

2010

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Publication Info

Published in *Organizations and Markets in Emerging Economies*, ed. Sigita Urbonavicius, Volume 1, Issue 1, 2010, pages 24-50.

<http://www.om.ef.vu.lt/>

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CLUSTERS AND UPGRADING: A PURPOSEFUL APPROACH*

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Abstract. *We develop a theoretical model to investigate how backward societies can improve their upgrading capabilities by transforming existing industrial agglomerations into dynamic clusters. Our main assumptions are two: first, emerging market economies are not uniform but characterized by variety of subnational regional and sectoral organizational and institutional configurations; second, the basic building block and unit of explanation in social sciences is personal action guided by some intention, which is heterogeneous across different actors. Based on these assumptions and the literature on human motives and social networks, we develop a purposeful approach to clusters and upgrading. We argue that governments can develop institutions with private actors that facilitate new types of relationships and improve the access local firms have to a variety of knowledge resources, a key ingredient to upgrading. We illustrate this argument revisiting the literature on clusters and upgrading in Latin America and using two case studies in Argentina, a country better known for its volatility and lack of optimal social capital and institutions. We conclude with avenues for further research.*

Key words: *clusters, upgrading, institutions, emerging economies, human motives*

Over the past 15 years scholars of economic development and management have increasingly focused on the ability of emerging market firms and industries upgrade to compete in the world – shifting from lower to higher value added activities based on a society's innovative capacities (Doner et al., 2005; Giuliani et al., 2005; Song, 2002). As Ghoshal and Moran (1999) argue, a key puzzle for development is identifying the institutional conditions that help firms create capabilities to continually improve their products, processes, and functions. This perspective emphasizes a purposeful or intentional approach to innovation and growth that understands contexts as conditioning rather than determining human intentionality. (Lovas & Ghoshal, 2000; Ghoshal, 2005).

* Paper presented at the Ibero Academy of Management, Buenos Aires, December 2009.

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This approach coincides with broader debates about the creation of innovative capacities in a region. As captured in the “clusters” literature, these debates understand upgrading as a product of the local organizational relationships, in which a firm is embedded (Rocha, 2004). The advantage of this literature has been its ability to show how firm and regional strategies vary according to the ways firms learn from one another and recombine local resources. The drawback in the literature, however, is that it tends to conflate clusters with agglomeration (Rocha, 2004), presupposing new knowledge is “in the air,” or views their structural traits as static (Tallman et al., 2004; Arıkan, 2009). These two problems are of particular importance to emerging market economies, such as those in Latin America, since they often lack the requisite social and institutional endowments that are viewed as vital for innovation and cluster governance (Schmitz, 1994; Rocha, 2006).

In this paper, we address these two shortcomings by showing how backward societies can improve their upgrading capabilities by transforming existing industrial agglomerations into dynamic clusters. Conventional approaches to clusters and upgrading often view development paths as determined by social and economic endowments or view policy in terms of governments providing more R&D resources, liberalizing markets, or facilitating the entry of foreign technology. In contrast, we suggest that social relationships are malleable and that governments can develop institutions with private actors that facilitate new types of relationships and improve the access local firms have to a variety of knowledge resources – a key ingredient to upgrading.

Our logic is as follows. First, following recent work on innovation (Chesbrough, 2005; Miles et al., 2005), we argue that both the creation of and access to knowledge is largely relational, as it is often applied and tacit. Second, such relationships are not evenly distributed across firms. Third, the question then arises as to which types of practices and policies can induce the development of learning relationships so as to promote broad based upgrading. We will show that where relationships change in this regard, firms and governments promote practices that are akin to what scholars call “pragmatic collaboration” (MacDuffie, 2007, Helper et al., 2002) and “intrinsic collaboration” (Nahapiet et al., 2005).

We build this “purposeful approach” to upgrading and cluster by integrating recent work in management and economic sociology. Ghoshal (2005) argues that the management literature’s overemphasis on ex ante rationality and maximization ignores the possibility for collaboration where often none seems possible. Social phenomena cannot be explained in terms of causal determinism, because the “basic building block in the social sciences, the elementary unit of explanation, is individual action guided by some intention.” (Ghoshal, 2005, p. 78). In emphasizing the variety in the structure and composition of networks, Granovetter (2002) suggests that organizations and institutions in a region can reshape relationships that facilitate or impede knowledge creation and diffusion. Table 1 summarizes the purposeful view and contrasts it with the more deterministic one underlying the key phenomena and relationships on clusters and upgrading.

TABLE 1. Clusters and Upgrading – Deterministic and purposeful paradigms

Phenomena	Deterministic	Purposeful
Geographical concentration of organizations	“Industrial Agglomerations or proximate groups of firms belonging to the same industry or closely related industries that could potentially, but not necessarily, interact” (Rocha & Sternberg, 2005, p. 271)	“Clusters or geographically proximate group of firms and associated institutions in related industries, linked by economic and social interdependencies” (Rocha & Sternberg, 2005, p. 270)
Knowledge	In the air	Co-created by interrelated organizations
Relationships	Static	Developed & Dynamic
Upgrading	Result of given stock of knowledge and existing relationships. More generally, determined by social and economic endowments.	Result of both the context and the purposeful action in the creation of knowledge and the development of relationships within a given context.

We illustrate our argument and views using as empirical setting Latin America in general and Argentina in particular. Research interest in clusters has grown because of its presumed impact on firm performance, regional economic development, and national competitiveness. Latin American countries are a natural setting for both research and policy making on clusters given that this region includes some of the most inequitable socioeconomic environments in the world (Morley, 2001).

This paper is structured as follows. In Sections I and II, we define the key concepts of our model in light of the literature on clusters, entrepreneurship, upgrading and regional development in Latin America. In Sections III and IV, we illustrate our argument via two case studies in Argentina, a country better known for its volatility and lack of optimal social capital and institutions. Implicit in these studies is a revelation of the variety of clusters by industry and region. Our analysis of the autoparts sector in the Province of Buenos Aires shows how knowledge diffusion and learning appears largely due to certain types of customer-supplier relationships. Our analysis of the wine sector in the provinces of Mendoza and San Juan then reveals how different paths of upgrading appear rooted in distinct public policies. Both cases reflect Ghoshal’s optimism for practices and policies that can transform learning relationships between organizations. We conclude with challenges for future research on development and upgrading in firms operating in emerging regions and nations.

I. Clusters, knowledge, relationships and upgrading

Following a Schumpeterian (Schumpeter, 1934) and purposeful view of the firm (Lovas & Ghoshal, 2000; Ghoshal, 2005), we view product upgrading as a particular form of innovation, in which firms focus on the creation of new products for higher value by purposeful experiments with new combinations of existing inputs, processes and / or products and services. As Fleming (2001) has argued, this process of recombina-

tion is fraught with technological and market uncertainties, demanding that firms gain knowledge and expertise to convert different types of inputs into specific products, to assess the reliability of suppliers, and to learn which types of products can gain traction in different market niches in the short and long run. While firms gain experience from their own in-house activities and human capital, they access a variety of raw and applied knowledge through their peers, customers, and suppliers as well as via non-market actors, such as trade associations and government support institutions (GSIs) that provide training or R&D services (McEvily & Zaheer, 1999). Durable social relationships between firms underpin their ability to undertake iterative, joint-experiments and participate in the sustained provision of collective resources (McEvily & Marcus, 2002; Saxenian, 1994).

The closing years of the 20th century saw a growing awareness among scholars and practitioners of the importance of intangible assets as the primary source of competitive advantage. Both knowledge and relationships are two of these assets (Nahapiet et al., 2005; Miles et al., 2005). In fact, the knowledge-based view of the firm, as it has come to be known, considers knowledge as the most strategically significant resource of the firm (Kogut & Zander, 1992). Research and experience have shown that a knowledge economy is also a relational economy since the structure and quality of relationships are a major influence on both the creation and exploitation of knowledge (cf. Nahapiet et al., 2005, for a review).

Following the extant literature on clusters (Rocha, 2004; Rocha & Sternberg, 2005), we distinguish between industrial agglomerations and clusters. Industrial agglomerations “are proximate groups of firms belonging to the same industry or closely related industries that could potentially, but not necessarily, interact” (Rocha & Sternberg, 2005, p. 271). Clusters are more comprehensive phenomena, including two additional dimensions to the geographical one: the intersectoral and the inter-organizational ones. Clusters refer to geographical concentrations of interdependent firms, government agencies, and non-governmental organizations in related industries.¹

As stated in the introduction, the main argument of the paper is that clusters promote knowledge creation and diffusion via specific constellations of ties among firms, associations, schools and GSIs. In accessing the diverse knowledge resources, firms can upgrade their products with greater value and speed than otherwise. Figure 1 summarizes this argument. This model will guide the two case studies we use as empirical setting for our purposeful approach on clusters and upgrading. However, we first briefly review the literature on clusters, entrepreneurship, upgrading and regional development in emerging markets in general and LATAM in particular in the next section.

