Do clusters matter to firm and regional development and growth?

Evidence from Latin America

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Abstract

Purpose – This paper aims to analyse the impact of clusters on development and growth at the firm and regional level in Latin America (LA). The past 20 years have witnessed an acceleration of cluster initiatives, assuming their positive impact on firm performance and regional development. However, theoretical development and empirical meta-studies in emerging countries to validate this assumed relationship are scarce.

Design/methodology/approach – This paper reviews empirical evidence from a population of 123 studies and a sample of 45 empirical studies including 216 clusters in LA.

Findings – It concludes that clusters contribute to both development and growth at the firm- and regional-level contingent to factors such as cluster stage of development, collective efficiency, the pattern of governance of the value chain and the sector in which the firm operates; however, clusters are also a potential source of socio-economic divides.

Originality/value – Therefore, these results qualify the conclusions of studies of clusters in developed countries (Porter, 2003; Delgado *et al.*, 2010).

Keywords Embeddedness, Latin America, Firm performance, Regional development, Clusters, Industrial agglomerations

Paper type Research paper

Resumen

El propósito – Los últimos 20 años han sido testigos de una aceleración en las iniciativas de clusters, asumiendo su positivo impacto en el desempeño de las empresas y el desarrollo regional. Sin embargo, el desarrollo teórico y los estudios empíricos en países emergentes para validar esta relación son escasos. Este artículo tiene como objetivo comprender el impacto de los clusters en el desarrollo y en el crecimiento tanto a nivel de las empresas como de las regiones en Latinoamérica.

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La metodología – Este artículo revisa los argumentos teóricos y evidencia empírica de una muestra de 45 estudios empíricos incluyendo 216 clusters en Latinoamérica.

Los resultados – Los clusters contribuyen tanto al crecimiento como al desarrollo, moderados por factores como la madurez del cluster y la eficiencia colectiva, el patrón de gobierno de la cadena de valor y el sector en el que la empresa opera; no obstante, los clusters representan también una potencial fuente de brechas socioeconómicas.

La originalidad/el valor – Por lo tanto, estos resultados cualifican las conclusiones a la cual arriban estudios de clusters realizados en países desarrollados (Porter, 2003; Delgado *et al.*, 2010).

Palabras clave Desarrollo regional, desempeño de la empresa, rentabilidad, clusters, aglomeraciones industriales, América Latina, embeddedness.

Tipo de artículo – Artículo de investigación

Resumo

Propósito/objectivo – Os últimos 20 anos foram testemunhas de uma aceleração de iniciativas de clusters, assumindo seu impacto positivo sobre o desempenho da empresa e o desenvolvimento regional. No entanto é escasso o desenvolvimento teórico, e os estudos empíricos, em países emergentes, para validar esta relação. Este trabalho tem como objetivo compreender o impacto dos clusters no desenvolvimento, e crescimento, empresarial e regional na América Latina.

Metodología – Este trabalho tem como metodología la reveção de análises teóricas e evidências empíricas, a partir do estudo de uma amostra de 45 estudos empíricos, incluindo 216 clusters na América Latina.

Resultados – Os clusters contribuem para o desenvolvimento e crescimento, moderados por fatores como a madurez do mesmo e a eficiência coletiva, também o modelo de administração da cadeia de valor e do setor em que a empresa opera; no entanto os clusters também são uma fonte potencial de divisão socio-econômica.

Originalidade/valor – Assim sendo estes resultados relativizam as conclusões a que chegam os estudos de clusters realizados em países desenvueltos (Porter, 2003; Delgado *et al.* 2010).

Palavras clave Desenvolvimento regional, desempenho da empresa, clusters, pólos industriais, América Latina, embeddedness.

Tipo de artigo – Artigo de investigação

1. Introduction

Economic geographers, economists, sociologists, researchers in business and management and policymakers have witnessed an increased interest in the study of clusters – i.e. geographical concentrations of interdependent firms, governmental agencies and non-governmental organisations in related industries – in the past two decades.

In particular, management researchers propose cluster development as one of the factors that may help to fix the current capitalist system (Porter and Kramer, 2011), which echoes the intrinsic connection between organizations and societal-level outcomes highlighted by both the founding fathers of management (Barnard, 1938; Selznick, 1957; Drucker, 1954) and current prestigious researchers and practitioners (see Margolis and Walsh, 2003; Bies *et al.*, 2007 for a review)[1]. From the policy standpoint, two-thirds of European Union countries have introduced the cluster approach in their innovation policy (UNIDO, 2009). It is no surprise, then, that "hundreds of clusters initiatives have been launched involving virtually all the regions of the world" (Porter, 2003a, p. 5; UNIDO, 2009). In the case of Latin America (LA), firms and sectors perform very differently even under similar macroeconomic conditions (Elstrodt *et al.*, 2002;

Porter, 2001a, 2001b), which has led some authors to argue that a macroeconomic climate is a necessary but not a sufficient condition for competitiveness (Porter, 2001a, 2001b). These arguments have attracted the attention of international organisms and policymakers, who are committing important investments in cluster-led initiatives (Pietrobelli and Stevenson, 2011).

An important reason underlying this increased interest in clusters is their assumed impact on firm performance, regional economic development and national competitiveness (Porter, 1998, 2003b). Theoretically, clusters could be considered as one of the contributing factors to economic development and growth, according to the endogenous development (Garofoli, 1992; Nelson, 1993) and endogenous growth (Romer, 1986; Lucas, 1988) theories. At the firm level of analysis, management researchers studying regional clusters have focussed on the impact of clusters on outputs such as innovation (Whittington *et al.*, 2009) or on internal mechanisms, such as trust and inter-firm collaboration (Mesquita, 2007), inter-firm knowledge exchange (Arikan, 2009) and inter-organizational governance (Bell *et al.*, 2009). Empirically, preliminary results in developed countries provide some evidence that shows the positive impacts of clusters on both regional outputs such as entrepreneurship, innovation and employment (Porter, 2003b; Rocha and Sternberg, 2005; Delgado *et al.*, 2010) and firm-level output such as innovation, learning capacity and wages (Porter, 2003b; Pinch *et al.*, 2003; Pietrobelli and Rabellotti, 2007), although this evidence is not at all conclusive (McCann and Folta, 2008).

Notwithstanding the theoretical arguments and the policy motivation and investment in cluster-led initiatives, theoretical development considering LA specificities and meta-studies researching this relationship are scarce, given both theoretical and empirical reasons. Theoretically, specificities in public policies, industrial organisation and development suggest additional arguments underlying cluster outcomes in LA as compared to other countries. Research on clusters in Latin American Countries (LAC) has begun to consider some country specificities (cf. Schmitz and Nadvi, 1999; Altenburg and Meyer-Stamer, 1999; Dávila Flores, 2007; Teixeira and Ferraro, 2009), but this body of research still lacks theoretical frameworks that capture relevant dimensions in emerging economies. For example, the development-related issues of poverty and inequality that characterise LAC (Morley, 2001) are not included in the general frameworks on cluster outcomes (cf. Porter, 1990; Solvell *et al.*, 2003). Another relevant dimension not captured in the current theoretical frameworks is the impact of multinational corporations (MNCs) on the host economy and society in emerging economies. This latter dimension is relevant because MNCs face both the challenge of becoming indigenous (Hart, 2005) or, in other words, the challenge of territorial embeddedness given their developmental impact on host economies (Coe and Wrigley, 2007, p. 346; Porter and Kramer, 2011, p. 71). Empirically, the lack of data availability and homogeneity has prevented comprehensive empirical studies on the impact of clusters on firm performance and regional development in LAC (Solvell *et al.*, 2003, p. 33; Porter and van der Linde, 2002; Vassolo *et al.*, 2011).

This paper aims at understanding the impact of clusters on development and growth at the firm and regional level in LA, reviewing empirical works. Two research questions guide this paper:

RQ1. What is the impact of clusters on firm and regional development and growth in LAC?

RQ2. Are there any LAC-specific factors that explain the relationship between clusters, development and growth at the firm and regional level?

The scope of the paper is limited to cluster outcomes and does not consider the determinants of cluster formation and upgrading. Methodologically, given data heterogeneity on clusters in LA, the scope is limited to a meta-study or qualitative research across studies, applying a matrix approach to literature reviews of empirical studies (Salipante *et al.*, 1982). Rigorous quantitative studies require similar variables and data homogeneity across studies (Singleton and Straits, 1999), which cannot be found in cluster studies except in the case of studies based on a standardised dataset on clusters (cf. Porter, 2003b; Delgado *et al.*, 2010). Figure 1 depicts the focus and scope of this paper.

The structure of the paper is as follows. The next section defines clusters, development and growth; then, the third section summarises the arguments; the fourth section defines the method and reviews LAC's empirical evidence on clusters; the fifth section discusses and summarises the findings to answer the two research questions; finally, the sixth section proposes avenues for future research and policymaking.

2. Definitions

2.1 Development and growth

The historical evolution of these concepts shows three main conceptualisations: economic growth, economic development and development (Allen and Thomas, 2000; Todaro, 2000). Economic growth is defined as "a continued increase in the size of an economy, i.e. a sustained increase in output over a period" (Allen and Thomas, 2000, p. 31) and is generally measured in terms of variation in either gross domestic product

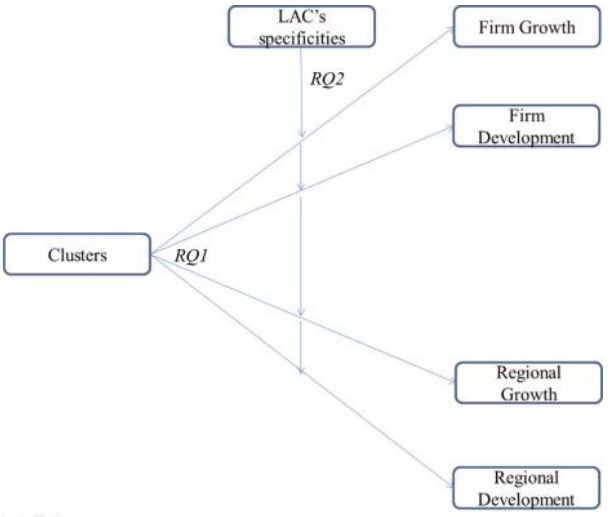

Figure 1.
Focus and scope

(GDP) per capita or in any of its constitutive components – i.e. growth in consumption and investment (both private and public sectors) and exports. Economic development is defined as enhancing the factors of productive capacity of an economy – i.e. land, labour, capital and technology (Allen and Thomas, 2000) – and measured in terms of either measures of innovation such as R&D and patents or in terms of productivity measures such as the total productivity factor (Malecki, 1997; Todaro, 2000). Finally, development is defined as the expansion of capabilities (Sen, 1997) and is measured by either multi-item indices such as the Human Development Index (HDI) – i.e. weighted average of income per capita, literacy rate and life expectancy – or more simple ones such as employment (Sen, 1997, 1999; Stewart and Deneulin, 2002). The latter is a proxy for development, given the human, social and economic implications of getting a job.

Economic growth, economic development and development are used interchangeably in the literature. However, while economic growth is a quantitative change in the scale of the economy in terms of investment, output, consumption and income, economic development is a qualitative change, which entails changes in the structure of the economy including innovations in institutions, behaviour and technology (USA Department of Commerce, 2000). Similarly, while economic growth is related to economic output, development is related to human, economic and social capabilities. For example, taking employment as a case in point, economic growth refers to the quantity of available jobs, whereas development refers to the capabilities of the person as a whole, including his or her habits, psychology, social relationships, health, education and material well-being. Also, economic growth could be positive, whereas development is negative in the same space and time.

The literature uses the previous conceptualisation and measures of development at both national and regional level. However, regional economics pay special attention on explaining how regional disparities arise, especially in unemployment rates, and why they persist over time. This focus has been the centre of regional policy since the 1950s and will continue to dominate the discussion of regional policy issues in the future (Armstrong and Taylor, 2000, p. 3). Therefore, regional development includes a dimension of inequality both within and between regions.

Finally, at the firm level of analysis, the main management theories such as transaction cost economics, agency theory, industrial organisation economics and resource base view of the firm assume that the increase of profit over the long term (cf. Grant, 1998, p. 34; Ghoshal, 2005). Profit is "the surplus of revenues over costs available for distribution to the owners of the firm" (Grant, 1998, p. 34) and is measured in different ways. Indicators such as sales variations in assets, sales and net income growth refer to firm's economic growth. Other indicators such as labour or capital productivity or efficiency, return on investment and return on equity are variations of outputs per unit of input and refer to firm's economic development. However, none of these indicators is sufficient to measure firm development. The stakeholder view of the firm (Freeman, 1984; Post *et al.*, 2002) shed some light on this concept and possible measures, when it defines firm wealth as the "capacity of an organisation to create benefits for any and all of its stakeholders over the long run" (Post *et al.*, 2002, p. 45). This includes among the recipients of the firm benefits not only the stockholders but also any individual and constituency that contributes to the wealth-creating capacity of the firm (Post *et al.*, 2002). Wealth creation is difficult to measure, but multi-item indicators such as those including networks and metrics associated to a firm's main stakeholders are being used

for this purpose (cf. Post *et al.*, 2002), including different levels of impacts and associated metrics such as employee relations, innovation and quality products at the individual level, inter-organisational linkages at the organisational level and environment at the societal level (cf. Waddock and Graves, 1997; McWilliams and Siegel, 2000; Walsh *et al.*, 2003).

