account of the governance dimension of FDI-innovation policies. A mere listing of policy prescriptions can remain in a vacuum or fail completely if tasks, authorities and coordination mechanisms are not explicitly considered. Frustrating experiences in the past account for this. Institutional design offers great potential to address traditional constraints and inefficiencies on the policy front, but it is a complex task and should be approached as such. Appropriate incentives and adaptability to existing local organizations must be basic concepts on which to work.

Final Comments and Conclusions

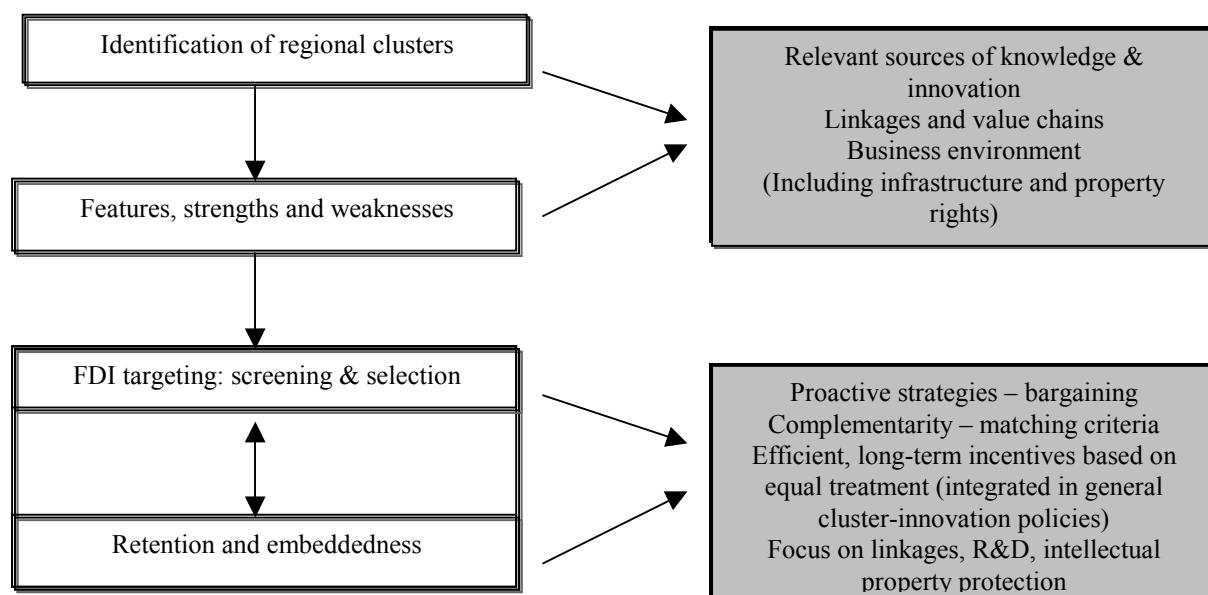
The foregoing discussion points to the importance of FDI as an additional element of a regional development strategy, a complement to domestic investment and innovation efforts, which ultimately serve as the main forces behind regional dynamism.

Consequently, FDI policies should focus on regional endogenous forces and adopt a sustainable and medium- to long-term perspective. A policy is likely to succeed if it entails investing in the enhancement of the overall business environment, addressing local weaknesses and the main obstacles to innovation and the development of linkages, rather than basing itself on subsidies and fiscal incentives as core instruments (see Figure 2). Moreover, fiscal incentives may induce short-term strategies on the part of MNEs as they anticipate future policy shifts. At the same time, the room for maneuver at the sub-national level is quite limited in terms of the instruments and resources available.

MNEs, like domestic firms, pursue good business environments. Unfortunately, most LAC countries still find it difficult to secure sound and sustainable macroeconomic policies. Additionally, poor governance in public policy (the rule of law and government effectiveness,

see Table 4), as well as weaknesses in soft and hard infrastructure, hamper the creation of a favorable environment for investment and private-sector development.

Figure 2. A Stylized Policy Framework



Other obstacles include enshrining the principle of non-discrimination and the protection of intellectual property in national legislation, and implementing procedures for effective enforcement at all levels of government. Exposure to effective competition on an even playing field and the protection of property rights are important incentives for foreign and domestic companies to upgrade management and technology.

As pointed out earlier, sub-national governments and meso-institutions can play an important role as active players (for example in infrastructure policies and the spread of information) and as coordinators and guides for policy debates. At the regional level, they should focus on building consensus on proactive strategies that tackle regional weaknesses. Screening for MNEs to serve as complements and/or external sources of knowledge for local SMEs should be the driving principle of FDI policies.