¹ The concept of clusters was introduced by M.E. Porter, *The Competitive Advantage of Nations*, The Free Press, New York (1990). The study of clusters can be traced to the work of Marshall on industrial districts. See A. Marshall, *Principles of Economics*, 8th ed., MacMillan, London (1966). For a detailed review of the literature on clusters, see Rocha (2004).

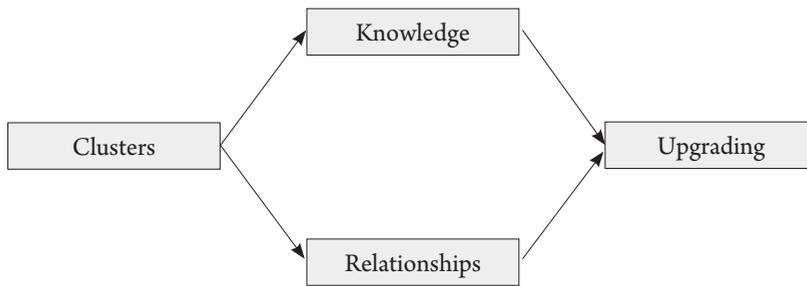


FIGURE 1. Clusters and upgrading – ex-ante relationships

II. Clusters and upgrading in emerging markets²

The previous description of upgrading is widely embraced in studies of a variety of industries in developing countries. (Guiliani et al., 2005) What is less clear is how clusters might contribute to this. As Rocha (2004, 2006) explains, the literature on clusters and industrial agglomerations has several views of the level of analysis and the relevant mechanisms.

Given these shortcomings, two empirical studies highlight the importance of conceptually and empirically distinguishing between clusters and other types of agglomerations. To this purpose, they compare sets of firms within and not within clusters and industrial agglomerations.

The first study reviews 19 empirical studies with a total of 146 Latin American clusters showed that clusters contribute to growth at the firm and regional levels but that they are also a potential source of socioeconomic division (Rocha, 2006). Clusters show positive impacts on economic development indicators such as innovation capacity, employment training and growth, product upgrading, and production and exports. However, they have no impact on functional and inter-sectoral upgrading, and a negative impact on economic and social equality. The causes of these results are the weak inter-firm and institutional links within clusters and with the local economy. The presence of clusters tends, in many instances, to be associated with inequalities in terms of both incomes and opportunities if alternative governance mechanisms and ways of rooting firms in the local economy are not taken into account. Here, research and practice on inter-firm collaboration could greatly improve economic and social conditions at the societal level.

Another study on Argentine clusters arrives at similar conclusions (Rocha et al., 2004). It takes as the unit of analysis the industry-territory, defined as the presence of

² This section draws its conclusions from Rocha (2006) and the comparison between Latin America and Germany presented at the Plenary Session on Building Competitive Export Capacity of Developing Countries and Firms, XI United Nations Conference for Trade and Development, Sao Paulo, Brazil, June 14-18 (2004).

at least one plant within an Argentinean county. A total of 5,052 industry-territories located across 467 Argentinean counties were identified. Following previous literature (cf. Rocha, 2004; Rocha & Sternberg, 2005) this study classifies different industry-territories in terms of their specialisation and presence of networks. The empirical model uses multiple regression–fixed effects to test the impact of clusters on entrepreneurship and regional development.

While the study finds that clusters tend to promote entrepreneurship and regional development, access to specialized inputs, skills, and demand appears to be a function not of pure agglomeration but rather inter-firm and institutional networks within geographical boundaries. Prior studies have equated industrial agglomerations to clusters (Baptista & Swann, 1998), but the lack of distinction among them hides important causal mechanisms affecting entrepreneurship and regional development. These different mechanisms seem not to be fully operative in Argentinean clusters and their emergent nature in terms of lack of developed networks could explain their small positive differential impact on entrepreneurship and regional development when compared to industrial agglomerations and clusters in general.

From the policy standpoint, the small but better contribution of emergent clusters to entrepreneurship and regional development when compared to industrial agglomerations suggests that the creation of conditions for more interaction among agglomerated organisations could be beneficial to those outputs.

What are the key assumptions underlying the reviews and empirical tests provided by these studies? The first assumption is that different agglomerations are not just different labels but different phenomena which have different impacts. The second assumption is that the focus is at the regional level of analysis, showing how different configurations of contexts and networks within them result in different outputs in terms of upgrading and entrepreneurship. Finally, this regional focus deliberately makes agency an exogenous variable and therefore its influence on upgrading cannot be isolated. As pointed out in a previous work, “(a) main criticism of the network approach to cluster is its emphasis on the socio-territorial embeddedness of knowledge and innovation. The individual (...) dimension is also important and therefore it is not necessary to be locally embedded to transfer knowledge (...) It seems that proximity matters when knowledge spillovers are informal. On the other hand, when knowledge is transmitted through formal mechanisms such as participation in boards or joint ventures, proximity appears to be less important (Audretsch & Stephan, 1996, Rocha, 2004, p. 377). Therefore, despite the different approaches to clusters, at their limit they all rely on a form of structural and economic determinism. For instance, the economics literature often depicts innovation occurring in regions that have superior ex ante endowments in human, natural, and financial capital or an ex ante superior density of firms (Rocha, 2004). In this view, knowledge is “in the air”, readily available for all firms, especially those with high level of absorptive capacities or knowledge stocks. This view is often coupled in the development literature with institutional views, which emphasize the importance of an ex ante system of clear private property rights and clear boundaries between the state and the market.

Underpinning this view, which often promotes the value of MNCs as sources of new knowledge for local firms, is a form of technological determinism. The more traditional view based on incentives and market forces would argue that once MNCs have reorganized supply lines and allowed market competition to weed out the weak firms, surviving suppliers would in general have similar levels of upgrading. A similar perspective comes from a variant of the “modularization view” in the automotive literature. Each production tier depends on a discreet package of technologies and interfaces, which are increasingly standardized and well-codified, and in turn, allows little need for inter-firm coordination. At its limit, this largely technologically deterministic view understands that once the value chain is established, modularization permits arm’s length, market based relationships between suppliers and customers to be sufficient for sustaining global supply chains and increased upgrading (Gereffi et al., 2005; Sturgeon & Florida, 2004).

Oddly enough, critics of this optimism, also rely on such determinism but with a different interpretation. This is typical of the aforementioned conceptualization of “hierarchical clusters.” (Humphrey & Memedovic, 2003; Giuliani et al., 2005). While the transnationalization of production forces domestic firms to reside in the second and third tiers, the logic of modularization relegates firms in these tiers to produce only standardized components, impeding their ability to learn about new products and processes and thus upgrade over time. The technological imperative of the auto industry creates a “glass ceiling” for upgrading in lower tier, mainly domestic, firms as it determines the incentives and relationships that contribute to upgrading. For instance, in their analyses of the automotive industry in Latin America, Humphrey & Memedovic (2003) and Quadros (2004) argue that although market pressures and the introduction of international standards compel surviving suppliers to make initial improvements in products and processes, the use of modularization restricts the access that suppliers in the lower tiers have to the new information, knowledge, and development activities of the international assemblers and their allied international top tier suppliers. These isolated suppliers have limited internal resources and knowledge to upgrade on their own. In turn, one would expect that firms in the second and third tiers have similar levels of upgrading, respectively, but less improvements relative to firms in the first tier.

Although sociological views are very aware of the relational factors shaping upgrading, their application to clusters often resides in binary understanding of the embeddedness rooted in the determinism of inherited social capital. Upgrading is likely to occur in societies historically rich in networks and the attendant social capital that are enduring and manifested in the relative density of associations and cooperatives as well as pre-existing coherent public policies (Grabher & Stark, 1996; Putnam et al., 1993).

In contrast, this paper cuts through these determinisms by building on recent work on purposeful view of firms (Ghoshal, 2005), innovation (Chesbrough, 2005; Miles et al., 2005), and embeddedness (Lin, 2001) that increasingly seek to differentiate the relative impact of a firm’s network composition and structure on both its capabilities and performance. Nan Lin (2001) has argued forcefully that an individual’s or firm’s network is composed of different types of organizations, which in turn, provide dif-

ferent types of resources and information that can shape the actor's performance in different ways. In particular, Lin argues that researchers should pay closer attention to an actor's *network resources*, which are embedded in one's ego-networks, and not simply to an actor's total number of overall ties or an actor's location in the network. The key insight that we exploit in here is whether the focal firm has ties to a certain type of organization (e.g., customer, supplier, trade association, etc.) that can lend knowledge resources that are of value for the task at hand. We then push this view further to explore how certain types of relationship emerge through purposeful action by market or government actors.