Summing up the discussion, economic growth relates to outputs, economic development relates to productive capabilities and development relates to economic, human and social capabilities. Table I summarises these conceptualisations and their operationalisation at the regional and firm level of analysis, including additional measures used in the empirical studies analysed in this paper.

2.2 Clusters

An historical and extensive review of the literature on clusters show a theoretical and empirical distinction between clusters and other agglomeration phenomena (cf. Rocha, 2004; McCann and Folta, 2008). Following this literature, clusters are defined "as a geographically proximate group of firms and associated institutions in related industries, linked by economic and social interdependencies" (Rocha, 2004, p. 363).

This conceptualization includes the geographical, inter-firm and institutional or inter-organisational dimensions, which has been analysed in detail elsewhere (cf. Rocha and Sternberg, 2005). The geographical dimension refers to co-located firms and has been the only cluster dimension considered in most quantitative studies (cf. Baptista and Swann, 1998; Sorenson and Audia, 2000). Theoretically, the geographical dimension means that clusters encompass certain agglomerations of firms to produce external economies (cf. Marshall, 1920/1890). Inter-firm networks refer to both market-based

	Economic growth	Economic development	Development
Conceptual definition	Increase in the size of an economy	Enhancement of productive capacities of an economy	Expansion of human, economic and social capabilities
Key dimension	Output	Productive capabilities	Human, economic and social capabilities
Operational definition			
Regional level	GDP per capita Growth in consumption, investments, exports, wages and production Number of jobs	Total productivity factor Labour and capital productivity R&D and patents Product, process, functional and inter-sectoral upgrading Start-ups Collective efficiency (external economies plus joint action)	HDI (weighted average of GDP per capita, literacy rate and life expectancy) Quality jobs Regional inequalities in terms of unemployment Inter-organisational linkages
Firm level	Sales Assets Profits	Labour and capital productivity Profitability (profits per unit of capital) Process, product and functional upgrading	Quality jobs Quality products Inter-organisational linkages

Table I.
Development and growth – conceptual and operational definitions

transactions and untraded or informal relationships (Storper, 1997; Brass *et al.*, 2004) between firms within a cluster. Traded interdependencies are production and commercial links, as measured by input-output tables, and constitute the main dimension to define sectoral clusters (Porter, 1990). Untraded interdependencies "take the form of conventions, informal rules, and habits that coordinate economic actors under conditions of uncertainty" (Storper, 1997, p. 5). Finally, institutional networks refer to relationships between firms and non-governmental and governmental organisations within the cluster (Becattini, 1979; Aydalot, 1986; Saxenian, 1994). As in the case of inter-firm networks, the institutional network dimension of clusters includes both formal – i.e. bridging organisations such as chambers of commerce – and informal – i.e. shared norms, common knowledge and trust – relationships.

This definition of clusters and their core dimensions allows the distinction of clusters from other phenomena, such as industrial agglomerations, which are defined as "proximate groups of firms belonging to the same industry or closely related industries that could potentially, but not necessarily, interact" (Rocha and Sternberg, 2005, p. 271; for a detailed review of conceptual and operational definitions of clusters and other phenomena and their associated theories, see Rocha, 2004).

The distinction between clusters and other industrial agglomerations is relevant for answering the research questions of this paper, given that different agglomerative phenomena might have different impacts on development and growth (cf. Delgado *et al.*, 2010; Rocha and McDermott, 2010).

This section has defined the core concepts of the paper: clusters, development and growth at the firm and regional level. Other specific concepts that are found in the literature such as local embeddedness of firms and governance mechanism within a cluster (cf. Pietrobelli and Rabellotti, 2004, 2007) are defined in the review of the studies. The following section summarises the arguments that explain their relationship.

3. Arguments

The arguments that explain the impact of clusters on development and growth at the firm and regional level of analysis have been analysed in detail elsewhere (Rocha, 2004, pp. 377-383; cf. also Martin and Sunley, 2003; Markusen, 1999; Fujita *et al.*, 1999).

At the firm level, impact of clusters can be summarised as follows. Both external economies (Marshall, 1920/1890; Krugman, 1991) and the special competitive (Porter, 1998) and socio-cultural (Becattini, 1979; Saxenian, 1994) environments within clusters foster firm efficiency, innovation and performance. Also, empirical results show the positive effect of clusters on firm performance and innovation. However, different results might be expected in future empirical studies that control for both the stage and strength of the clusters under analysis. For example, the physical infrastructure and skilled labour provided by clusters could have a positive effect on firm performance in the initial stage of the cluster but could have a negative impact in its mature stage because of competition and congestion effects, reflected in higher cost of living, real estate prices and salaries of technical personnel.

At the regional level, four theories positively relate clusters to regional development. First, endogenous growth theory argues that clusters promote collective efficiencies, which, in turn, foster regional development. The sources of collective efficiencies are external economies and a common vision (Schmitz, 1999) based on interaction and cooperation between firms and institutions that operate within the region. Second,

endogenous growth theory stresses that technological change or productivity increase, fostered by investments in R&D and knowledge spillovers, is a key factor leading to economic growth. Knowledge spillovers tend to be spatially restricted (Audretsch and Feldman, 1996), especially when they are based on informal ties (Audretsch and Stephan, 1996). Third, given that:

> […] physical proximity and networks, two main components of clusters, foster externalities – and therefore knowledge spillovers as a special kind of externalities – and these externalities foster growth […], therefore clusters foster growth (Rocha, 2004, p. 382).

This argument is similar to that of competitiveness theory (Porter, 2001a, 2001b), which argues that clusters affect innovation and, therefore, competitiveness. Fourth, Krugman's new economic geography argues that increasing returns lead to the clustering of economic activity and the concentration of development in specific areas where the process started because of either chance or historical accident (Krugman, 1991). Then, a process of cumulative causation and inflexibility starts (Arthur, 1989).

However, the literature has identified at least three cases in which clusters have negative impacts on regional development (Rocha, 2004):

(1) regions with few clusters;

(2) clusters specialised in only one industry; and

(3) clusters producing congestion effects and social divides (i.e. a conflict between social groups with differences in economic opportunities and income).

In addition, taking a more dynamic view, the impact of clusters on regional development has to include the temporal dimension. For example, Tuscany and Emilia Romana's productivity growth and employment were higher than the national average during the 1980s, but lower than the national average during the 1990s (Capello, 1996; Rodriguez Pose, 2001). A similar critical view can be found in studies taking industries (Klepper and Simons, 2000; Klepper, 1996) and industrial agglomerations (Glaeser *et al.*, 1992; Glaeser, 2000) as units of analysis[2].

4. Empirical evidence in LA

The goal of this paper is to review empirical evidence in LAC on the impact of clusters on development and growth at the firm and regional level, and to evaluate how those arguments hold before LAC's specificities. The previous two sections reviewed the conceptual and operational definitions of development, growth and clusters and the arguments underlying their relationship. This section reviews empirical studies on clusters in LAC in light of the definitions and arguments of the previous two sections. The first part explains the method used for the gathering, organisation and evaluation of empirical studies and the second part reviews LAC's empirical studies on clusters.

4.1 Method

The review and assessment of empirical evidence in LAC is done by conducting a meta-study based on a variation of a matrix approach to literature reviews of empirical studies (Salipante *et al.*, 1982). A matrix approach aims at gathering information from a number of empirical studies to integrate findings and assess their validity (Salipante *et al.*, 1982, p. 324), with special emphasis on threats to internal and external validity (p. 334).

The nature of the empirical studies on clusters suggests that a qualitative meta-study rather than a statistical meta-analysis is the only alternative to analyse cluster studies (van der Linde, 2013). In fact, statistical meta-analysis requires similar variables and data homogeneity across studies (Singleton and Straits, 1999), which cannot be found in cluster studies given that they are case-based rather than quantitative.

Cluster mappings or datasets aim to overcome the challenge of comparability among case studies, but they face the limitation of construct validity and external comparability. For example, the cluster mapping carried out by Porter aims at measuring clusters in the USA, combining agglomeration indicators with input/output tables (Porter, 2003b). However, it faces not only internal methodological limitations inherent to the measurement of the inter-organizational dimension of clusters, which remain an assumption rather than a measured fact (cf. Porter, 2003b, p. 562; Delgado *et al.*, 2010, p. 503; EC, 2008, pp. 115-19), but also the potential for external comparability with other datasets. This latter challenge is structural, given that Porter's methodology is "not feasible in most if not all other countries" (Porter, 2003b, p. 562).

In the case of LA, data constraint in cluster studies is even stronger and aggravated by the fact that several studies are unpublished papers or policy documents, which prevents fine-grained and statistically based validity analyses across studies.

What follows are the steps of a matrix approach applied to the creation and assessment of LAC on clusters.

4.1.1 Defining the review's goals. The goal is twofold: first, to analyse whether clusters matter to firm and regional development and growth in LAC; second, to evaluate whether LAC provide new insights into the most accepted arguments explaining those relationships.

4.1.2 Selecting and obtaining the literature guided by the review's goals. The empirical evidence was gathered using combined keyword searches and a snowball approach starting from the search engine Web of Knowledge[3], meta-studies (Pietrobelli and Rabellotti, 2004, 2007; Porter and van der Linde, 2002; Altenburg and Meyer-Stamer, 1999; Ceglie and Dini, 1999; Nadvi and Schimtz, 1994) and, given the policy nature of the topic, publications and websites of policy-oriented institutions with special emphasis on LAC. The emergent nature of the cluster field means that many sources of information are unpublished. Therefore, an equal emphasis was put on tracking both published and unpublished research.

This procedure yielded an initial population of 123 studies (see Appendix for the complete list of surveyed studies). However, the goal of the study defined in the previous step suggests filtering this information to get the final sample of cases. In effect, five step-by-step sampling criteria guided the selection of studies to be reviewed.

First, the studies are empirical. Empirical studies are those that include some kind of data or data analysis using either qualitative or quantitative procedures. The former includes methods such as case studies. The latter includes any study using statistical techniques either in a descriptive or explanatory way using empirical data (Singleton and Strait, 1999). The application of this empirical criterion excludes 26 studies from the initial sample.

Second, the empirical studies include at least the industry and regional dimensions of clusters. A more strict selection criterion would require that all the selected studies include the geographical, inter-firm and inter-organisational networks dimensions of clusters as noted in the section on definitions. However, this criterion could be evaluated

in only three studies. For this reason, the selection criterion was limited to the clear presence of the industry and regional dimensions of clusters, which exclude cases such as business networks, sectoral clusters, value chains and national systems of innovation, phenomena that are defined at the national rather than the sub-national level. The application of this criterion excludes 12 additional studies from the initial sample.

Third, the empirical studies are related to outcomes, and there should be enough variability in these outcomes to be able to reach conclusions on the impact of clusters. The source of variability could be time – evolution of the impact of clusters over time – or control groups – for example, comparison of outcomes within clusters to those not within clusters or among clusters with different degrees of clustering. The application of this criterion excludes 48 additional cases from the initial sample.

The final two criteria refer to the inclusion of studies which include one or more clusters in common. The fourth criterion is that the original source of information supersedes meta-studies only when the latter have no empirical information on dependent variables, and the fifth criterion is that more updated studies supersede pioneer studies. The application of these two criteria excludes ten additional cases. Eighteen cases were excluded by more than one criterion. Summing up, 78 of the 123 cases were filtered, obtaining a final sample of 45 cases.

Figure 2 summarises the process and shows that the application of the previous five criteria yielded a final sample of 45 empirical studies, of which, 7 are at the firm level, 21 are at the cluster level, 7 at the regional level, 2 at the cluster and regional level, 5 at the cluster and firm level and 3 at the firm and regional level.

4.1.3 Identifying substantive findings in each study. The findings were categorised in terms of the impact of clusters on development and growth at the firm and regional level.

4.1.4 Grouping of like findings. Given the mixing of levels of analysis in cluster studies, the findings are categorised by levels of analysis – i.e. firm, cluster, regional and multilevel.