The increased sophistication of policies to attract and embed FDI entails a serious constraint for Latin American countries, which fail to develop related capacities, as well as responsive and proactive attitudes towards communities' needs. Regional development strategies should take this into account. A mere listing of policy prescriptions in a vacuum can fail completely if tasks, authorities and coordination mechanisms are not explicitly considered. Institutional design offers great potential to address traditional constraints and inefficiencies on the policy front, but it is a complex task and should be approached as such. Appropriate incentives and adaptability to existing local organizations must be basic concepts on which to work.

On the other hand, successful experiences in Chile, Brazil and Mexico highlight the importance of pragmatic policy initiatives and experimentation. Nonetheless, these initiatives relied heavily on local associations and organizations as sources of information and dissemination. In any case, program evaluation strategies must be implemented as systematic feedback to inform decisions about the continuity or further reform of the strategies.

Today, there persists only weak interaction between MNEs and local firms with public agencies (local/regional bodies), research and technology support organizations and venture capital funds. As production becomes more science-based, a developed research infrastructure, a qualified workforce and an innovative culture must become more important than natural resources as part of development strategies. These are tremendous challenges for the region.

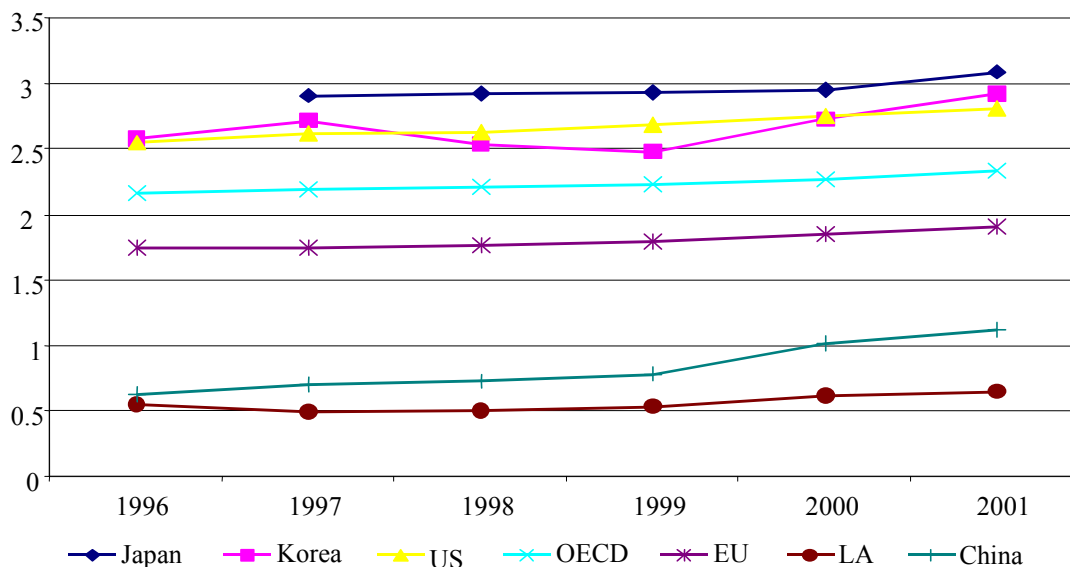
Specific institutions that help build a supportive and innovational environment must be addressed and stimulated (as part of endogenous approach to development). Specialized regions with developed clusters and administrative and organizational structures represent more meaningful communities of interest; they determine richer flows that can exploit and develop linkages and synergies among economic actors.

The role of universities and public-private partnerships, particularly for innovation and knowledge-based activities, should be explored further. RDAs also have a significant potential role in coordination, information exchange and informal linkages among actors.

In conclusion, FDI-RIS interactions can provide a new framework for addressing regional development concerns. Successful international experiences, including some in LAC countries, raise hope that proper approaches can enhance local innovation and global performance. Frustrating experiences in the past, however, should remind us of the dangers of excessive reliance on (isolated) public sector initiatives and of copying successful models. Local embedded institutions and firms must play an active role in policy design and implementation, with a focus on the overall business environment and innovation development.