This view has three important implications for the study of clusters and upgrading. First, clusters vary in the types of organizations that can provide new knowledge resources. These may be other firms, schools, associations, etc. as well as GSIs. Most importantly, the assumptions on human nature and relationships underlying the interaction between the actors of the cluster are key determinants of the process and results. For the sustainability of the cluster and its impact on upgrading, assumptions such as a focus on long-term relationships rather short-term gains and instrumental relationships are of utmost importance.

Second, relational quality may be attached to certain organizations. That is, not all ties are the same, and only a few may offer the active exchange of knowledge. Knowledge transfer and capabilities creation depends on the particular quality and intensity of the relationships that suppliers have with their main customers (Christensen & Bower, 1996; Dyer & Hatch, 2006; Sako, 2004). The underlying idea is that strong ties gradually promote and enhance trust, reciprocity, and a long-term perspective, which in turn helps partners develop joint projects and share tacit knowledge. To continue with the above example of traditional manufacturing, researchers on the automotive industry have increasingly focused on these types of customer-supplier relationships, calling them "pragmatic collaborations," (MacDuffie & Helper, 2006; Herrigel, 2004) as firms jointly invest in specific routines and interactions that "permit the transfer, recombination or creation of specialized knowledge" (Dyer & Singh, 1998, p. 665). In this view, new knowledge and capabilities emerge for suppliers when they engage in regular, disciplined discussions with customers about product designs and processes that yield joint experiments and routinized collective problem solving. Such routines tend to develop when customers commit to assisting suppliers in product and process innovations, such as bi-lateral production programs and focused supplier associations (Dyer & Hatch, 2006; Helper & Kiehl, 2004).

Third, certain relational and organizational traits of the ties within a community may be dense, but can insulate firms from new information and relationships with members of other communities. As Lin (2001) and Uzzi (1996) have shown, one's ego-network can easily restrict access to different resources and blind it from new information because of the strength of immediate ties and the limited variety of valuable information and resources that its alters (other organizations, firms, etc.) can pass on. That is, although a region on aggregate may have a wide variety of resources and expe-

riences that, when combined, could create value, a firm is often embedded in a rather restricted network, be it composed of firms, associations or public agencies (Knoke, 2001). At a more macro-level of analysis, recent work public policy has sought to show that although a society may contain a plethora of, e.g., professional associations, the attendant social ties and norms that can promote collaboration and collective learning can also be self-limiting and exclusionary. To the extent that these groups and localities have different needs and resources, are relatively isolated, and are not incorporated into more encompassing institutions, a diverse socio-economic environment can easily produce a balkanized society that thwarts broad-based innovation, knowledge diffusion, and concerted action (Locke, 1995; Ostrom, 1999; Safford, 2007; Schneider, 2004; Tandler, 1997). The lack of collective goods and coherent policies is rooted not in the absence of social ties but their insulating qualities and the lack of cross cutting between ties producer communities and their respective associations.

To sum up, the previous empirical studies have shown the conceptual, empirical and policy importance of distinguishing between clusters and other types of agglomerations. To this purpose, they have compared a set of firms within and not within clusters and industrial agglomerations. We now advance a step forward. To consider a more dynamic understanding of clusters and their upgrading potential, one must consider both the relational qualities and the composition of networks in a cluster. In doing so, one can then better identify the constraints on learning and the types of strategies and policies that can alleviate them. That is, the first step is to recognize how productive relationships are distributed but also malleable. The second step is to consider the ways in which public and private can change the quality and structure of the networks by altering the composition and routines of the network actors.

We illustrate these points via two case studies. Our first is on the autoparts sector, which will establish the relational foundations of knowledge flows and how these relationships vary according to the type of organization and quality of the tie. We then turn to the Argentine wine industry to show how public policy can alter existing network ties and improve ones access to knowledge resources.

III. The Buenos Aires autoparts cluster and the determinants of upgrading³

During the 1990s, Argentina became a leader of pro-market reforms in Latin America, with the cornerstones being a currency board, fiscal stability, price and trade liberalization, and privatization. These efforts brought price stability as well as dramatic increases in growth, trade, and investment. Similar to such countries as Mexico and Brazil, Argentina also sought to revive its automotive industry, the output of which had declined to about 100,000 units by 1989, by using focused policies to attract FDI and enhance trade in both vehicles and autoparts, albeit with little attention on supporting supply-

³ This section draws heavily from McDermott & Corredoira (2009).

side policies, such as the development of quasi-public institutions for improving R&D and training (Humphrey & Memedovic, 2003; Yoguel et al., 2002). The combination of high powered economic incentives and investment by the automotive MNCs was to lead to increased production as well as improved capabilities for domestic suppliers.

First, as was the case in many other emerging market countries (Humphrey & Memedovic, 2003), the MNCs (i.e., the international assemblers and allied top tier suppliers) took charge of massively reorganizing the industry to establish three tiers of suppliers and diffuse the principles of lean production throughout the value chain. The first tier is dominated by foreign firms, which are responsible for complete systems, followed by the second tier (subsystems), and the third tier (components and standard inputs). Suppliers were given strong market incentives to improve quality and reduce costs by incorporating such practices as JIT, TQM, statistical process control, and six sigma. Argentine suppliers also had to regularly adapt their products to feed approximately 17–20 different platforms and 24 models, 16 of which were exclusively for the Argentine market and 3 of which changed annually (cf. McDermott & Corredora, 2009).

By the late 1990s, these changes allowed for significant increases in sales, investment, and productivity as well as a reduction of the supplier by about half. Given their ability to survive the turbulence of the 1990s and their similar geographical proximity, then the local autoparts suppliers are to have similar likelihoods of upgrading their processes and products. To the extent they vary, we can discern the relative impact of a firm's internal resources, the composition of its network ties, and the quality of these ties.

McDermott & Corredora (2009) studied these issues via a unique 1999 survey data set of all surviving suppliers in Buenos Aires province, which accounted for approximately 55% of the sales and employment of the autoparts sector. In turn, given the research setting, to the extent that variation in upgrading of the surviving firms is largely driven by certain types of inter-organizational relationships, the evidence would tend to support a growing view about the roles of networks and institutions in the development of emerging markets.

This study ran two types of quantitative analyses, with the dependent variables as whether the focal firm undertook significant product and process upgrading. The first type of analysis was logistic regressions for each dependent variable. The second type of analysis was the use of the delta method to discern the inter-action effects of type of tie and the tier of the supplier, the summarized results of which are given in Tables 2 and 3. Most suppliers in Tiers 2 and 3 were domestically owned, small and medium sized firms.

The results highlight the relative value of a firm's social ties to certain organizations and institutions as well as the importance of collaborative relationships between customers and suppliers. First, the results for the variables measuring the impact of the social and professional ties a firm has to different types of organizations suggest that the value of the ties is not uniform, but varies significantly according the type of organization. Ties to some actors within and outside the value chain, like assemblers, suppliers, and universities, appear to improve the likelihood of process and product upgrading,

TABLE 2. Comparing the effect of linkages to different alters

Linkage measure	New Product			New Process		
	Tier1	Tier2	Tier3	Tier1	Tier2	Tier3
Assemblers	(↓) across full range	(↑) first few ties	(=) no impact	(↑) first few ties	(↑) first few ties	(↑) first few ties
Customers	(=) no impact	(↓) mostly first ties	(=) no impact	(↓) first few ties	(=) no impact	(=) no impact
Suppliers	(=) no impact	(↑) first few ties	(↑) first few ties	(↓) first few ties	(=) no impact	(↓) first few ties
Peers	(=) no impact	(↑) mostly first ties	(=) no impact	(↑) first few ties	(=) no impact	(=) no impact

TABLE 3. Comparing the marginal impact of ties

Linkage measure	New Product		New Process	
	Tier 1 vs Tier 2	Tier 1 vs Tier 3	Tier 1 vs Tier 2	Tier 1 vs Tier 3
Assemblers	Tier 2>Tier 1 (significant above 5 ties, p-value 0.01 to 0.10)	Tier 3>Tier 1 (significant above 10 ties, p-value 0.05 to 0.10)	No significant difference	No significant difference
Customers	No significant difference	No significant difference	No significant difference	No significant difference
Suppliers	No significant difference	No significant difference	No significant difference	No significant difference
Peers	No significant difference	Tier 1>Tier 3 (significant across full range, p-value 0.05 to 0.10)	No significant difference	No significant difference

while ties to other types of organizations and institutions may constrain or offer few relevant resources and information to firms.