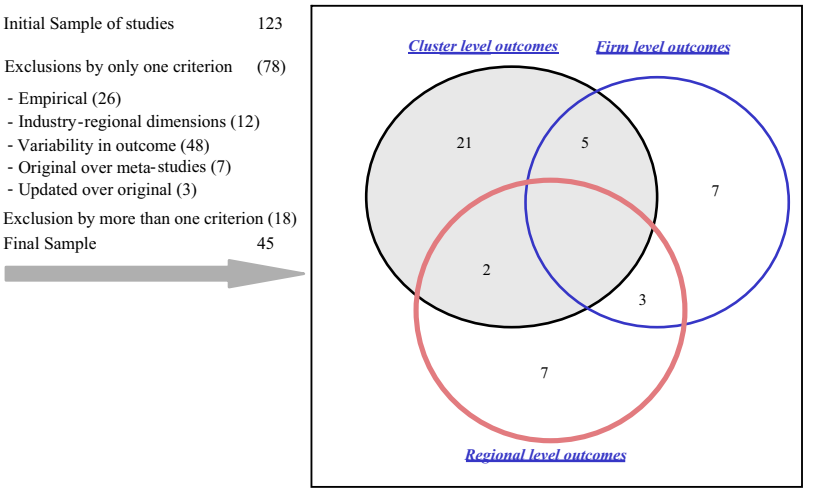

Figure 2.
Sample of cluster studies in LAC

4.1.5 Assessing the validity of the findings and LAC's specificities. Three types of validity are analysed: construct, internal and external validity (cf. Singleton and Straits, 1999, Thietart, 2001):

- *Construct validity*: It refers to the degree of matching between the conceptual and operational definition and will be analysed by comparing the conceptual definition of clusters analysed in the section on definitions to the operational definition of clusters, followed by the selected cluster studies in LAC.
- *Internal validity*: It refers to whether the relationship between the independent and dependent variables is both present and robust and will be analysed by assessing the impact of clusters on development and growth at the firm and regional level.
- *External validity*: It refers to whether the arguments on the relationship between clusters, development and growth apply to LAC and also whether the specificities and results can be generalised to countries other than LAC.

The validity assessment with special emphasis on LAC's specificities is the object of the following section.

4.2 Empirical studies on clusters, development and growth

Table II shows the sample of 45 empirical studies on clusters in LAC after applying the five selection criteria described above. These studies cover 216 clusters. What follows is an overall assessment of these studies in terms of construct, internal and external validity, identifying and grouping the findings in terms of the impact of clusters on firm and regional development and growth.

4.2.1 Construct validity. There is consensus in the literature that to identify clusters, it is necessary to conduct both qualitative and quantitative analyses to truly capture their geographical and network dimensions (Rocha, 2004). Almost all LAC's studies are case-based, and only three consider both dimensions simultaneously. First, Pietrobelli and Rabellotti (2004) subjectively measure 40 clusters in terms of external economies – i.e. the geographical dimension – and joint action – i.e. the network dimension. Second, IDI (2001) maps Argentinean clusters using location quotients and, based on the highest values of these quotients, infers the presence of industrial districts. A combination of the subjective measures of Pietrobelli and Rabellotti (2004) to quantify the network dimension with the objective measures of IDI (2001) to quantify the geographical agglomeration dimension provides the ideal method to measure clusters and get high construct validity. This is attempted in a third study (Rocha *et al.* 2004), which, based on the cluster mapping of IDI (2001), distinguishes between industrial territorial specialisations, industrial agglomerations and clusters. The first two phenomena are identified using location quotients based on firms of all sizes and number of firms within the industrial specialisation, whereas the third phenomenon – i.e. clusters – is identified using the previous agglomeration indicators, and three proxies and expert knowledge to measure the network dimensions.

In addition, LAC's studies focus on the Italian industrial district paradigm, either to apply this model to LA cases (Casaburi, 1999; Visser, 1999; Giuliani, 2006) or to highlight the differences between the Italian and the LAC's model (Rabellotti, 1997; Schmitz, 1995; Rabellotti and Schmitz, 1999). This trend has been reverted in the past ten years, and now, the focus is more on clusters, which provides a richer framework to analyse local production systems in LAC.

Table II.
LA – empirical studies on clusters

Study	Clusters: Space	Clusters: Industry	No. of clusters	No. of clusters (cumulative)[a]
Visser (1999)	Peru – Lima (Gamarra)	Garment	1	1
Yoguel and Boscherini (2001)	Argentina – Tres de Febrero, Rafaela, Mar del Plata and Gran Buenos Aires (GBA)	Agricultural foods Auto components Traditional goods Technical progress diffusers	3	4
Zepeda (2004) (cited in Pietrobelli and Rabellotti, 2004)	Mexico – Chipilo town	Furniture	1	5
Rabellotti and Schmitz (1999)	Brazil – Sinos Valley, Mexico–Guadalajara and Leon	Shoe	1	6
Giuliani, 2006	Italy (Bolgheri/Val di Cornia) and Chile (Colchagua Valley)	Wine	3	7
Ciravegna and Giuliani (2007)	Costa Rica	Electronics and medical devices	1	8
Grenier *et al.* (2008)	Brazil	Software	1	9
Pietrobelli and Rabellotti (2004)	Brazil (20 clusters), Chile (2 clusters), Colombia (3 clusters), Costa Rica (1 cluster), Mexico (11 clusters), Nicaragua (1 cluster), Peru (2 clusters)	Traditional manufacturing (15 clusters) Natural resources (11 clusters) Complex systems (9 clusters) Software (5 clusters)	40	48
Dávila Flores, 2007	Mexico – all regions	Metalworking and automotive. Non-metallic minerals and other metal products. Chemical products. Food products. Energy and derivatives. Textiles. Electronics and parts. Paper and cardboard products. Materials for car part production. Non-ferric metals and parts. Leather goods. Animal foodstuffs	12	49
McDermott and Rocha, 2010	Argentina – Provinces of Buenos Aires, Mendoza and San Juan and Patagonia region	Automotive Wine (San Juan and Mendoza) Wool	4	52
Held, 2003	Colombia – Departments of Caldas, Risaralda and the Quindio	Bamboo	1	53
IDI, 2001	Argentina – all regions	All manufacturing industries	50	96

(*continued*)

Table II.

Clusters

Study	Space	Industry	No. of clusters	No. of clusters (cumulative)[a]
Rocha *et al.* 2004	Argentina – all regions	All manufacturing and service industries	98	110
Bagella and Pietrobelli (1997)	Argentina – Rafaela city	Agro-industry Chemical, industrial and agricultural machinery Auto components	3	113
Ceglie and Dini (1999)	Honduras	Different industries	6	119
Mazorra *et al.* (2005)	Argentina – Olavarría, Rafaela, San Nicolás	Cement Steel Food (dairy and meat) Machinery Auto components	6	121
Kantis (2005)	Argentina – San Carlos de Bariloche, Buenos Aires city, Córdoba City and Rosario City	Technological activities of San Carlos de Bariloche Design activities of Buenos Aires city. Software activities of Córdoba City Software in Rosario City	4	125
Kesidou *et al.* (2007)	Uruguay – Montevideo	Software	1	126
Cunha Resende and Oliveira Gomes (2003)	Brazil – São Paulo, Caxias do Sul (RS) and Joinville (SC)	Models for process of plastic	3	129
Cunha Resende (2003)	Brazil – ABC paulista	Plastic packing	1	130
Perez-Aleman (2003)	Chile – South Central Valley Nicaragua – Nueva Guinea city	Tomato processing (Chile) Diary (Nicaragua)	2	132
Visser (2004)	Chile – Central Valleys	Wine (12 regions)	12	144
Bas and Kunc, 2008	Argentina – Mendoza, San Juan and Puerto Madryn	Wine Mining Aquaculture	3	145
Bas *et al.* (2008)	Chile – all regions	Salmon Wine Mining	15	148
Borello *et al.* (2005)	Buenos Aires city and GBA	Steel Automotive	1	148

(*continued*)

Table II.

Study	Clusters Space	Industry	No. of clusters	No. of clusters (cumulative)[a]
Teixeira and Ferraro, 2009	Brazil (54 clusters)	Textile (10 clusters) Wood and furniture (9 clusters) Agro-industry (17 clusters) Tourism (4 clusters) Information Technology (4 clusters) Shoe (2 clusters) Auto components (1 cluster) Oil (1 cluster) Ornamental stones (2 clusters) Artisans (4 clusters)	54	199
Felzensztein (2008)	Chile	Salmon	2	199
Paladino and Hasman (2002)	Argentina – Rafaela city	Diary Machinery Car and auto components	1	199
Casaburi (1999)	Argentina – Santa Fe state – Rafaela city Chile – Central Valley	Argentina–diary Chile–fresh fruit	2	200
Sarghini (2001)	Argentina – Bahía Blanca Petrochemical pole, Ensenada area, Campana – San Nicolás area, GBA area (Avellaneda). Drinks: GBA and Zárate. Meat: GBA and Mar del Plata	Petrochemicals Drinks Meat	8	200
Otero (2002a)	Argentina – Province of Bs. As. – 1) Several areas. 2) San Nicolás, Campana and GBA	Oily (soybean and sunflower). Steel	4	200
Otero (2002b)	Argentina – Province of Bs. As. – Several areas	Wheat flour Textile	2	200
Otero, 2005a	Argentina – Province of Bs. As. – Several areas	Pharmaceutical complex	1	201
Otero (2005b)	Argentina – Province of Bs. As. – Several areas	Automotive Dairy Fishing	3	202
Coelho (2007)	Mexico – all regions	Tequila – agave	1	203
Hodgetts (1993)	Mexico – all regions	Petroleum/chemicals Automotive	2	204

(*continued*)

Table II.

Study	Clusters: Space	Clusters: Industry	No. of clusters	No. of clusters (cumulative)[a]
Giuliani (2003)	Chile – Colchagua Valley	Wine	1	204
Schmitz (1999)	Brazil – Rio Grande do Sul Sinos Valley cluster	Shoe	1	204
Rabellotti (1999)	Mexico – Guadalajara	Shoe	1	204
Bair and Gereffi (2001)	Mexico – Torreon	Apparel – blue jeans	1	204
Montero (2004)	Chile – X and XI Regions (Port Montt)	Salmon	1	204
Schmitz (1995)	Brazil – Rio Grande do Sul Sinos Valley cluster	Shoe	1	204
Meyer-Stamer (1998)	Brazil – Santa Catarina	Textile Metal engineering and electro-mechanical	3	204
Meyer-Stamer *et al.* (2001)	Brazil – Santa Catarina(also Italy – Sassuolo and Spain – Castellon)	Tile	1	204
Pietrobelli and Rabellotti (2007)	Brazil (19 clusters), Chile (2 clusters), Colombia (3 clusters), Costa Rica (1 cluster), Mexico (11 clusters), Nicaragua (1 cluster), Peru (2 clusters)	Traditional manufacturing (15 clusters) Natural resources (11 clusters) Complex systems (9 clusters) Software (5 clusters)	40	216

Notes: [a] Cumulative number of clusters; this number is not the simple sum of the left-hand column because it excludes repetition of cases

4.2.2 Internal validity. As noted above, this criterion refers to existence and robustness of the relationship between independent and dependent variables. This criterion and that of construct validity are the keys for answering the first research question on whether there is an impact of clusters on development and growth at the firm and regional level in LAC.

A first step in assessing the internal validity of the relationship of interest is to find out whether an association between the variables under investigation exists (Singleton and Straits, 1999). This means that there should be variability in both the independent and dependent variables, either defining clusters as dichotomous or continuous variables or assessing how the variability in the cluster measure affects development and growth. Given the lack of data availability on clusters, this methodological need is tough to meet but necessary to improve the rigour of cluster studies (Schmitz and Nadvi, 1999, p. 1,510). Figure 2 shows that 48 studies were excluded from the initial sample for not including dependent variables. This confirms that many studies were more interested in analysing the differences between the Italian industrial district model and LAC's agglomerations (Schmitz and Nadvi, 1999) rather than analysing the impact of clusters on firms and regional development and growth. Table III categorises the studies according to their unit of analysis and level of measurement of the cluster variable.

Once the association between independent and dependent variable is established, the second step in assessing internal validity is to rule out rival explanations (Singleton and Straits, 1999). Given the qualitative nature of the present review, a way of applying this criterion is to analyse as many cases as possible to get both commonalities amongst cases and exceptions that qualify these general results (cf. Yin, 1994; Thietart, 2001). This paper includes 45 studies comprising 216 clusters, and given the qualitative rather than quantitative nature of the validity assessment, it could be concluded that this is a reasonable number of cases as a first step in evaluating the internal validity of the results.

Finally, a third step in assessing internal validity is to avoid ecological fallacies – i.e. when relationships between properties of geographic areas are used to make inferences about the individual behaviours within those areas (Singleton and Straits, 1999, p. 69)[4]. For example, a case in point is when studies of clusters at the regional level of analysis apply their conclusions to the firm level of analysis without specifying the causal link between the two levels. To avoid this problem, the impact of clusters has to be analysed at different levels of analysis, which will be done in the next two sections.

4.2.2.1 Impact of clusters on firm development and performance. Clusters seem to contribute to firm development – i.e. innovative capacity and upgrading (Yoguel and Boscherini, 2001; Giuliani, 2006; Grenier *et al.*, 2008) – and performance (Visser, 1999; Meyer-Stamer, 1998). Yet, these results should be qualified. In fact, several contingencies moderate the relationship between clusters and firm development and performance.