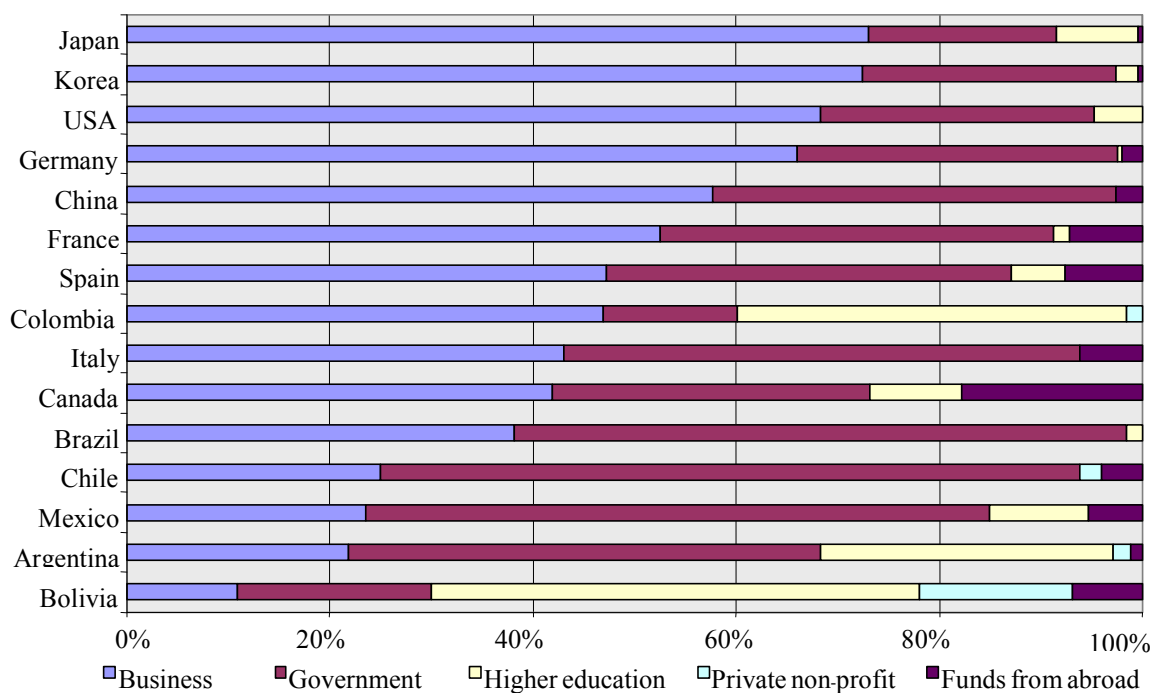
ANNEX

Figure 3. R&D by Region and Selected Countries



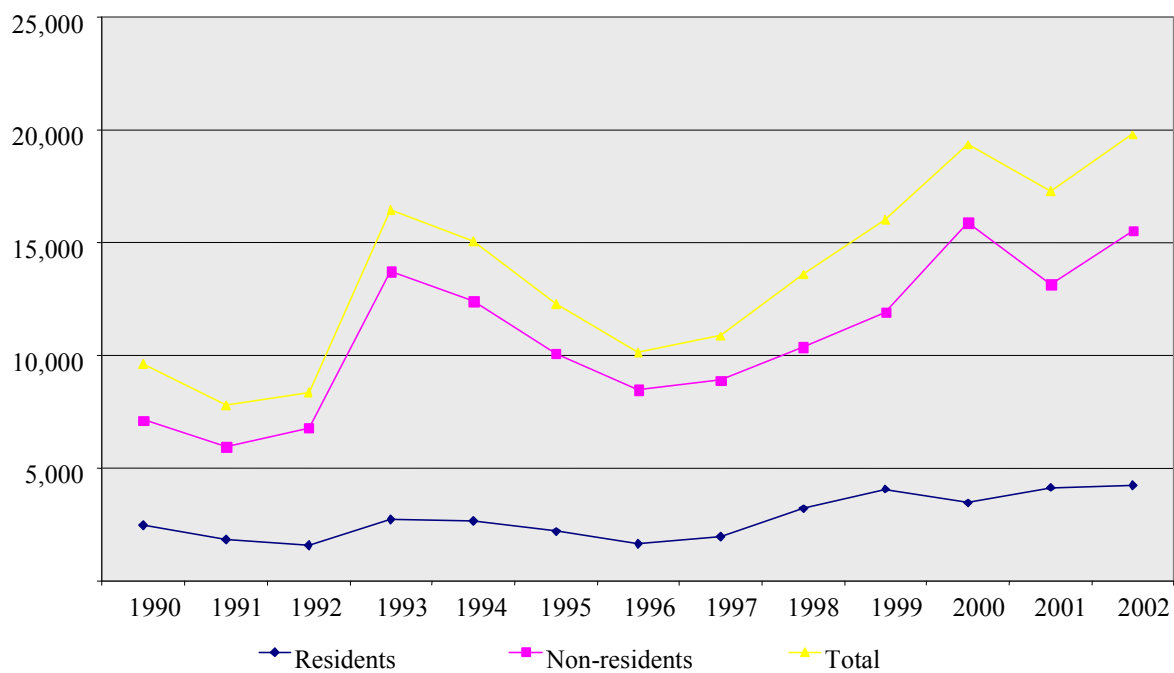
Source: Red Iberoamericana de Ciencia y Tecnologia (RICyT) and OECD.

Figure 4. Gross Domestic Expenditure on Research and Development (GERD) by Source of Funds



Source: UNESCO Institute for Statistics.

Figure 5. Patents Granted: Total Latin America



Source: Red Iberoamericana de Ciencia y Tecnología (RICyT) and OECD.

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