Second, it appears that the value a supplier gains from social ties to other firms in the value chain in many ways interacts with its structural position in the value chain or Tier. These results are captured in Table 4. For instance, social ties to assemblers appear to facilitate upgrading for suppliers in Tiers 2 and 3, which tend to be small and medium sized domestic firms, but social ties to their peers appear to have value for suppliers in Tier 1, which tend to be MNCs. These sets of results coincide with recent research emphasizing the notion that emerging market firms can gain new knowledge from social ties to MNCs and participating in R&D programs in universities, but that their local

TABLE 4. Public-Private Institutions in Mendoza created in the 1990s

Institution	Year of creation or restructuring	Governing Members	Activities	Resources	Legal Form
INTA EEAs	1991; INTA San Juan reformed in 1996	Gov't of Mza, 15 Agro Ass'ns, Nat'l and Prov'l Institutes and Univ's	R&D (inputs, plants, tech), extension training, consulting	50% – Gov't budget (salaries & overhead); 50% – services, alliances, cooperadoras	Part of INTA Cuyo; 4 in Mza, 1 in SJ; Public, Non-state, non-profit entity
Fondo Vitivinicola	1993-94	Gov't Mza, 11 wine/grape Ass'ns	Oversees new wine regulations, promotes wine industry/marketing	Tax on firms from over produc'n of wine	Public, non-state, non-profit entity
Fondo para la Transformacion y el Crecimiento (FTC)	1993-94	Gov't Mza, Regional advisory councils, ass'ns	Subsidized loans and credit guarantees to SMEs for tech. against extreme weather & for grape conversion	Self-financing; initial capital from gov't	Independent legal entity under authority of governor
Instituto Desarrollo Rural (IDR)	1994-95	36 founders – INTA Cuyo, Gov't Mza, 2 peak ass'ns, various agro sectoral ass'ns	Technical info collection & dissemination; Data base mgmt; R&D, training, consulting	Mza Gov't; services; gradual increase of fees from member ass'ns	Non-profit Foundation; with oversight by Min of Economy
Instituto Tecnologico Universitario (ITU)	1994	Founders – Gov't Mza, Univ Nacional Cuyo, UTN, 2 peak ass'ns	Continuing education for managers and some R&D in mgmt and technology	Founders; fees for services	Non-profit Foundation
Pro Mendoza	1995-96	Gov't Mza, 3 peak business associations	Export promotion – organize fairs, delegations, strategic information, training	Gov't Mza; Peak ass'ns; services	Non-profit Foundation

Abbreviations: INTA – Instituto Nacional de Tecnología Agropecuaria; EEA – Estaciones Experimentales (Sub-regional centers); Mza – Mendoza; Cooperadoras – Non-profit NGOs.

Source: Adapted from McDermott (2007, p. 123)

organizational and institutional environments may be too weak to offer relevant resources and information (Conceição et al., 2003; Giuliani et al., 2005). The research on Argentina, especially in the province of Buenos Aires, has shown that the policies of the 1990s largely ignored investment into institutions that provide knowledge resources, particularly those related to manufacturing (Sutz 2000; Casaburi et al., 1999).

Third, the evidence suggests that the quality of inter-firm relationships and not simply the quantity of social ties may be especially beneficial for upgrading. We highlight the strong positive effectiveness of the Assistance variables in the regressions and the marginal effects of certain ties found in Table 5. While our analysis of the marginal effects points to diminishing returns on upgrading for the addition of many social ties, our Assistance variables appear to significantly improve the likelihood of a supplier's ability to upgrade its products and processes. A few strong ties, grounded in discrete programs that induce pragmatic collaboration can help firms learn faster than others. Such findings tend to support recent research arguing that collaborative, joint problem-solving relationships rooted in customer initiated assistance programs are likely to facilitate learning and knowledge transfer for suppliers (Dyer & Hatch, 2006; MacDuffie & Helper, 2006).

These results suggest two important implications for the study of clusters. First, as emphasized in this above, analysis of relational factors is likely to yield more valuable insights for managers and policymakers in emerging markets to the extent it can begin to differentiate the relative impact of different types of inter-organizational relationships on upgrading. Our analysis tried to distinguish the value of relationships according to the type of organization, to which a firm is tied, and the quality of the tie. We also found that the impact of certain social ties can vary according to one's tier. As several network scholars have increasingly argued (Burt, 2000; Lin, 2001; Gulati et al., 2000), considerations about the variety of network resources, be they by interacting structural and relational variables or parsing out strong and weak ties, allow one to identify more consistently how certain types of knowledge resources flow through distinct patterns of relationships. Such an approach also allows one to identify which types of relationships and organizations may constrain upgrading or lack the relevant resources and knowledge to support upgrading. For instance, in some contexts MNCs might be the key source of knowledge while in others collaborative ties among local firms and their institutions might create relative advantage, regardless of the type of industry.

In the context of the Argentine automotive industry, non-market organizations and institutions appear weak as supporters of upgrading, while domestic firms appear more likely to benefit from collaborative relationships with assemblers and their customers. As mentioned above, this is an increasingly common observation from the case-based research in Latin American and other emerging market countries (Gereffi et al., 2005; Rocha, 2006). The issue is not simply whether economic activity is embedded or not in a robust cluster, but rather how network resources vary in an industry or region and what types of firm strategies and public policies can effectively reconfigure them.

Most importantly, given our purposeful approach, intentional explanations play a key role. If MNCs view emerging economies as a resource platform, then increasing

disparity rather than sustainable development is expected to happen in LATAM. On the other side, if MNCs view emerging economies as a key arena for re-combining their global knowledge with the specific knowledge of the local base, sustainable development is the expected result. This trend, called “becoming indigenous” (Hart, 2005) is the current trend shaping the globalization – localization debate.

Second, to the extent that certain types of inter-organizational relationships are likely to be exclusive and unequally distributed across firms, a key issue for scholars of international business and development alike is discerning how they come about or can be expanded to a greater variety of actors. We now turn to this issue in our analysis of the Argentine wine industry in two provinces.

IV. Argentine wine upgrading – New institutions to transform relationships

This section draws on McDermott, Corredoira, and Kruse’s (2009) unique qualitative and quantitative analysis of the transformation of the Argentine wine sector in the two neighboring, dominant winemaking provinces of Mendoza and San Juan. After a long history of backwardness and virtually no international presence, the Argentine wine sector witnessed a dramatic turnaround in the 1990s and now accounts for over 3 percent of the \$16 billion global wine market. This revival has been based on significant innovations in quality control and design of new wines and grapes (McDermott, 2007). Mendoza has led this change as the dominant exporter and innovator, pioneering a new constellation of institutions and inter-firm networks that appears to have facilitated wide spread product upgrading. San Juan, in contrast, remained a laggard, despite its numerous firms, high density of associations, and policies that ushered in new investment. In turn, by identifying how Mendoza created a new path of innovation so different from its own past and from its neighbor, we can highlight the types of institutional mechanisms that help firms access a variety of knowledge resources and learn.

By analyzing a single industry over time in two neighboring provinces, we can highlight not simply the different types of clusters that exist, but especially how government policy can change the relationships and world views of private actors. This goes to the heart of Ghoshal’s claim about the importance of an intrinsic approach – while the above discussion of the autoparts clusters highlighted the role and variation in social relations for innovation, this study reveals the ways in which government can change these relationships over time and improve the access firms have to a variety of knowledge resources.

We argue here that product upgrading depends on a firm being tied not simply to any or many organizations and GSIs, but rather to those that act as social and knowledge bridges across distinct producer communities and in turn offer firms access to a variety of knowledge resources. In particular, we highlight the ways in which governments can alter the trajectory of product upgrading not simply through largess or market liberalization but by developing a new set of GSIs with a variety of previously isolated, even antagonistic, stakeholder groups. To the extent that GSIs are constituted with rules of

inclusion and participatory governance for relevant public and private actors, they can anchor new multiplex, cross-cutting ties between producer communities that underpin their ability to provide firms with a new scale and scope of services and facilitate new problem solving relationships between them. That is, governments can reshape the structure and composition of organizational fields, and in turn, knowledge flows, by instigating the creation of new public-private institutions that recombine existing social and knowledge resources in new ways and at different levels of society (Campbell, 2004; Stark & Bruszt, 1998; Thelen, 2003).

The relational view of product upgrading is widely embraced in studies of developing countries in general and wine in particular (Giuliani & Bell, 2005; Perez-Aleman, 2005; Roberts & Ingram, 2002; Swaminathan, 2001). Upgrading in wine takes several years, beginning with transforming the middle segments of the value chain: state-of-the-art quality control and product development running from careful vineyard maintenance to flawless harvests to fermentation and blending. Enologists work closely with agronomists and growers to introduce, evaluate, and document experiments with new methods of growing and fermentation for different types of varieties and clones. Because of the variation in climates and soils, experimentation is contextualized and knowledge is often tacit, posing barriers to dissemination and application elsewhere. In turn, to accelerate product upgrading, wineries gain a variety of market and applied technical knowledge from other firms as well as collective resources housed in industry associations, schools, and GSIs.