First, results could vary according to the stage of the cluster. For example, firms within the Santa Catarina cluster have decreased their profitability after the liberalisation process in Brazil (Meyer-Stamer, 1998). This result could be explained using the mimetic isomorphism argument of institutional theory (DiMaggio and Powell, 1983), which states that uncertainty fosters a pattern of conformity through imitation, and therefore, firms within a cluster, although heterogeneous in terms of size and technology, behave in a homogenous manner. This creates a kind of cluster myopia, and

Table III.
Internal validity and levels of analysis

Cluster Level of Measurement	Level of analysis: Firm (Unit = firm)	Regional (Unit = region or cluster)	Multilevel (Unit = firm, region and/or cluster)	No. of studies
Dichotomous	Firm outcome = f (in/out cluster) (Visser, 1999; Giuliani, 2006; Ciravegna and Giuliani, 2007;Grenier *et al.*, 2008)	Region/cluster outcome = f (in/out cluster) IDI, 2001; Rocha *et al.* 2004; Bagella and Pietrobelli, 1997; Mazorra *et al.*, 2005; Visser, 2004; Bas *et al.* 2008; Felzensztein, 2008; Paladino and Hasman, 2002; Casaburi, 1999)	Firm/region/cluster outcome = f (in/out cluster) (Meyer-Stamer, 1998)	14
Continuous	Firm outcome = f (degree of clustering of the region/cluster) (Yoguel and Boscherini, 2001; Zepeda, 2004; Rabellotti and Schmitz, 1999; Kantis, 2005; Kesidou *et al.* 2007; Schmitz, 1995)	Region/cluster outcome = f (degree of clustering of the region / cluster) (Pietrobelli and Rabellotti, 2004, 2007; Dávila Flores, 2007; McDermott and Rocha, 2010; Held, 2003; Ceglie and Dini, 1999; Cunha Resende and Oliveira Gomes, 2003; Cunha Resende, 2003; Perez-Aleman, 2003; Bas and Kunc, 2008; Borello *et al.* 2005; Sarghini, 2001; Otero, 2002a, 2002b, 2005a, 2005b, Coelho, 2007; Hodgetts, 1993)	Firm/region/cluster outcome = f (degree of clustering of the region / cluster) (Giuliani, 2003; Schmitz, 1999; Rabellotti, 1999; Bair and Gereffi, 2001; Montero, 2004; Meyer-Stamer et al, 2001)	30
Number of studies	10	27	7	44

therefore, clustered firms are disadvantaged when compared with non-clustered ones before competitive shocks.

Despite the plausibility of this argument, LAC could provide an additional explanation to the decreasing profitability of clusters after a competitive shock. In effect, most LAC clusters are emergent in nature, given their lack of developed inter-firm and institutional networks. For example, falling profits and exports in Sinos Valley before the intensified global competition in leather footwear is attributed to weak inter-firm and institutional linkages. Leading enterprises within the cluster put their alliance with a major global buyer above cooperation with local manufacturers, while "the state failed to mediate at critical moments between conflicting business associations and entrepreneurial alliances" (Schmitz, 1999, p. 1,627).

This case study in Brazil could be generalised to a whole country using secondary sources of information, as in the case of Argentina. In fact, a quantitative analysis of 129 industrial agglomerations and 98 clusters reveals that the impact of these phenomena on employment growth is positive but not statistically significant. Given that industrial agglomerations are conceptualised as clusters without networks, these results suggest that most LAC clusters are emergent. Finally, the previous conclusion could be generalised to the majority of LAC, given that a study of 40 clusters shows that clusters generate external economies but are characterised by little joint action (Pietrobelli and Rabellotti, 2004). A further study by the same authors provide additional insights, evaluating the impact of collective efficiency (defined in terms of external economies and joint action) is positively related to firm upgrading in natural resource-based and specialised services clusters, but are neutral in traditional manufacturing and complex products clusters (Pietrobelli and Rabellotti, 2007).

Second, results also vary according to the configuration of the cluster and the degree of embeddedness of the major firms within the cluster. Some clusters present an internal hierarchy such as the blue jeans cluster in Torreon, Mexico (Bair and Gereffi, 2001) and the salmon-farming cluster in Chile (Bas *et al.*, 2008; Felzensztein, 2008), which are possible configurations of local clusters inserted in global value chains. This case shows that the gains of the cluster are distributed mainly to the core firms and first-tier suppliers, whereas second-tier suppliers, including small and medium-sized enterprises' (SMEs) local subcontractors, seem to face at least neutral effects. Similarly, insertion in value chains can prevent functional upgrading – i.e. take on activities with higher value added within the value chain – or even create functional downgrading, as in the case of Mexico's furniture industry (Pietrobelli and Rabellotti, 2004, p. 21). In addition, producer-driven global value chains generally source inputs and innovation from foreign companies, not allowing the development of local firms and innovation (D'Avila Garcez, 2000; Humphrey, 2003). Also, high dependence on a single firm makes firms more vulnerable. For example, SMEs within the furniture cluster in Chipilo were highly dependent on an individual firm, which declared bankruptcy, affecting not only the performance but also the existence of its SMEs' suppliers. Finally, the presence of global leader firms has a positive relationship with product and process upgrading in traditional manufacturing and natural resource-based clusters, given that local tacit knowledge and close buyer–producer interaction are critical factors in these industries. However, the same relationship is neutral in complex products and specialised services clusters. As for functional upgrading, the presence of global leaders has a negative impact in all sectors (cf. Pietrobelli and Rabellotti, 2007).

Therefore, cluster-specific factors such as cluster stage of development, collective efficiency, the pattern of governance of the value chain and the sector in which the firm operates moderate the relationship between clusters and firm performance and development.

Third, and finally, firm development and growth vary even within the same cluster, showing that firm-specific capabilities matter. For example, firms' absorptive capacity was positively associated with firm performance in a Chilean cluster (Giuliani, 2003). This is not a specific feature on LAC, but it qualifies the arguments on the relationship between clusters, development and growth at the firm level of analysis. Other firm-specific measures potentially affecting firm performance are size and degree of embeddedness, as shown by a study that compares shoe clusters in Mexico and Brazil (Rabellotti and Schmitz, 1999).

4.2.2.2 Impact of clusters on regional development and growth. At a first glance, Tables II shows a positive impact of clusters on regional development (Pietrobelli and Rabellotti, 2004, 2007; Rocha *et al.*, 2004; McDermott and Rocha, 2010) and growth (Bagella and Pietrobelli, 1997; Paladino and Hasman, 2002; Visser, 2004).

However, these results have to be qualified by LAC's specificities in terms of both construct and internal validity criteria. As for construct validity, the development-related issues of poverty and inequality that characterise LAC (Morley, 2001) are not included in the general frameworks on clusters outcomes (cf. Porter, 1990; Solvell *et al.*, 2003). Therefore, a general conclusion of the impact of clusters on regional development cannot be reached before taking into account poverty alleviation, capability disparities and income disparities as regional outcome indicators. Only one case study has included poverty indicators such as basic needs unmet (Paladino and Hasman, 2002), and only one study has compared wages inside and outside clusters populated by poor people (Visser, 1999).

The construct validity criterion leads to the internal validity one, given that the LAC's specificities in terms of relevant outcome indicators affect the underlying mechanisms that relate clusters to those outcomes. Paladino and Hausman (2002) show that basic needs are better met within clusters, whereas Visser (1999) finds that wages within the garment cluster in Gamarra are higher than wages outside that cluster, even though both populations live in the same city. However, the limited scope of these studies makes them not generalisable to the whole LAC population. In addition, although wages are higher within the garment cluster in Gamarra, working hours are longer, and therefore, there is a trade-off between wages and working conditions. A different picture emerges when capability and income disparities are taken into account. In effect, some clusters could create social divides within the same region, as in the case of the blue jean cluster in Torreon (Bair and Gereffi, 2001). Social divides are not only in terms of salaries but also in terms of lack of integration within the local economy, which creates economic enclaves within regions. This seems to be the case of export-processing zones, such as that of the garment industry in the Dominican Republic (Vicens and Martínez, 1998) and the electronics and medical devices industry in Costa Rica (Ciravegna and Giuliani, 2007). Attracted by cheap labour for the assembly of imported goods, MNCs have little incentive to raise the skills of their workforce or to establish linkages with local firms (Oxfam, 2002). Social divisions increase inequality and, therefore, negatively affect regional development, given that LAC are the most inequitable in the world (Morley, 2001, p. 8).

The previous examples are not only limited to human and social regional development but also to economic regional development. These and additional examples show that MNC clusters in LAC show a lack of local embeddedness that prevents innovation. For example, the Mexican automotive clusters in Chihuahua (Mortimore, 1998) and Puebla (Altenburg and Meyer-Stamer, 1999) are characterised by exports based on simple assembly and re-export of imported components. This regional economic strategy based on dis-embedded external linkages negatively affects the development of local skills and innovation.

Therefore, the specific configuration of LAC's clusters and the degree of embeddedness of MNCs within them strongly qualify the arguments on the relationship between clusters and regional development. In addition to the governance type within value chain clusters, clusters upgrade as a function of the industrial sector and the degree of collective efficiencies (Pietrobelli and Rabellotti, 2004, 2007) as analysed in the previous section. Finally, clusters could create overproduction when the lack of internal coordination makes clustered firms ignore demand factors or the potential impact of external factors such as exchange rate and foreign competition, as happened in the Colchagua Valley cluster in the early 1990s (Giuliani, 2003). This usually happens in clusters with good external economies but little joint action (Pietrobelli and Rabellotti, 2004, p. 75), which is characteristic in LAC's clusters. However, there are exceptions such as the salmon industry in Chile (Bas *et al.*, 2008) and the wine industry in Mendoza (McDermott and Rocha, 2010).

To sum up, clusters in LAC seem to have a positive impact on firm and regional development and growth, although results in the latter case are more mixed. However, some specificities, such as poverty and income inequality, the emergent nature of clusters and cluster configuration, qualify those positive results. The following section analyses whether these specificities provide new insights into the relationship between clusters, development and growth.

4.2.3 External validity. The previous two sections aimed at answering the first research question of this paper based on construct and internal validity criteria. Their main output has been an evaluation of whether a relationship between clusters, development and growth exists and of the factors explaining those relationships. Based on these results, the present section aims at answering the second research question based on external validity criteria. The goal is to evaluate whether LAC provide new insights into the most accepted arguments, explaining the impact of clusters on firm and regional development and growth.

The results analysed in the previous two sections show that LAC's specificities such as poverty and income inequality, the emergent nature of clusters and cluster configuration strongly qualify the most accepted arguments on the relationship between clusters, development and growth at the firm and regional level. It is possible to argue that these specificities introduce additional arguments to explain the observed relationships. In effect, as for poverty and income inequality, these outcomes are not generally taken into account in mainstream studies on cluster outcomes. LAC provide new relevant outcomes, such as poverty alleviation, economic inequality and social divides, and new causal mechanisms linking clusters to development and growth for further analysis. As for the configuration and emergent nature of clusters, both specificities highlight potential negative impacts of clusters, such as the increase of LAC's already high inequalities in terms of both incomes and capabilities. This is

especially important not only for LAC, given the current level of inequality, but also for regional economics, a discipline that aims at explaining how regional disparities arise and persist over time (Armstrong and Taylor, 2000).

However, the external validity criterion aims to evaluate not only whether specificities that qualify mainstream arguments and bring in new insights exist but also whether these specificities can be generalised to other developing countries. It could be argued that the specificities and results found could also be found in other developing countries, but also that the configuration of clusters in LAC is context-specific.

In effect, as for poverty and inequality, what is specific to LAC is the fact that they are among the most inequitable in the world. The analysed outcome indicators and causal mechanisms linking clusters to development and growth, such as the lack of institutional development to root MNCs to the local economy, can be found in other developing countries and constitute avenues for future research on the impact of clusters on development and growth in developing countries.

As for the emergent nature of LAC's clusters, this is due to their weak network dimensions. In effect, emergent clusters have the critical mass of firms but lack the necessary interaction between them (Rosenfeld, 1997). The emergent nature of LAC's clusters is demonstrated for at least 40 clusters, which show higher external economies – i.e. critical mass – than joint action – i.e. interactions – for all industries (cf. Pietrobelli and Rabellotti, 2004, p. 45). Especially important is the lack of horizontal cooperation, which crystallises in associations that provide services to the member firms (Brusco, 1992). The low level of horizontal cooperation in LAC's clusters indicates that those associations are weak or inexistent, with few exceptions such as the diary cluster in Rafaela (Casaburi, 1999; Yoguel and Boscherini, 2001) and the salmon farming in Chile (Pietrobelli and Rabellotti, 2004; Bas *et al.*, 2008; Felzensztein, 2008). The low degree of inter-organisational linkages is one of the factors affecting the development of LAC's clusters. This problem is heightened in the cases of local clusters inserted in global value chains with hierarchical governance structures, in which large firms are taking the coordinating role in a vertical rather than horizontal direction (Bair and Gereffi, 2001), undermining the role of local institutions in shaping cluster configuration and outcomes, except in the cases related in McDermott and Rocha (2010).