Such coordination and relational-based upgrading is not necessarily forthcoming, however, especially for firms embedded in volatile environments with limited resources and potentially fragmented industry structures. Developing countries, such as Argentina, are widely known for their lack of collective knowledge resources, weak markets, and limited state capacities (Doner et al., 2005; Schmitz, 1994). Moreover, although diversity and a decentralized industry structure can be sources of innovation, they can also exacerbate the problems of concerted action and block the wide-spread diffusion of new practices (Jacobs, 1984; Romanelli & Khessina, 2003). Mendoza and San Juan have over 100 micro-climates supporting a wide variety of high value grapes and thousands of small vineyards, which typically supply 30-50% of a winery's needs. Both provinces still have over 680 and 170 wineries, respectively, which range from many small and medium family firms to some cooperatives and a few large diversified corporations.⁴ Over three hundred wineries export, with relatively low concentration ratios by international standards.

⁴ On the variety and decentralized structure of wine and grape production, see Cetrangolo *et al.* (2002) and Ruiz & Vila (2003). According to the data from the Instituto Nacional Vitivinícola (INV), there were still over 16,000 vineyards in Mendoza and 6,000 in San Juan; vineyards in both provinces with less than 25 has. still accounted for about 92% of the total number and 60% of surface area. According to the 2003 agricultural survey of vineyards in Mendoza, the largest 18 vineyard owners control only 5% of vineyard surface area, and about 1100 owners control 50%. (Authors' calculations for both sets of figures.)

IVa. Comparing Mendoza and San Juan

Given the coordination problems associated with product upgrading, our comparison of the two transformation paths focuses on two related questions that link the mechanisms of upgrading with broader policy problems of development. How were a broad set of firms able to upgrade their products and exploit variety rather than being paralyzed by it? What types of new institutional mechanisms were created to help firms access a variety of knowledge resources and learn?

Typical analyses would rely on the inherited economic and social endowments of the two provinces as determinants for the different paths. But in showing in detail the limitations of these approaches, McDermott (2007) revealed how the two provinces had a similar socio-economic structure, which then diverged in the 1990s because of new policies in Mendoza. It is especially noteworthy for the clusters literature that both provinces had similar level of SME density, natural resources, human resources, and stock measures of social capital. While the two provinces had similar indicators of associationalism and business-government relationships through the 1980s, a key problem for knowledge creation was the fragmented nature of social and political life between producer communities or *Zonas* within the provinces. For instance, while firms within particular *Zonas*, such as the *Zona Primera* and the *Zona Este*, often learned from one another and had their own trade associations to lobby the government for subsidies, they viewed their counterparts in other *Zonas* as rivals, from whom they had little to learn. The traditional policy making in the provinces of zero-sum games on price supports also reinforced weak horizontal ties between sectoral and zonal associations and ad hoc vertical ties between just a few associations and the government (Paladino & Jauregui, 2001; Rofman, 1999). Figure 2 gives a simplified depiction of this structure of policy making in the wine industry in Mendoza in 1987. One could give a similar depiction of San Juan in both the 1980s and 1990s.

The need for more specific applied knowledge and skills, coupled with regional prejudices and resource inequalities, can create barriers to the processes of aggregation and joint action vital for a sustainable base of innovation. As discussed above, public policy can remedy this problem by initiating a process in which public and private actors create new institutions with governance principles that anchor new horizontal ties between previously isolated producer communities. Such a view shifts the comparative lens of upgrading paths away from the existing economic and social endowments of regions and toward their institution-building processes.

A fruitful comparative analysis, in turn, focuses on how the contrasting policies toward resolving a common crisis in the late 1980s in the two regions led to the formation of different organizational and institutional arrangements in the 1990s. With the Argentine economy stagnating and the wine industry collapsing, the focal points of the crisis were both provinces' respective state-owned, perennial loss-making wineries, Cavic in San Juan and Giol in Mendoza, whose purchasing contracts and inflated prices effectively promoted the production of large volumes of low-quality wine (Azpiazu & Basualdo, 2003). San

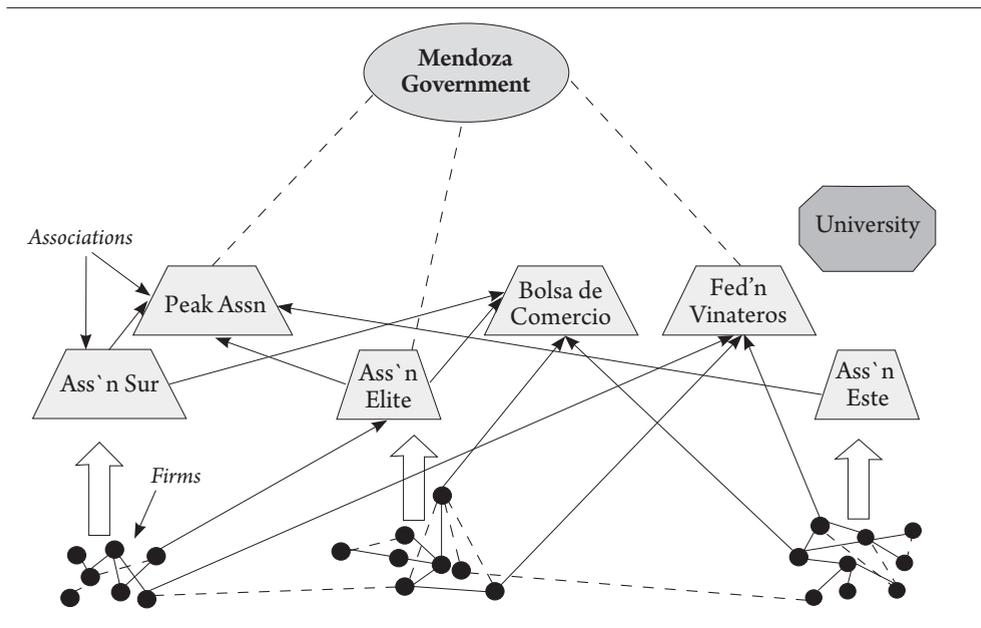


FIGURE 2. Policymaking and strategic ties in the Mendoza wine industry, 1988

NB. Guide for both Figures 1 and 2: Solid black circles represent firms in different regions in Mendoza. Each region has its main wine business association, as shown by the large white arrow. Dashed lines represent weaker links of contracting or communication than solid lines. Solid arrows denote membership and board participation in relevant associations and institutions.

Juan's government sought to insulate itself and rapidly impose high-powered, arm's-length economic incentives on society to induce change. It first chose to rapidly privatize the Cavic to local interests, brushing off the protests of dependent small grape growers and wineries. The firm soon failed again, causing the government to intervene and liquidate it. Then through the 1990s, the government focused on attracting new investment through a federally subsidized tax incentive. By most accounts this policy did bring in record levels of investment to the wine industry but failed to encourage broad based upgrading. The economic benefits remained concentrated among a few large firms that had little interest in incorporating and diffusing new practices along the value chain. The top down approach also exacerbated the fragmentation and animosities among relevant sectoral associations and the state, and perpetuated the old strategies of divide and rule cum rent-seeking. For instance, on several occasions during the 1990s, different sectoral associations proposed new institutions to support training and export promotion. Each attempt failed, with the state and the associations accusing each other of free-riding and attempting to gain control of state resources.

In contrast, Mendoza gradually built a new set of GSIs to provide a variety of new support services and resources in agriculture and especially the winemaking value chain (e.g., hazard insurance, training, R&D, export promotion, etc.). The first experiment

came in 1987-88, when the newly elected provincial administration chose to transform Giol into Fecovita, a federation of cooperatives, which were created from the previously dependent thousands of small grape growers and wineries. This experience not only revitalized the cooperative sector, but also initiated a broader effort by the Mendoza government to create Public Private Institutions (PPIs) de novo and then later reform existing GSIs with socio-economic partners over ten years (McDermott, 2007).

Table 6 gives an abridged description of the most prominent PPIs, their different support activities, and shared governance traits. They are public-private in their legal form, governance structures, resources, and membership, which includes representatives from the government and associations of a variety of zones and sub-sectors. As a sub-group of GSIs, they too received at least partial public funding, had state representatives on their boards, and had a public mandate.

But the aforementioned characteristics made the PPIs distinct from the pre-existing GSIs, since the latter were state/bureaucratic centered in their governance and had only ad hoc contact with a few elite groups instead of having governance and resource ties to a variety of associations. They were also distinct from the pre-existing sectoral and zonal associations, since the latter were voluntary organizations with no government representation or resources, were narrow in membership and mission, and had few services other than lobby the government as mentioned above.