It seems that the emergent nature of clusters could also be found in other developing countries (cf. Nadvi and Schimtz, 1994). However, it could be argued that at least one of the reasons for the emergence nature of LAC's clusters, that is, the process of cluster formation, is context-specific. In effect, the specific political and macroeconomic LA environment during the past 50 years gave shape to the actual configuration of clusters. The import substitution policy and exogenous development model of the 1950s and 1960s generated little competitive pressure and anti-export bias, concentrating investment in strategic economic activities or growth poles. With little pressure for improvement, diversification, rather than specialisation, was the norm (Altenburg and Meyer-Stamer, 1999). Also, macroeconomic instability fostered vertical integration as a way of coping with uncertainty and transaction costs. These features gave rise to mass-production clusters such as the shoe cluster in Sinos Valley (Schmitz, 1999) and the tile cluster in Santa Catarina (Meyer-Stamer *et al.*, 2001). During the 1980s and 1990s, liberalisation processes began and a series of competitive shocks affected the

industrial landscape of LAC (Ghemawat and Khanna, 1998; Carrera *et al.*, 2000). In effect:

> […] with flexible production systems requiring spatial proximity to enable firms to cooperate intensively, and national policies being liberalized, production sites of large firms increasingly develop the attributes of clusters (Meyer-Stamer, 1998, p. 1,704).

Therefore, clusters of transnational corporations emerged as a second type of cluster, such as the blue jean cluster in Torreon (Bair and Gereffi, 2001) and the automotive industry around Puebla (Meyer-Stamer, 1998). Finally, the high rate of unemployment and the particularities of poor regions in LAC gave rise to survival clusters of micro and small-scale enterprises, "which produce low-quality consumer goods for local markets, mainly in activities where barriers to entry are low" (Altenburg and Meyer-Stamer, 1999, p. 1695). The garment cluster in Lima is an example of this type of cluster (Visser, 1999).

5. Discussion

The last section explained the methodology and reviewed empirical studies on clusters in LAC. This section discusses the results to answer the two research questions of the paper. Table IV and Figure 3 summarise the results[5].

5.1 What is the impact of clusters on firm and regional development and growth in LAC?

The impact of clusters was analysed at the firm and regional level of analysis, considering both development – i.e. focus on capabilities – and growth – i.e. focus on results – to avoid ecological fallacies and conceptual confusions, respectively.

As Table IV and Figure 3 show, clusters contribute to both development and growth at the firm level of analysis. In fact, clusters seem to contribute to firm development – i.e. innovative capacity and upgrading – and growth – i.e. sales and wages. Results are more mixed at the regional level, where clusters show positive impacts on both economic development indicators (such as innovative capacity, employment, product upgrading and employment training) and economic growth indicators (such as production and exports). However, clusters show no impact on functional and inter-sectoral upgrading or even negative impact on economic and social divides.

The most accepted arguments relating clusters to development and growth such as the role of external economies, the special competitive and socio-cultural cluster environment, knowledge spillovers and increasing returns could explain the observed relationships.

However, the results are contingent to the definition of development and additional factors that qualify the most accepted arguments on the relationship between clusters, development and growth at the firm and regional level, as it is analysed in the answer to the second research question.

5.2 Are there specific factors in LAC that explain the relationship between clusters, development and growth at the firm and regional level?

The answer to the first question suggests that LAC's specificities such as poverty and income inequality, the emergent nature of clusters and cluster configuration introduce additional arguments to explain the relationship between clusters, development and growth at the firm and regional level.

Level	Impact: Development	Impact: Growth
Firm	Positive on innovative capacity and upgrading, especially product and, to certain extent, process upgrading Positive on skill upgrading No impact on functional and inter-sectoral upgrading	Positive on sales, employment and wages Positive on costs and information spillovers
	Qualifications: Cluster configuration – governance mechanisms Cluster sector Firm position within the value chain Cluster type – survival, mass-production, transnational corporations Firm's innovative performance	*Qualifications:* Cluster stage Cluster configuration – governance mechanisms Firm position within the value chain Firm absorptive capacity Firm size Firm degree of embeddedness
Regional	Positive on innovative capacity and upgrading, especially product and, to certain extent, process upgrading Positive on employment training Positive on employment Positive on social indicators Positive on employment concentration and rate Positive on average wage Both positive and negative impact on functional and inter-firm upgrading Negative on social cohesion – social divides Negative on increasing capability and income inequality	Positive on production and GDP per capita Positive on exports
	Qualifications: Definition of development – poverty and inequality Cluster configuration–governance mechanisms Cluster type – survival, mass-production, transnational corporations Cluster degree of collective efficiency- emergent Cluster sector	*Qualifications:* Cluster stage Cluster configuration – governance mechanisms Cluster degree of joint action – emergent

Table IV. Empirical LAC's studies – impact of clusters on firm and regional development and growth

As for the definition of development, poverty and income inequality are LAC's specificities rarely considered in mainstream studies on cluster outcomes. The results show that clusters contribute to economic growth but, at the same time, are potential sources of social divides that hinders development dimensions such as the human and social environment in which they operate.

As for additional independent variables, results are contingent to factors such as cluster stage, cluster governance configuration, degree of collective efficiency, degree of embeddedness of firms and sector. For example, qualitative studies show

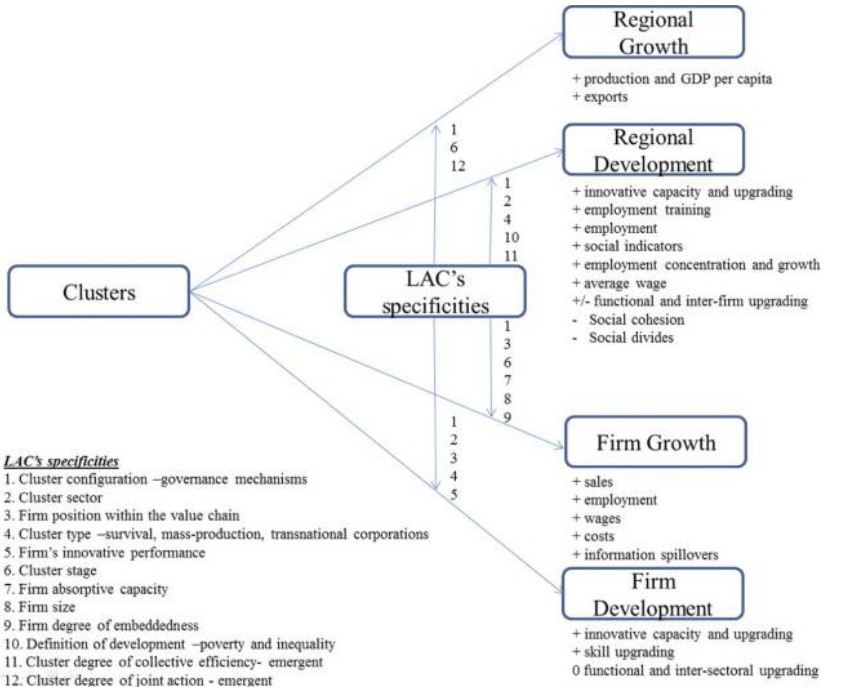

Figure 3.
Empirical LAC's studies – the impact of clusters on firm and regional development and growth

that collective efficiency is positively related to firm upgrading in natural resource-based and specialised services clusters, but are neutral in traditional manufacturing and complex products clusters; in the same vein, cluster governance configuration, measured in terms of the presence of global leader firms, has a positive relationship with product and process upgrading in traditional manufacturing and natural resource-based clusters, but neutral on complex products and specialised services clusters. As for functional upgrading, the presence of global leaders has a negative impact in all sectors (cf. Pietrobelli and Rabellotti, 2007). Especially important are the governance mechanism and the degree of embeddedness of large firms within the cluster, given that hierarchical coordinating mechanisms coupled with a lack of embeddedness in the region are potential sources of economic and social divides. These divides increase inequality, which is a key indicator of regional development in LAC, the most inequitable in the world (Morley, 2001; IDB, 1998, 2000; Edwards, 1995). Purely private hierarchical governance structures combined with the lack of embeddedness in the region is a source of social divides, as suggested by the literature on relational/network approaches in economic geography (cf. Coe and Wrigley, 2007, p. 346).

6. Conclusions

The aim of this paper is to review the empirical evidence in LA on the impact of clusters on development and growth at the firm and regional level to answer two research questions:

RQ1. What is the impact of clusters on firm and regional development and growth in LAC?

RQ2. Are there any LAC-specific factors that explain the relationship between clusters, development and growth at the firm and regional level?

To answer these questions, this paper develops a meta-study of 45 empirical studies and 216 clusters. Based on these studies, it applies three interrelated validity criteria: construct validity – i.e. degree of matching between conceptual and operational definitions of the variables – internal validity – i.e. whether the relationship between independent and dependent variable is both existent and robust – and external validity – i.e. whether LAC's specificities provide new insights into the relationships of interest and whether these insights are generalisable to other contexts. Construct and internal validity are directly related to the first research question, given that they focus on both evaluating whether a relationship between clusters, development and growth at the firm and regional level exists in LAC, and analysing what factors explain that relationship. External validity is directly related to the second question, given that it concentrates on analysing specificities and whether the results found in this paper are generalisable to other developing countries.

The previous section shows that the answer to the two research questions of the paper are positive, making explicit both the qualifications and the new phenomena mediating or moderating the impact of clusters on firm and regional development and growth. The rest of this section shows the contributions, limitations and directions for future research.

6.1 Contributions

The contribution of this paper is fourfold. First, from the theoretical standpoint and based on LAC's specificities, this paper provides new insights for theory development on the impact of clusters in general and in emerging economies in particular. For example, LAC's specificities suggest that new cluster outcomes, such as poverty alleviation, economic inequality and social divides, and how clusters impact on them, are the new insights to be included in the most general frameworks linking clusters to development and growth. Another example is the emergent nature and particular configuration of LAC's clusters, two specificities that could moderate the impact of clusters on development and growth. Purely private hierarchical governance structures combined with lack of embeddedness in the region is a source of social divides, as suggested by the literature on relational/network approaches in economic geography (cf. Coe and Wrigley, 2007, p. 346).

Second, from the empirical standpoint, it provides an answer to whether clusters contribute to development and growth at the firm and regional level in LA, based on a meta-study of 45 empirical studies and 216 clusters. This paper shows that clusters contribute to firm and regional development and growth contingent to factors such as cluster stage of development, collective efficiency, the pattern of governance of the value chain and the sector in which the firm operates; however, clusters are also a potential source of socio-economic divides. Therefore, these results qualify the conclusions of studies of clusters in developed countries (Porter, 2003b; Delgado *et al.*, 2010). In addition, this paper provides new LAC-related phenomena such as poverty, inequality

and the emergent nature of clusters, which could be operationalised as dependent and independent variables for future empirical work.

Third, from the methodological standpoint, five sampling criteria and three validity criteria guided the selection and evaluation, respectively, of the studies, which contribute both the insights provided by case studies and the tentative generalisations provided by meta-studies. Given the current lack of data availability and homogeneity, this paper contributes research designs criteria for greater construct, internal and external validity in future studies.

Fourth, and finally, from the policy standpoint, this paper warns policymakers not to shift gears from exogenous to endogenous factors without considering a clear definition of the policy target and goals, LAC's cluster specificities and coordination between the local and national level. It is hypothesised that clusters have positive impacts if policy design considers the specificities of LAC's clusters and targets development simultaneously with growth, and clusters simultaneously with public–private articulation at the regional and national level. A cluster-led policy approach without considering clusters' governance mechanisms and coordination between national and local policies will both hinder growth in the long run and increase existing disparities in LAC.

6.2 Limitations

The previous conclusions have to be qualified in light of two limitations of the study, which are avenues for future research. The first limitation is related to the scope of the paper, and the second limitation is related to the nature of the empirical cases analysed to reach the conclusions.

As for the first limitation, the focus of the empirical analyses has been on the firm and regional level of analysis, taking into account intra-cluster and intra-regional disparities. However, both the national level of analysis, and the potential intra-country disparities due to positive outcomes at the cluster and regional level but negative outcomes at the national level, has not been analysed. There is no empirical evidence in LAC on these effects, but given the lack of developed networks in LAC's clusters and the insufficient coordination between the national and regional level, it is expected that clusters are potential sources of inequality at the national level. In effect, clusters create socio-economic divides when they are fostered at the local level based on inter-regional competition without coordinating mechanisms at the national level. One case in point is the attraction of foreign direct investment based on sub-national state competition. For example, Brazilian states attracted automotive MNCs using economic incentives – i.e. subsidies, tax breaks, building of physical infrastructure – rather than genuine competitive advantages, generating a bidding war which resulted in the waste of public funds at the national level (Rodriguez-Pose and Arbix, 2001). Decentralised cluster strategies take neither national impacts nor inter-regional disparities into account and are especially harmful when they are based on regional competition to increase economic growth without considering the development of local social and economic capabilities, as demonstrated by the Brazil automotive industry in the 1990s.

As for the second limitation, despite this paper undertaking a comprehensive review of LA cluster studies, almost all the studies were case-based. This lack of data homogeneity across studies prevents the use of meta-analysis to improve the robustness of the results in terms of internal and external validity. To ameliorate this problem, this

paper has followed three strategies (cf. Yin, 1994; Thietart, 2001). First, it includes as many cases as possible. In fact, this paper reviewed 45 studies and 216 clusters after applying the five selection criteria outlined in the method section. Second, many outcome variables were coded in terms of four categories: development and growth at the firm and regional level. This strategy both reduces to four the more than 20 possible outcome indicators (cf. Tables I) and allows distinguishing between capabilities – i.e. development – and outputs – i.e. growth. Third, and finally, it outlines the specific qualifications to the general conclusions on the impact of clusters on development and growth at the firm and regional level, which allow the formation of more realistic conclusions on the relationship between clusters, development and growth. Notwithstanding these strategies, future research should complement qualitative and quantitative approaches to analyse the impact of clusters in LAC, such as those performed by Visser (1999), Schmitz (1999), Rabellotti and Schmitz (1999), Yoguel and Boscherini (2001), Cunha Resende (2003), Rocha *et al.* (2004), Pietrobelli and Rabellotti (2004), Giuliani (2006), Ciravegna and Giuliani (2007) and McDermott and Rocha (2010).

6.3 Directions for future research and policymaking

The previous analyses suggest that future studies on the impact of clusters on development and growth at different levels in LAC would yield important contributions for research and policymaking.

As for academics, three important considerations related to purpose, content and methods (when designing future research are in order). As to purpose, given that clusters contribute to economic growth but, at the same time, are potential sources of social divides that hinder development dimensions such as the human and social environment in which they operate, future studies could focus more on the impact of clusters on socio-economic capabilities (development) rather than on economic outputs (growth). Having clusters fostering economic growth simultaneously with social divides leads to a vicious circle that negatively affects development (cf. Rocha, 2004 for a review).

As for content, it is necessary to consider specificities such as the emergent nature and particular configuration of LAC's clusters. The case of the blue jean cluster in Torreon shows that purely private hierarchical governance structures combined with a lack of embeddedness in the region is a source of social divides. This is an interesting opportunity to research the corporate social responsibility of corporations in LA, analysing their management model and consequent impact on the locality where they operate. It is hypothesised that corporations formulating their global, corporate and business strategies following a shareholder and value appropriation approach will be more dissembedded and yield worst performance and development results compared to those guided by a stakeholder (Post *et al.*, 2002), institutional and territorial embeddedness (Van de Ven, 1993; Hess, 2004) and value creation (Ghoshal and Moran, 1996) approaches. These studies would also greatly contribute to strategic management as well as development studies because they would link not only firm-level decisions to broader societal outcomes but also developmental strategies based on both endogenous and exogenous factors.

Finally, as for method, research designs must consider construct, internal and external validity issues.

Construct validity increases when both the agglomeration and network dimensions of clusters are measured, as in the cases of Pietrobelli and Rabellotti (2004), Rocha *et al.* (2004) and McDermott and Rocha (2010). *Internal validity* improves when research distinguishes different levels of analysis, which is common in cluster and network studies (Rocha, 2004; Brass *et al.* 2004). Differentiation between levels of analysis is essential to avoid methodological individualism, or the automatic translation of individual level outcomes to higher level outcomes, which, as in the case of the trickle-down assumption, is a kind of reductionism that takes into account neither each individual level's specificities nor cross-level interactions and externalities. To this end, this paper has considered potential intra-cluster and intra-regional divides at the firm-cluster and cluster-regional levels, respectively. Finally, *external validity* increases with the use of larger sample sizes of firms and clusters and similar methods across LAC and between LAC and non-LAC countries. In fact, as for sample sizes, Table II shows that they are pretty small, and therefore, non-parametric testing is the norm. As a result, statistical precision is low, and results are more exploratory than explanatory. A way to overcome this limitation is to undertake comprehensive surveys (Pietrobelli and Rabellotti, 2004, 2007) and cluster mappings (IDI, 2001; Rocha *et al.* 2004). As for the application of homogeneous methodologies to compare results across LAC and between LAC and non-LAC, this is critical, given that most cluster studies are case-based. Attempts to use similar methodologies such as Schmitz (1999) and Pietrobelli and Rabellotti (2004) point at this direction. In the same vein, comparing clusters from developed and developing countries controlling for industrial sectors, as in the case of Meyer-Stamer *et al.* (2001), Rabellotti (1997) and Rabellotti and Schmitz (1999) is important not only to learn what is achievable for LAC's firms and regions but also to identify the specificities to avoid the direct application of models that do not fit LAC's reality (Humphrey, 1995).

The answers to the two research questions and the suggestions for future research have important implications for policymaking. A first implication is the need to clearly define the object of the cluster policy. The multidimensional nature of clusters coupled with policymakers' tendency to define broad objectives strongly correlates to the current flexibility in the definition of clusters and their impact. This is one of the reasons why it is so difficult to measure the impact of cluster policies (cf. Ferraro, 2010).

A second implication is that, despite the theoretical arguments supporting a focus on endogenous factors, the general political and macroeconomic environments matter in LAC. This is not only demonstrated by the fact that these environments have strongly shaped the nature of clusters but also by the potential negative effects of focussing on clusters and economic growth without considering development criteria. Previous policy experiences in LAC based on growth models through either state-led import substitution or market-led liberalisation processes were both economic growth-oriented and based on a trickle-down assumption – i.e. the benefits obtained by the most favoured sectors, regions and people would trickle-down to the less favoured ones. The fact that LAC are still the most inequitable in the world shows that this assumption is wrong. Now the risk is to shift the focus totally to endogenous factors to attain economic growth without considering the potential intra-clusters, intra-regional and intra-country disparities that these policies could have by not considering the emergent nature and special configuration of LAC's clusters.

To avoid the problems of shifting gears from exogenous to endogenous factors without considering cluster specificities, the definition of the end, the means and the sequence of the process is extremely important. In effect, developing countries initially favouring economic growth lapse into a vicious circle, whereas those with good human development and poor economic growth sometimes move into a virtuous circle (Ranis *et al.*, 2000). This is especially true for LAC, where development has to occur prior to or simultaneous with improvements in economic growth to reach a virtuous circle (Ranis and Stewart, 2001). Therefore, the end should be more development rather than growth, given that a focus on capabilities and linkages would prepare the conditions to spread widely the subsequent growth across regions and sectors.

Notes

1. For example, 73th Academy of Management Conference, August 2013 ("Capitalism into Question"), *Harvard Business Review*, January-February 2011 ("How to fix Capitalism"), 4th Drucker Conference, October 2012 ("Capitalism 2.0), are just some headlines from prestigious organisations, academics and practitioners that highlight the crisis of the current dominant economic system and the role of firms to contribute to overcome it.
2. A detailed review and critical analysis of the impact of localisation and urbanisation economies on development and growth – i.e. the localisation vs urbanisation debate – has been analysed elsewhere. In short, results are inconclusive for the impact of localisation and urbanisation economies on economic growth but show a positive impact of localisation economies on local competition (Glaeser, 2000; Cheshire and Malecki, 2004).
3. Web of Knowledge is a portal service containing the Web of Science, ISI Proceedings and Journal Citation Reports database. Web of Science coverage dates from 1980 and covers 7,500 journals. Its key feature is that it allows the identification of which author(s) cited a specific paper since its publication, allowing a snowball effect or to follow "research pathways" in the published literature.
4. There are certain conditions under which it is reasonable to make inferences about individuals based on aggregate data; however, it is often difficult to determine whether these conditions are met (cf. Singleton and Straits, 1999, p. 97 for references).
5. As noted in the section on internal validity, cluster impact is analysed considering only the studies that show variability in the cluster construct – i.e. either degree of clustering or clusters vs non-clusters (cf. Table III), whereas the qualifications of the results are made considering the total sample of studies (Table II).

References

Albornoz, F., Milesi, D. and Yoguel, G. (2002), "New economy in old sectors: some issues coming from two production networks in Argentina", *DRUID Summer Conference*.

Allen, T. and Thomas, A. (2000), *Poverty and Development into the 21st Century*, Oxford University Press, Oxford.

Altenburg, T. and Meyer-Stamer, J. (1999), "How to promote clusters: policy experiences from Latin America", *World Development*, Vol. 27 No. 9, pp. 1693-1713.

Arikan, A.T. (2009), "Interfirm knowledge exchanges and the knowledge creation capability of clusters", *Academy of Management Review*, Vol. 34 No. 4, pp. 658-676.

Armstrong, H. and Taylor, J. (2000), *Regional Economics and Policy*, Blackwell Publishers, Oxford.

Arthur, W.B. (1989), "Competing technologies, increasing returns, and lock-in by historical events", *Economic Journal*, Vol. 99 No. 394, pp. 116-131.

Audretsch, D.B. and Feldman, M.P. (1996), "R&D spillovers and the geography of innovation and Production", *American Economic Review*, Vol. 86 No. 3, pp. 630-640.

Audretsch, D.B. and Stephan, P.E. (1996), "Company-scientist locational links: the case of biotechnology", *American Economic Review*, Vol. 86 No. 3, pp. 641-652.

Aydalot, P. (1986), *Milieux Innovateurs en Europe*, GREMI, Paris.

Bagella, M. and Pietrobelli, C. (1997), "From SMEs to industrial districts in the process of internationalization: theory and evidence", in Van Dijk, M.P. and Rabellotti, R. (Eds), *Enterprise Clusters and Networks in Developing Countries*, Frank Cass, London.

Bair, J. and Gereffi, G. (2001), "Local clusters in global chains: the causes and consequences of export dynamism in Torreon's blue jeans industry", *World Development*, Vol. 29 No. 11, pp. 1885-1903.

Barnard, C.I. (1938), *The Functions of the Executive*, Harvard University Press, Cambridge, MA.

Bas, T.G., Amoros, E. and Kunc, M. (2008), "Innovation, entrepreneurship and clusters in Latin America natural resource – implication and future challenges", *Journal of Technology, Management & Innovation*, Vol. 3 No. 4, pp. 52-65.

Bas, T.G. and Kunc, M.H. (2009), "National systems of innovations and natural resources clusters: evidence from copper mining industry patents", *European Planning Studies*, Vol. 17 No. 12, pp. 1861-1879.

Bazán, L. and Navas-Alemán, L. (2003), "Upgrading in global and national value chains: recent challenges and opportunities for the Sinos valley footwear cluster, Brazil", EADI, Novara.

Becattini, G. (1979), "Dal "settore industriale" al "distretto industriale". Alcune considerazioni sull' unita d'indagine del'economia industriale", in Becattini (1989) (Ed.), *Sectors and/or Districts: Some Remarks on the Conceptual Foundations of Industrial Economics*, Rivista di Economia e Politica Industriale.

Bejarano Avila, J.A., Trejos, R.A., de las Casas, L.P., Núñez, R., Bejarano, J., Tello Coello, J. and Arias, J. (1998),"Elementos para un enfoque de la competitividad en el sector agropecuario", No. IICA CDSC-02, IICA, Bogotá (Colombia).

Bell, M. and Albu, M. (1999), "Knowledge systems and technological dynamism in industrial clusters in developing countries", *World Development*, Vol. 27 No. 9, pp. 1715-1734.

Bell, S.J., Tracey, P. and Heide, J.B. (2009), "The organization of regional clusters", *Academy of Management Review*, Vol. 34 No. 4, pp. 623-642.

Bianchi, P. (1994), "Technology and human resources in Europe after Maastricht", *International Journal of Technology Management*, Vol. 9 No. 3, pp. 314-331.

Bies, R.J., Bartunek, J.M., Fort, T.L. and Zald, M.N. (2007), "Corporations as social change agents: individual, interpersonal, institutional, and environmental dynamics", *Academy of Management Review*, Vol. 32 No. 3, pp. 788-793.

Bitrán, E. (2004), "Sistema de innovación, consorcios tecnológicos y clusters dinámicos en Chile", Serie En foco 20.

Boari, C., Fioretti, G. and Odoricci, V. (2008), "Rivalry and learning among clustered and isolated firms", MPRA Paper, University of Bologna, Department of Management.

Borello, J.A., Morhorlang, H. and Silva Failde, D. (2005), "Economías de Aglomeración en Países Semi-Industrializados: el caso de las tramas automotriz y siderúrgica en la Región Metropolitana de Buenos Aires, Argentina", UNGS, Foncyt, Buenos Aires.

Brass, D.J., Galaskiewicz, J., Greve, H.R. and Tsai, W. (2004), "Taking stock of networks and organizations: a multilevel perspective", *Academy of Management Journal*, Vol. 47 No. 6, pp. 795-817.

Brusco, S. (1992), "Small firms and the provision of real services", in Pyke, F. and Sengenberger, W. (Eds), *Industrial Districts and Local Economic Regeneration*, International Institute for Labour Studies, Geneva.