Our particular interest is how the distinct governance rules of PPIs anchored their ability to act as multiplex bridges (Padgett & Ansell, 1993; Burt, 1992) between the public and private domains as well as between the relevant producer communities, and in turn create mechanisms to improve firm access to a variety of knowledge resources. Figure 3 gives a simplified depiction of this new structure and the role of PPIs in Mendoza in 2000. The combination of these governance rules and network qualities in PPIs fostered three mechanisms to transmit a new variety of applied knowledge to firms. First, in combining the material and informational contributions of the public and private participants, the PPIs gradually built up knowledge resources at a scale, scope and cost that the government and the associations could not have provided individually and did not exist before or in other provinces. For instance, INTA Mendoza, IDR, and ProMendoza pioneered new detailed mappings of the micro-climates for grapes and other agricultural products; data bases on best practices (internationally and sub-regionally), harvests, and product markets; benchmarking and training programs for different sectors and zones; and teams of experienced consultants. The staff acquired such contextualized knowledge from the input of the associations themselves, their own research, and the various service contracts with constituent firms. Similar to the technology centers described by McEvily & Zaheer (2004), these PPIs became public repositories of diverse practices and standards and also of repackaged knowledge to be adapted to particular settings.

Second, PPIs produced services that integrated the needs of their different constituencies with international standards. The leverage of each participant came from its ability to provide or withhold resources as well as its ability to voice proposals and

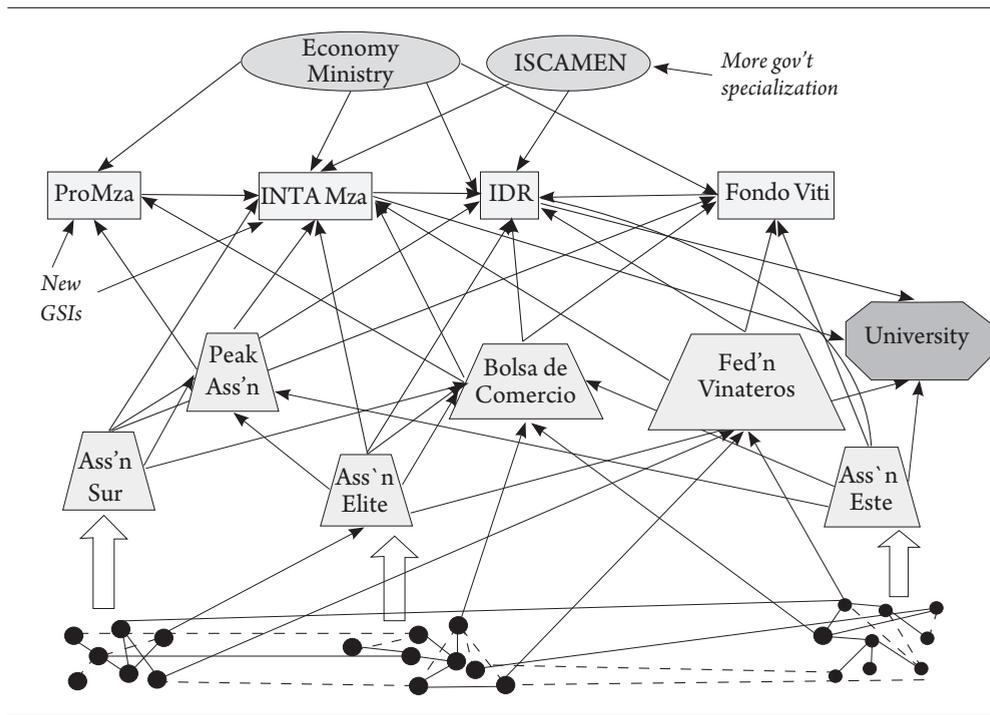


FIGURE 3. Policymaking and strategic ties in the Mendoza wine industry, 2000

grievances through the board. Third, the PPIs built programs to help firms learn from one another and create new relationships. Both firm managers and directors of these institutions repeatedly told us that one of the most valued qualities of services was the way they helped to diffuse standards, practices, and experiences from one zone or sector to another. A typical example of an indirect method was the use of INTA Mendoza's testing labs and viticulture consultants by a variety of firms, from the most elite to the fragile cooperatives. With this diverse experience, INTA Mendoza began documenting, benchmarking, and teaching practices from the most advanced form of computer monitored drip-watering to new applications of the more traditional orthogonal vine training systems. The most common examples of a more direct method of knowledge transmission and relationship building was the use by INTA, IDR, and ProMendoza of multi-firm training and research programs based on collective problem-solving techniques.

By the end of the 1990s, the overlapping ties and demonstration effects of the new institutions channeled spillovers across policy domains and provinces. Within Mendoza, the older, more archaic institutions and GSIs, such as the regional university, the province's phytosanitary regulator, and the national regulating agency for wine, began to change their programs, standards, and governance structures largely due to their participation in new advisory councils and industry support programs. The Mendoza gov-

ernment and associations also spearheaded the replication of the institutional model at a national level that was signed into law in late 2004. Beginning in 2002, the San Juan government openly criticized the old approach of tax incentives and advocated the creation of new public-private institutional resources for training, R&D, and export promotion. Indeed, the government explicitly mentioned INTA San Juan, INTA Mendoza's satellite center, as an exemplary model (Gobierno de San Juan, 2004).

In sum, Mendoza's approach to building new GSIs appears to have helped induce upgrading by improving the access firms had to a variety of knowledge resources and functioning akin to the "network facilitator" role discussed by McEvily & Zaheer (2004). The rules of inclusion and multi-party governance helped representatives of previously isolated producer communities gradually forge common strategies and a coherent, dynamic set of support policies with the state. Consequently, the programs and services of the relevant institutions helped firms learn how to apply new knowledge with existing natural inputs and build new relationships with one another. With statistical techniques, we now explore the degree to which this new constellation of organizational and institutional ties, once it had taken root, improved a firm's product upgrading.

IVb. Network composition and product upgrading

In collaboration with IAE of Buenos Aires and IDR of Mendoza, McDermott et al. (2009) designed and implemented a survey of about 120 wineries from all zones of Mendoza and San Juan in 2004-05. The survey had a 90% response rate and focused on measuring the upgrading capabilities of firms, their demographics, and their public-private networks. The cross-sectional nature of our quantitative data impedes us from statistically tracking the changes in a firm's network and product upgrading. It does however allow us to evaluate how the composition and structure of a firm's ego-network impact its product upgrading, and the plausibility of our key claim that Mendoza's policy approach facilitated firm access to a new variety of knowledge resources by creating new institutions with multiplex bridging qualities that fostered cross-cutting ties between producer communities.

Our previous theoretical and empirical discussions argued that the alters, which appeared most valuable to firms, were those offering a new variety of applied knowledge resources and cross-cutting channels of information and professional contacts between different producer communities, especially the different zones. Mendoza's approach appeared to improve access for firms to a variety of knowledge resources by creating a new set of GSIs, the PPIs, and then reforming the old GSIs to offer new services directly to firms and foster new types of relationships between them. Our qualitative analysis further suggested that wineries benefited most from their interactions with other firms and the GSIs, because these alters, as opposed to the other types, offered the combination of new knowledge resources and inter-active relationships for solving ongoing problems of product development. In contrast, pre-existing organizations, such as schools, banks, associations, and cooperatives were not the repeated recipients of policies to

new knowledge resources directly for the firm or remained focused in their membership, clientele, and social orientation toward their locality or zone. Furthermore, our discussion above noted that Mendoza's PPIs were especially effective because of the ways in which their governance rules anchored their ability to act as social and knowledge bridges between distinct production communities or Zonas. That is, the evidence suggested that alters, be they firms or GSI, could be effective hubs of diverse knowledge resources because they would have ties to many firms from different Zonas.

McDermott et al. (2009) tested these qualitative claims by regressing a set of control and network variables on a firm's level of *Product Upgrading*, which measures the extent to which the firm implemented practices associated with the introduction of new and higher value wines, experimentation with new blends, varietals, and clones, monitoring domestic and foreign markets.⁵ The explanatory, network variables measure the degree to which a firm regularly interacts, collaborates, and exchanges information with different types of organizations and institutions, such as other firms, banks, schools, associations, cooperatives, and GSIs. Ties to Firms and Ties to GSIs were then decomposed in two ways. First, the authors decomposed Ties to GSIs into Ties to Old GSIs and Ties to PPIs, which are the new GSIs that Mendoza created in the 1990s. Second, to capture our claim that firms gain access to diverse knowledge resources particularly via mediating alters which themselves are tied to a variety of firms from different locations, we decomposed Ties to Firms and Ties to GSIs into those that were the most central and had the highest levels of network geographic diversity and those that were not. The control variables were: Size, Foreign Ownership, Knowledge Stock, Upgrading Intent, location dummies for the different zones.