Capello, R. (1996), "Industrial enterprises and economic space: the network paradigm", *European Planning Studies*, Vol. 4 No. 4, pp. 485-506.

Casaburi, G.G. (1999), *Dynamic Agroindustrial Clusters. The Political Economy of Competitive Sectors in Argentina and Chile*, MacMillan Press, Great Britain.

Ceglie, G. and Dini, M. (1999), "SMEs cluster and network development in developing countries: the experience of UNIDO", *UNIDO – Private Sector Development Branch*, Vol. 2, pp. 1-25.

CEPAL (2002), "Mar del Plata productiva: diagnóstico y elementos para una propuesta de desarrollo local", Oficina de la CEPAL en Buenos Aires.

Cheshire, P.C. and Malecki, E.J. (2004), "Growth, development, and innovation: a look backward and forward", *Regional Science*, Vol. 83 No. 1, pp. 249-267.

Ciravegna, L. and Giuliani, E. (2007), "MNC-dominated clusters and the upgrading of domestic suppliers: the case of Costa Rican Electronics and Medical Device industries", *Montresor S. Dynamic Capabilities between Firm Organization and Local Systems of Production*, Routledge.

Coe, N.M. and Wrigley, N. (2007), "Host economy impacts of transnational retail: the research agenda", *Journal of Economic Geography*, Vol. 7 No. 4, pp. 341-371.

Coehlo, A. (2007), "Eficiencia colectiva y upgrading en el cluster del tequila. (Collective efficiency and upgrading in the Tequila District Cluster of Jalisco State, Mexico. With English summary", *Análisis Económico*, Vol. 22 No. 49.

Cunha Resende, M.F. (2003), "Competitividade e Potencial de Crescimento do Cluster de Embalagens Plásticas do ABC paulista", Texto para discussão CEDEPLAR/FACE/UFMG, Belo Horizonte.

Cunha Resende, M.F. and Oliveira Gomes, J. (2003), "Competitividade e Potencial de Crescimiento do Cluster de Moldes para a Indústria do Plástico de Joinville", Texto para discussão CEDEPLAR/FACE/UFMG, Belo Horizonte.

Dávila Flores, A. (2003), *Geographic Information System: The Economic Clusters of the Industrial Sector in Mexico*, EADI, Novara.

Dávila Flores, A. (2007), *Industrial Clusters in Mexico. 1988-2002*, American University, Washington, DC.

D'Avila Garcez, C.M. (2000), "Multinational enterprises and local systems of innovation: the case of the automotive industry in Brazil", *The DRUID Winter Conference*, Copenhagen.

Delgado, M., Porter, M. and Stern, S. (2010), "Clusters and entrepreneurship", *Journal of Economic Geography*, Vol. 10 No. 4, pp. 495-518.

DiMaggio, P.J. and Powell, W.W. (1983), "The iron cage revisited: institutional isomorphism and collective rationality in organizational fields", *American Sociological Review*, Vol. 48, pp. 147-160.

Dini, M., Ferraro, C. and Gasaly, C. (2007), "Pymes y articulación productiva. Resultados y lecciones a partir de experiencias en América Latina", Naciones Unidas, Santiago de Chile.

Döring, T. and Schnellenbach, J. (2006), "What do we know about geographical knowledge spillovers and regional growth? A survey of the literature", *Regional Studies*, Vol. 40 No. 3, pp. 375-395.

Drucker, P. (1954), *The Practice of Management*, HaperCollins, New York, NY.

Edwards, S. (1995), *Crisis and Reform in Latin America: from Desire to Hope*, Oxford University Press, Oxford.

Elstrodt, H., Ordorica Lenero, P. and Urdapilleta, E. (2002), "Micro lessons for Argentina", *The McKinsey Quarterly*, Vol. 2, pp. 1-8.

European Commission (EC) (2008), "The concept of clusters and cluster policies and their role for competitiveness and innovation: main statistical results and lessons learned", *Commission Staff Working Document SEC* 2637.

Felzensztein, C. (2008), "Clusters, social networks and marketing collaboration in small firms: exploratory evidence from Chile and Scotland", *International Journal of Entrepreneurship and Small Business*, Vol. 6 No. 2, pp. 230-244.

Ferraro, C. (2010), "Clusters y políticas de articulación productiva en América Latina", LC/W. 337, CEPAL-FUNDES, Santiago de Chile.

Ferrero, L. and Maffioli, A. (2004), "The interaction between foreign direct investment and small and medium-sized enterprises in Latin America and the Caribbean. A look at regional innovation systems", Paris.

Fleming, L., King, C. III and Juda, A. (2006), *Small Worlds and Regional Innovation*, Harvard Business School, Boston, MA.

Freeman, R.E. (1984), *Strategic Management: A Stakeholder Approach*, Pitman, Boston, MA.

Fujita, M., Krugman, P. and Venables, A.J. (1999), *The Spatial Economy. Cities, Regions, and International Trade*, The MIT Press, Boston, MA.

Garofoli, G. (1992), *Endogenous Development in Southern Europe*, Aldershot, Averbury.

Ghemawat, P. and Khanna, T. (1998), "The nature of diversified business groups: a research design and two case studies", *Journal of Industrial Economics*, Vol. 46 No. 1, pp. 35-61.

Ghoshal, S. (2005), "Bad management theories are destroying good management practices", *Academy of Management Learning & Education*, Vol. 4 No. 1, pp. 75-91.

Ghoshal, S. and Moran, P. (1996), "Bad for practice: a critique of the transaction cost theory", *Academy of Management Review*, Vol. 21 No. 1, pp. 13-47.

Giuliani, E. (2003), "Knowledge in the air and its uneven distribution: a story of a chilean wine cluster", *DRUID Winter Conference 2003*, available at: www.druid.dk

Giuliani, E. (2006), "The uneven and selective nature of cluster knowledge networks: evidence from the wine industry", Paper No. 2006/11, University of Pisa and SPRU.

Giuliani, E. (2007), "The selective nature of knowledge networks in clusters: evidence from the wine industry", *Journal of Economic Geography*, Vol. 7 No. 2, pp. 139-168.

Giuliani, E. and SPRU (2006), *Do your Neighbours Matter? A Study on the Innovative Performance of Firms in Wine Clusters*, DRUID, Copenhagen.

Giuliani, E., Pietrobelli, C. and Rabellotti, R. (2004), *Upgrading in Global Value Chains: Lessons from Latin American Clusters*, UNIPMN, Novara.

Glaeser, E.L. (2000), "The new economics of urban and regional growth", in Clark, G.L., Feldman, M. and Gertler, M.S. (Eds), *The Oxford Handbook of Economic Geography*, Oxford University Press, Oxford.

Glaeser, E.L., Kallal, H.D., Scheinkman, J.A. and Shleifer, A. (1992), "Growth in cities", *Journal of Political Economy*, Vol. 100 No. 6, pp. 1126-1152.

Grenier, C., Vargas, L.M. and Chaves Vilela, D. Jr (2008), "The process of creation and capitalization of knowledge within distributed organization: the case of clusters", Euromed Marseille, Ecole De Management.

Gwynne, R.N. (2008), "Firm creation, firm evolution and clusters in Chile's dynamic. Wine sector: evidence from the Colchagua and Casablanca regions", American Association of Wine Economists.

Hart, S. (2005), *Capitalism at the Crossroads: The Unlimited Business Opportunities in Solving the World's Most Difficult Problems*, Wharton School Publishing.

Held, C. (2003), "Institutional and technological innovations in NTFP-cluster promotion. The case of the Bamboo (Guadua angustifolia) sector in Colombia", Deutscher Tropentag, Göttingen.

Henderson, R. and Cockburn, I. (1996), "Scale, scope, and spillovers: the determinants of research productivity in drug discovery", *RAND Journal of Economics*, Vol. 27 No. 1, pp. 32-59.

Hernández, I., Alemán, F. and Taborda, J. (2006), "Parquesoft: a study of social entrepreneurship in software industry cluster in Cali, Colombia", UMNG, Colombia.

Hess, M. (2004), "£Spatial relationships? Towards a reconceptualization of embeddedness", *Progress in Human Geography*, Vol. 28 No. 2, pp. 165-186.

Hilhorst, J.G.M. (1998), "Industrialization and local/regional development revisited", *Development and Change*, Vol. 29 No. 1, pp. 1-26.

Hodgetts, R.M. (1993), "Porter's diamond framework in a Mexican context", *Management International Review*, Vol. 33 No. 2, pp. 41-54.

Humphrey, J. (1995), "Industrial reorganization in developing-countries – from models to trajectories", *World Development*, Vol. 23 No. 1, pp. 149-162.

Humphrey, J. (2003), "Globalization and supply chain networks: the auto industry in Brazil and India", *Global Networks*, Vol. 3 No. 2, pp. 121-141.

IDB 1998 for Inter-American Development Bank - IADB (1998), *Facing up to Inequality*, IADB.

IDB 2000 for Inter-American Development Bank - IADB (2000), *Development Beyond Economics*, IADB.

Instituto para el Desarrollo Industrial (IDI) (2001), "La Evolución Territorial-Sectorial de las PYMIS Argentinas (1994-2000)", IDI – Observatorio Permanente de las PyMIs Argentinas.

Jovanović, M.N. (2003), "Spatial location of firms and industries: an overview of theory", *Economia Internazionale*, Vol. 56 No. 1, pp. 23-82.

Kantis, H. (2005), *Clusters y nuevos polos emprendedores intensivos en conocimiento en Argentina*, Universidad Nacional de General Sarmiento/LITTEC, Buenos Aires.

Kesidou, E. and Romijn, H. (2005), "Local knowledge spillovers and innovation: the software cluster in Uruguay", *World Development*, Vol. 36 No. 10.

Kesidou, E., Caniëls, M.C.J. and Romijn, H.A. (2007), *Mechanisms of Local Knowledge Spillovers: Evidence from the Software Cluster in Uruguay*, University of Technology Eindhoven, Eindhoven.

Klepper, S. (1996), "Entry, exit, growth, and innovation over the product life cycle", *American Economic Review*, Vol. 86 No. 3, pp. 562-583.

Klepper, S. and Simons, K.L. (2000), "The making of an oligopoly: firm survival and technological change in the evolution of the US tire industry", *Journal of Political Economy*, Vol. 108 No. 4, pp. 728-760.

Krugman, P. (1991), *Geography and Trade*, MIT Press, Cambridge, MA.

López, A. and Ramos, D. (2007), *Complementación productiva en la industria del software en los países del MERCOSUR: impulsando la integración regional para participar en el mercado global*, Red Mercosur, Uruguay.

Lucas, R. (1988), "On the mechanics of economic development", *Journal of Monetary Economics*, Vol. 22 No. 1, pp. 3-42.

Lugones, G. and Porta, F. (1999), "La Industrialización del Cuero y sus Manufacturas en Argentina. ¿Un Cluster en Desarticulación o un Complejo Desarticulado?", Instituto de Estudios Sociales de la Ciencia y la Tecnología UNQUI – GRUPO REDES, Buenos Aires.

McCann, B.T. and Folta, T.B. (2008), "Location matters: where we have been and where we might go in agglomeration research", *Journal of Management*, Vol. 34 No. 3, pp. 532-565.

McDonald, F., Huang, Q., Tsagdis, D. and Tüselmannand, H.J. (2007), "Is there evidence to support porter-type cluster policies?", *Regional Studies*, Vol. 41 No. 1, pp. 39-49.

McWilliams, A. and Siegel, D. (2000), "Corporate social responsibility and financial performance: correlation or misspecification?", *Strategic Management Journal*, Vol. 21 No. 5, pp. 603-609.

Maggi Campos, C. (2004), "The salmon farming and processing cluster in Southern Chile", *Capabilities dinamiche tra organizzazione d'empresa e sistemi locali di produzione*, Progetto di Recerca di Interesse Nazionale.

Malecki, E.J. (1997), *Technology & Economic Development. The Dynamics of Local, Regional, and National Competitiveness*, Addison Wesley Longman, London and Boston, MA.

Marchese, M. and Sakamoto, A. (2008), "Skills development for industrial clusters: a preliminary review", Employment Working Paper No. 8, ILO, Geneva.

Markusen, A. (1999), "Fuzzy concepts, scanty evidence, policy distance: the case for rigour and policy relevance in critical regional studies", *Regional Studies*, Vol. 33 No. 9, pp. 869-884.

Marshall, A. (1920/1890), *Principles of Economics*, Mcmillan, London.

Mata, J. and Mata Marín, G. (2008), "Foreign direct investment and the ICT cluster in Costa Rica: chronicle of a death foretold?", paper presented at the GLOBELICS 6th International Conference 2008, Mexico City, 22-24 September.

Mazorra, J., Filippo, A. and Schleser, D. (2005), "Áreas económicas locales y mercado de trabajo en Argentina: estudio de tres casos", CEPAL – Serie Desarrollo Productivo 57, Naciones Unidas, Santiago de Chile.

Menéndez Gallegos, J. (2000), "Politicas de Competitividad en Regiones a la Luz de la Estrategia de Desarrollo Chilena", Politicas Económicas, Infraestructura y Energía Economía.