Table 5 gives an abbreviated presentation of the results. The only control variables that were consistently significant were Education and Upgrading Intent. The results strongly suggest that product upgrading was greatly enhanced when a focal firm had many and strong ties: a) to other (alter) firms and to GSIs; b) to PPIs but not other Old GSIs; c) to firms and GSIs with the strongest centrality and bridging traits. If access to diverse knowledge is key, then higher levels of upgrading should be associated with ties to alters that have the highest centrality and bridging traits but not with ties to alters that lack these traits. The results appear to broadly confirm our claim, but more so for GSIs than for firms. The combination of these quantitative results and our qualitative analysis suggest that a firm's access to diverse knowledge resources depends on it being tied not just to any or many organizations and institutions but particularly on its being tied to those that excel in centrality and bridging qualities. These results have two important implications for public policy and innovation.

First, to the extent that access to a variety of knowledge resources is vital for firm upgrading, the qualitative and quantitative evidence reframes our notion about which types of alters may facilitate such access. Prior research on innovation has emphasized

⁵ The complete discussion of the methods, regressions, and the results can be found in McDermott, Corredoira & Kruse (2009).

TABLE 5. Summary of regression results – impact of network ties on product upgrading of focal firms (Full models with controls on firms demographics, locality, all types of ties)

Variables	Statistical Significance
Ties to Other Firms and to GSIs	Positive, at the 0.01 level
Ties to Associations, Banks, Cooperatives, and Schools	Negative or Insignificant
Ties to PPIs vs. Ties to Old GSIs	Positive at the 0.05 level for PPIs
Ties to Most Central Alter Firms	Positive, not Significant
Ties to Most Central GSIs	Positive at the 0.05 level
Ties to “Bridging Firms” (highest degree of geographic diversity)	Positive at the 0.05 level
Ties to “Bridging GSIs” (highest degree of geographic diversity)	Positive at the 0.05 level

Based on McDermott, Corredoira & Kruse (2009)

the importance of firms and associations providing cross-cutting relationships between previously isolated groups of firms (Fleming, 2001; Safford, 2007; Zuckerman & Sgourev, 2006) and the role of GSIs helping diffuse knowledge in providing collective resources and having a public mission to share new knowledge (Breznitz, 2007; Owen-Smith & Powell, 2004). The evidence here supports a blending of the two views in that the effectiveness of government programs are rooted in the institutionalization of their network qualities. The innovation in Mendoza’s approach was developing a new set of GSIs, the PPIs, with rules of inclusion and participatory governance. These rules anchored the multiplex bridging qualities of PPIs that underpinned their ability to provide a new scale and scope of knowledge resources to firms and mold new relationships between them. Hence, this research suggests that firms can improve their access to a variety of knowledge resources and their attendant “combinatory capacities” (Moran & Ghoshal, 1999, p. 409) if they participate in structures that are constituted with the aforementioned institutional and network qualities.

Second, the evidence in its entirety suggests that organizational fields can be reshaped in different ways, primarily because one component – GSIs – is highly responsive to government policy. This is consistent with growing work on issues ranging from technology diffusion to health care to emerging market corporate governance that shows the impact of government policy in structuring inter-organizational networks (Knoke, 2001; Owen-Smith & Powell, 2004; Provan & Milward, 1995; Stark & Vedres, 2006). Hence, a long term consequence of Mendoza’s policy has been to reshape the organizational field in ways that differed significantly from the province’s past and from San Juan. For instance, Figure 4 offers a UCINET (Borgatti et al., 2002) depiction of the ties between focal firms and the entities we coded as GSIs, comparing the two provinces. An immediate observation is that firms in Mendoza now live in a much richer institutional environment than those in San Juan. Such a view coincides with the increasingly growing argument that locational variables, some of which were significant in our models, should be viewed not simply as proxies for geography and natural

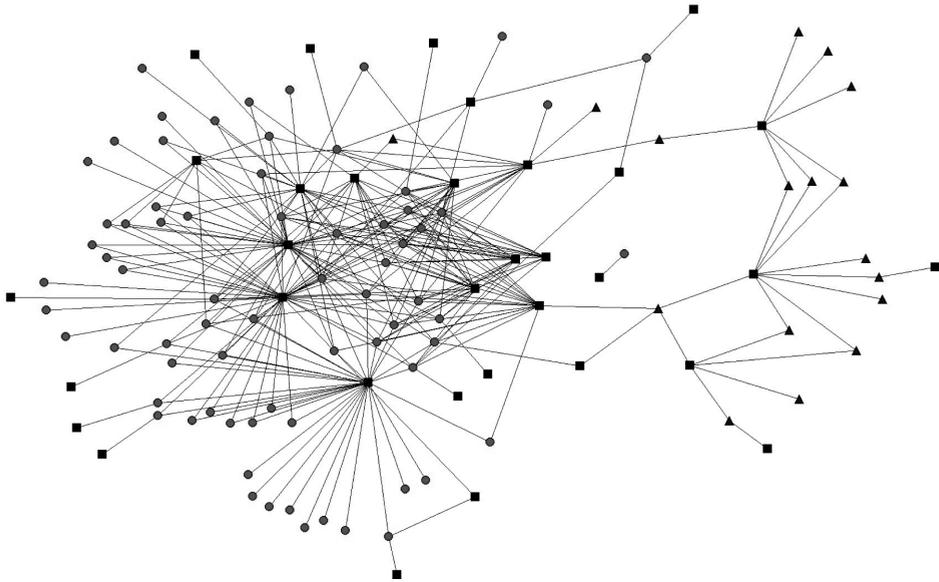


FIGURE 4. Ties between focal firms and GSIs-Mendoza & San Juan, 2005

Note: The circles on the left denote wineries in Mendoza. The triangles on the right denote wineries in San Juan. The squares denote GSIs. Source: Authors' survey data, 2004-05.

resources but as indicators of the different constellations of organizations and institutions, in which a firm is embedded (Granovetter, 2002; Locke, 2005; Owen-Smith & Powell, 2004; Saxenian, 1994).

IV. Conclusion

This paper has attempted to offer an alternative view about the development of upgrading capabilities in firms from emerging markets. Building on prior work about the distinctive contributions clusters make toward knowledge creation (Tallman et al., 2004; Arikan, 2009) and about the role of agency in reshaping socio-economic relationships (Ghoshal, 2005), we have argued for a purposeful approach that emphasizes how public and private actors can construct new institutions that facilitate upgrading by acting as social and knowledge bridges between previously isolated producer communities even within the same region.

We proceeded in two steps. First, we found that the distinction between clusters and industrial agglomerations is relevant from the conceptual, empirical and policy standpoint. Second, in order to achieve a fine-grained knowledge of how to transform existing industrial agglomerations into dynamic clusters, we focused on two cases studies in Argentina. Our discussions of the transformation of the Argentine autoparts and wine

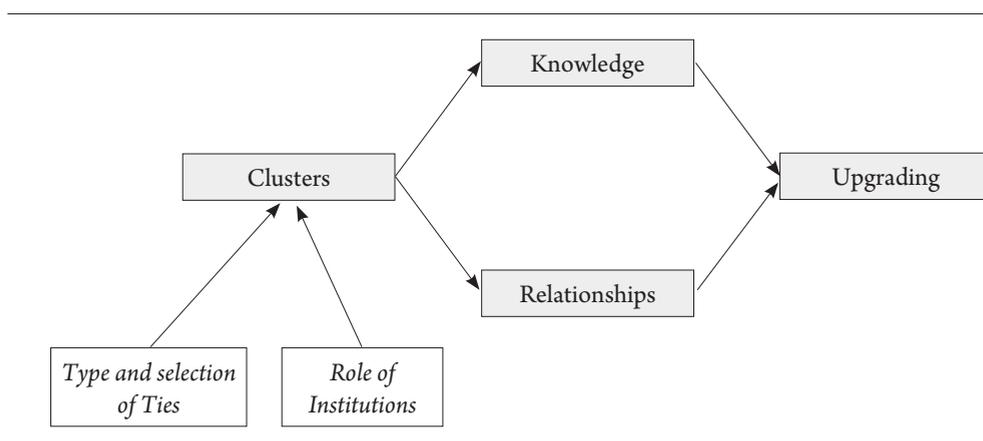


FIGURE 5. Clusters and upgrading – ex-post conclusions

sectors suggest relationships and organizational constellations are more malleable than scholars assume.

We first showed how learning and upgrading are often products of specific types of relationships with certain organizations. In turn, knowledge creation and diffusion is a social process but key relationships are not equally distributed across firms. For instance, the evidence from the autoparts sectors showed how domestic firms tend to learn from just a few social ties to assemblers and from programs that promote pragmatic collaboration with customers. But does this mean that such ties cannot be replicated and expanded?

The evidence from the Argentine wine sector suggests that they can. The experience from Mendoza revealed that governments can pursue policies that can improve upgrading by helping recombine social and knowledge resources. That is, by creating new public-private GSIs with relevant stakeholder groups, the Mendoza government initiated a process whereby firms could build new relationships and learn more rapidly. For instance, PPIs endowed with the principles of inclusion and participatory governance have multiplex bridging traits that improve the access firms have to a variety of knowledge resources.

These findings enrich the original model presented in Figure 1, providing two new phenomena: the type and selection of ties and the role of institutions. The new model is presented in Figure 5. The model suggests that managers and policymakers do not have to be passive actors beholden to existing structure but can improve innovation by creating institutions and organizations that have multiplex bridging traits discussed above.

The challenges for future research are, at least, twofold. The first challenge is to identify the types of relationships that foment co-creation and acquisition of knowledge, and learning. The second challenge is to explore how public and private actors might breed knowledge and learning in contexts where firms appear trapped in their existing

social structure. In other words, the challenge is identifying the conditions for building sustainable and learning relationships. In doing so, we would advance not only a much more purposeful and pragmatic understanding of clusters and their impact on upgrading, but also a much more rigorous theory on development and international competitiveness of organizations and industries in emerging economies.

To the extent that our argument holds ground, it invites managers to explore strategies focused recombining their existing network ties and knowledge resources with other organizations. Moreover, our argument suggests that managers view public policy in terms not simply of greater public spending on industry or greater market liberalization but rather in the ways that they can collaborate with government to construct new institutions that facilitate the co-creation of knowledge and relationship, therefore fostering upgrading during the very same process.

References

- Arikan, A. T. (2009). Interfirm knowledge exchanges and the knowledge creation capability of clusters. *Academy of Management Review*, 34(4), 658–676.
- Audretsch, D. B. & Stephan, P. E. (1996). Company-Scientist Locational Links: the Case of Biotechnology. *American Economic Review*, 86(3), 641–652.
- Baptista, R. & Swann, P. (1998). Do Firms in Clusters Innovate More? *Research Policy*, 27(5), 525–540.
- Chesbrough, H., W. (2005). *Open Innovation: the new Imperative for Creating and Profiting from Technology*, Harvard Business School Press.
- Davidsson, P. & Wiklund, J. (2001). Levels of analysis in entrepreneurship research: Current research practice and suggestions for the future. *Entrepreneurship: Theory & Practice*, 25(4), 81–99.
- Doner, R. F., Ritchie, B. K., & Slater, D. (2005). Systemic vulnerability and the origins of developmental states: Northeast and Southeast Asia in comparative perspective. *International Organization*, 59(2).
- Dyer, J. H., & Hatch, N. W. (2006). Relation-specific capabilities and barriers to knowledge transfers: creating advantage through network relationships. *Strategic Management Journal*, 27(8), 701.
- Fleming, L. (2001). Recombinant uncertainty in technological search. *Management Science*, 47(1), 117–132.
- Gereffi, G., Humphrey, J., & Sturgeon, T. (2005). The governance of global value chains. *Review of International Political Economy*, 12, 78.
- Ghoshal, S. (2005). Bad Management Theories are Destroying Good Management. *Academy of Management Learning & Education*, 4(1), 75–91.
- Giuliani, E., Pietrobelli, C., & Rabellotti, R. (2005). Upgrading in global value chains: lessons from Latin American clusters. *World Development*, 33(4), 549–73.
- Gulati, R. (1999). Network location and learning: the influence of network resources and firm capabilities on alliance formation. *Strategic Management Journal*, 20, 397–420.
- Gulati, R., Nohria, N., & Zaheer, A. (2000). Strategic networks. *Strategic Management Journal*, 21, 203–215.
- Hart, S. (2005). *Capitalism at the Crossroads: The Unlimited Business Opportunities in Solving the World's Most Difficult Problems*. Wharton School Publishing.

- Helper, S., MacDuffie, J. P., & Sabel, C. (2000). Pragmatic collaborations: advancing knowledge while controlling opportunism. *Industrial & Corporate Change*, 9(3), 443.
- Herrigel, G. (2004). Emerging strategies and forms of governance in high-wage component manufacturing regions. *Industry & Innovation*, 11(1/2), 45.
- Hsu, J. Y. and A. Saxenian (2000). The Limits of Guanxi Capitalism: Transnational Collaboration Between Taiwan and the Usa. *Environment and Planning*, 32(11), 1991–2005.
- Humphrey, J. & Memedovic, O. (2003). The Global Automotive Industry Value Chain: What Prospects for Upgrading by Developing Countries. In UNIDO, editor, *Sectoral Studies Series*. Vienna.
- Lin, N. (2001). Building a Network Theory of Social Capital. In N. Lin, K. Cook & R. S. Burt, (eds.), *Social Capital: Theory and Research* (pp. 3–30). New York: Aldine de Gruyter.
- Locke, R. (1996). *Remaking the Italian Economy*. Ithaca: Cornell University Press.
- Lovas, B. and S. Ghoshal (2000). Strategy as Guided Evolution. *Strategic Management Journal*, 21(9), 875–896.
- MacDuffie, J. P., & Helper, S. (2006). *Collaboration in Supply Chains: With and Without Trust*. In C. Heckscher & P. Adler, (eds.). *The Firm as Collaborative Community*. New York: Oxford.
- Marshall, A. (1966). *Principles of Economics*. London: Mcmillan.
- McDermott, G. A. (2002). *Embedded Politics: Industrial Networks and Institutional Change in Postcommunism*. Ann Arbor: University of Michigan Press.
- McDermott, G.A. & Corredoira, R.A. (2009). Network Composition, Collaborative Ties, and Upgrading in Emerging Market Firms: Lessons from the Argentine Autoparts Sector. *Journal of International Business Studies*. (Forthcoming).
- McDermott, G.A., Corredoira R.A., & Kruse, G. (2009). Public Private Institutions as Catalysts for Upgrading in Emerging Markets. *Academy of Management Journal*. (Forthcoming).
- McEvily, B. & Marcus, A. (2005). Embedded ties and the acquisition of competitive capabilities. *Strategic Management Journal*, 26(11), 1033–55.
- McEvily, B. & Zaheer, A. (1999). Bridging ties: a source of firm heterogeneity in competitive capabilities. *Strategic Management Journal*, 20(12), 1133–56.
- Miles, R., Miles G., et al. (2005). *Collaborative Entrepreneurship: how networked firms use continuous innovation to create economic wealth*. Stanford, CA: Stanford University Press.
- Moran, P., & Ghoshal, S. (1999). Markets, firms, and the process of economic development. *Academy of Management Review*, 24(3), 390.
- Morley, S. A. (2001). Distribution and Growth in Latin America in an Era of Structural Reform: the Impact of Globalisation. *OECD Development Centre Technical Papers*, (184), 1–36.
- Nahapiet, J., Gratton L., et al. (2005). Knowledge and Relationships. When Cooperation is the Norm. *European Management Review*, 2(1), 3–14.
- Porter, M. E. (1990). The Competitive Advantage of Nations. *Harvard Business Review*, 68(2), 73–93.
- Powell, W. W., White, D. R., Koput, K. W., & Owen-Smith, J. (2005). Network dynamics and field evolution: the growth of interorganizational collaboration in the life sciences. *American Journal of Sociology*, 110(4), 1132.
- Rocha, H. (2004). Entrepreneurship and Development: the Role of Clusters. A Literature Review. *Small Business Economics*, 23, 363–400.
- Rocha, H. (2006). The Entrepreneurship and Cluster Foundations of Development: Theoretical Perspectives and Latin American Empirical Studies. *Blackwell, Strategic Management Society Book Series*. P. 114–159.
- Rocha, H., Reynolds, P, Donato, V, Haedo, C. (2004). Local Production Systems, Entrepreneurship and Regional Development: Theoretical Arguments and Empirical Evidence from Argentina. Presented at the *Babson – Kauffman Entrepreneurship Research Conference*, Glasgow.

Rocha, H., Sternberg, R. (2005). Entrepreneurship: The Role of Clusters. Theoretical Perspectives and Empirical Evidence from Germany. *Small Business Economics*, 24(3), 267–292.

Saxenian, A. (1994). *Regional Advantage. Culture and Competition in Silicon Valley and Route 128*. Harvard University Press.

Schmitz, H., and Musyck, B. (1994). Industrial Districts in Europe: Policy Lessons for Developing Countries? *World Development*, 22(6), 889–910.

Schumpeter, J. A. (1934). *The Theory of Economic Development*. Cambridge, MA: Harvard University Press.

Song, J. (2002). Firm capabilities and technology ladders: sequential foreign direct investments of Japanese electronic firms in East Asia. *Strategic Management Journal*, 23(3), 191.

Tallman, S., Mark J., Nick H., Pinch S. (2004). Knowledge, clusters, and competitive advantage. *Academy of Management Review*, 29(2), 258–271.

Uzzi, B. & Lancaster, R. (2003). Relational embeddedness and learning: the case of bank loan managers and their clients. *Management Science*, 49(4), 383.