Mesquita, L.F. (2007), "Starting over when the bickering never ends: rebuilding aggregate trust among clustered firms through trust facilitators", *Academy of Management Review*, Vol. 32 No. 1, pp. 72-91.

Meyer-Stamer, J. (1995), "New departures for technology policy in Brazil", *Science and Public Policy*, Vol. 22 No. 5, pp. 295-304.

Meyer-Stamer, J. (1998), "Path dependence in regional development: persistence and change in three industrial clusters in Santa Catarina, Brazil", *World Development*, Vol. 26 No. 8, pp. 1495-1511.

Meyer-Stamer, J., Maggi, C. and Seibel, S. (2001), "Improving upon nature: creating competitive advantage in ceramic tile clusters in Italy, Spain and Brazil", *INEF Report Universitat Duisburg*, Vol. 54.

Montero, C. (2004), *Formación y desarrollo de un cluster globalizado: el caso de la industria del salmón en Chile*, CEPAL, Naciones Unidas, Santiago de Chile.

Moori Koenig, V., Milesi, D. and Yoguel, G. (2001), "Las PYMES exportadoras argentinas exitosas: hacia la construcción de ventajas competitivas", No. E2029.

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*, Vol. 184, pp. 1-36.

Mortimore, A. (1998), "Getting a lift: modernising industry by way of Latin American integration", *Transnational Corporations*, Vol. 7 No. 2, pp. 97-136.

Mortimore, M. (2003), *Illusory Competitiveness: The Apparel Assembly Model of the Caribbean Basin*, Naciones Unidas, Santiago de Chile.

Mortimore, M. and Barron, F. (2005), *Informe sobre la industria automotriz Mexicana*, Naciones Unidas, Santiago de Chile.

Mossi, M. (2003), "Growth dynamics and space in Brazil", *International Regional Science Review*, Vol. 26 No. 3, pp. 393-418.

Nadvi, K. and Schimtz, H. (1994), "Industrial clusters in less developed countries: review of experiences and research agenda", IDS Discussion Papers, p. 339.

Nelson, A.C. (1993), "Theories of regional development", in Bingham, R.D. and Mier, R. (Eds), *Theories of Local Economic Development. Perspectives from Across the Disciplines*, Sage Publications, Newbury Park, CA.

Nooteboom, B. (2004), "Innovation, learning and cluster dynamics", ERIM Report Series Research in Management, Erasmus Research Institute of Management.

Otero, G.A. (2002a), *Clusters Productivos en la Provincia de Buenos Aires. Segunda Parte*, Ministerio de Economía de la Provincia de Buenos Aires, Cuadernos de Economía.

Otero, G.A. (2002b), *Clusters Productivos en la Provincia de Buenos Aires. Tercera Parte*, Ministerio de Economía de la Provincia de Buenos Aires, Cuadernos de Economía.

Otero, G.A. (2005a), *Clusters Productivos en la Provincia de Buenos Aires. Complejo Farmaceútico*, Ministerio de Economía de la Provincia de Buenos Aires, Cuadernos de Economía.

Otero, G.A. (2005b), *Clusters Productivos en la Provincia de Buenos Aires. Complejos Automotriz, Lácteo y Pesquero*, Ministerio de Economía de la Provincia de Buenos Aires, Cuadernos de Economía.

Oxfam (2002), "Rigged rules and double standards: trade, globalisation, and the fight against poverty", Oxfam Report, Oxfam International.

Paladino, M. and Hasman, A. (2002), "Rafaela: Un Exito mas Alla de lo Economico", IAE - Business and Management School - Austral University, pp. 1-35.

Pedroso da Silva, A.R. (2004), "Pólo regional ou cluster: o caso do município de Rio Verde – Goiás", *Caminhos de Geografia*, Vol. 5 No. 13.

Perez-Aleman, P. (2003), "Decentralised production organisation and institutional transformation: large and small firm networks in Chile and Nicaragua", *Cambridge Journal of Economics*, Vol. 27, pp. 789-805.

Pietrobelli, C. (2007), *Global Value Chains and Clusters in LDCs: What Prospects for Upgrading and Technological Capabilities*, UNCTAD, Ginebra.

Pietrobelli, C. and Rabellotti, R. (2004), "Upgrading in clusters and value chains in Latin America. The role of policies", IADB – Inter-American Development Bank.

Pietrobelli, C. and Rabellotti, R. (2007), *Upgrading to Compete. Global Value Chains, Clusters and SMEs in Latin America*, Harvard University Press, Cambridge, MA.

Pietrobelli, C. and Stevenson, C. (2011), *Cluster Development Programs in Latin America and the Caribbean: Lessons from the Experience of the Inter-American Development Bank*, Inter-American Development Bank.

Pinch, S., Henry, N., Jenkins, M. and Tallman, S. (2003), "From 'industrial districts' to 'knowledge clusters': a model of knowledge dissemination and competitive advantage in industrial agglomerations", *Journal of Economic Geography*, Vol. 3 No. 4, pp. 373-388.

Porter, M.E. (1990), *The Competitive Advantage of Nations*, Macmillan, London.

Porter, M.E. (1998), *On Competition*, Harvard Business School Press, Boston, MA.

Porter, M.E. (2001a), *Clusters of Innovation: Regional Foundations of US Competitiveness*, Council of Competitiveness, Washington, DC.

Porter, M.E. (2001b), "Enhancing the microeconomic foundations of prosperity: the current competitiveness index", in Schwab, K., Porter, M. and Sachs, J. (Eds), *The Global Competitiveness Report 2001 – 2002*, Oxford University Press, New York, NY.

Porter, M.E. (2003a), "Foreword", in Solvell, O., Lindqvist, G. and Ketels, C. (Eds), *The Cluster Initiative Green Book*, Ivory Tower AB, Stockholm.

Porter, M.E. (2003b), "The economic performance of regions", *Regional Studies*, Vol. 37 Nos 6/7, pp. 549-578.

Porter, M.E. and Kramer, M.R. (2011), "The big idea: creating shared value", *Harvard Business Review*, Vol. 89 No. 1, p. 2.

Porter, M. and Van der Linde, C. (2002), "Clusters and cluster develpment project", Institute for Strategy and Competitivenes, Harvard Business School.

Post, J.E., Preston, L. and Sachs, S. (2002), *Redefining the Corporation: Stakeholder Management and Organizational Wealth*, Stanford University Press, Stanford, CA.

Quintar, A., Ascua, R., Gatto, F. and Ferraro, C. (1993), "Rafaela: un cuasi-distrito italiano" a la Argentina", Documento de Trabajo CFI-CEPAL No. 35, Publicación CEPAL LC/BUE.

Rabellotti, R. (1997), "Footwear districts in Italy and Mexico", in van Dijk, M.P. and Rabellotti, R. (Eds), *Enterprise Clusters and Networks in Developing Countries*, Psychology Press.

Rabellotti, R. (1999), "Recovery of a Mexican cluster: devaluation, bonanza or collective efficiency?", *World Development*, Vol. 27 No. 9, pp. 1571-1585.

Rabellotti, R. and Schmitz, H. (1999), "The internal heterogeneity of industrial districts in Italy, Brazil and Mexico", *Regional Studies*, Vol. 33 No. 2, pp. 97-108.

Ranis, G. and Stewart, F. (2001), "Growth and human development: comparative Latin American experience", *Developing Economies*, Vol. 39 No. 4, pp. 333-365.

Ranis, G., Stewart, F. and Ramirez, A. (2000), "Economic growth and human development", *World Development*, Vol. 28 No. 2, pp. 197-219.

Requier-Desjardins, D., Boucher, F. and Cerdan, C. (2003), "Globalization, competitive advantages and the evolution of production systems: rural food processing and localized agri-food systems in Latin-American countries", *Entrepreneurship & Regional Development*, Vol. 15 No. 1, pp. 49-67.

Robert, V., Yoguel, G., Cohan, L. and Trajtenberg, L. (2010), "Estrategias de innovación y dinámica del empleo en ramas productivas argentinas", Economía: teoría y práctica, Vol 32, pp. 113-158.

Rocha, H.O. (2004), "Entrepreneurship and development: the role of clusters. A literature review", *Small Business Economics*, Vol. 23 No. 5, pp. 363-400.

Rocha, H.O. and Sternberg, R. (2005), "Entrepreneurship: the role of clusters. Theoretical perspectives and empirical evidence from Germany", *Small Business Economics*, Vol. 24 No. 3, pp. 267-292.

Rocha, H.O., Reynolds, P.D., Donato, V. and Haedo, C. (2004), "Local production systems, entrepreneurship and regional development: theoretical arguments and empirical evidence from Argentina", paper presented at the Babson – Kauffman Entrepreneurship Research Conference, Glasgow.

Rodriguez Mansfield, A. (2000), "Estrategia de Competitividad para la República Dominicana. Proyecto para Desarrollar una Estrategia de Competitividad Nacional", República Dominicana, Santo Domingo.

Rodriguez-Pose, A. (2001), "Local production systems and economic performance in France, Germany, Italy, and the United Kingdom", in Crouch, C., Le Gales, P., Trigilia, C. and Voelzkow, H. (Eds), *Local Production Systems in Europe. Rise or Demise?*, Oxford University Press, Oxford.

Rodriguez-Pose, A. and Arbix, G. (2001), "Strategies of waste: bidding wars in the brazilian automobile sector", *International Journal of Urban and Regional Research*, Vol. 25 No. 1, pp. 134-153.

Romer, P. (1986), "Increasing returns and long-run growth", *Journal of Political Economy*, Vol. 94 No. 5, pp. 1002-1037.

Rosenfeld, S. (1997), "Bringing business clusters into the mainstream of economic development", *European Planning Studies*, Vol. 5 No. 1, pp. 3-23.

Salipante, P., Notz, W. and Bigelow, J. (1982), "A matrix approach to literature reviews", *Research in Organizational Behaviour*, Vol. 4, pp. 321-348.

Salvatierra, G.F. (2006), "Lecciones de las transformaciones y emergencia de una vitivinicultura competitiva en Argentina. Factores influyentes en el proceso de cambio de los clusters sanjuanino y mendocino", UNGS, Buenos Aires.

Sarghini, J. (2001), *Clusters Productivos en la Provincia de Buenos Aires*, Ministerio de Economía de la Provincia de Buenos Aires, Cuadernos de Economía.

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

Schmitz, H. (1995), "Small shoemakers and Fordist Giants – tale of a supercluster", *World Development*, Vol. 23 No. 1, pp. 9-28.

Schmitz, H. (1999), "Global competition and local cooperation: success and failure in the Sinos Valley, Brazil", *World Development*, Vol. 27 No. 9, pp. 1627-1650.

Schmitz, H. and Musyck, B. (1994), "Industrial districts in Europe: policy lessons for developing countries?", *World Development*, Vol. 22 No. 6, pp. 889-910.

Schmitz, H. and Nadvi, K. (1999), "Clustering and industrialization: introduction", *World Development*, Vol. 27 No. 9, pp. 1503-1514.

Segura, G. and Inman, C. (1998), *Turismo en Costa Rica: La Visión a Largo Plazo*, Centro Latinoamericano de Competitividad y Desarrollo Sostenible del INCAE.

Selznick, P. (1957), *Leadership in Administration: A Sociological Interpretation*, Row and Peterson, Evanston, IL.

Sen, A. (1997), "Development thinking at the beginning of the 21st century", STICERD, LSE, DERP No 2, Development Economics Research Program.

Sen, A. (1999), *Development as Freedom*, Oxford University Press, Oxford.

Sfeir Yazigi, R., Moreles Letzkus, C. and Pinto Cornejo, P. (2006), "Estudio e Identificación de Clusters Exportadores Regionales, Región de Coquimbo", Ministerio de Relaciones Internacionales de Chile.

Singleton, R.A. and Straits, B.C. (1999), *Approaches to Social Research*, Oxford University Press, Oxford.

Solvell, O., Lindqvist, G. and Ketels, C. (2003), *The Cluster Initiative Green Book*, Ivory Tower AB, Stockholm, CA.

Sorenson, O. and Audia, P.G. (2000), "The social structure of entrepreneurial activity: geographic concentration of footwear production in the United States, 1940-1989", *American Journal of Sociology*, Vol. 106 No. 2, pp. 424-461.

Stewart, F. and Deneulin, S. (2002), "Amartya Sen's contribution to development thinking", *Studies in Comparative International Development*, Vol. 37 No. 2, pp. 61-70.

Storper, M. (1997), *The Regional World*, Guilford, New York, NY.

Teixeira, F. and Ferraro, C. (2009), "Aglomeraciones productivas locales en Brasil, formación de recursos humanos y resultados de la experiencia CEPAL – SEBRAE", Naciones Unidas, Santiago de Chile.

Teltscher, S. (1994), "Small trade and the world economy: informal vendors in Quito, Ecuador", *Economic Geography*, pp. 167-187.

Thietart, R.E. (2001), *Doing Management Research*, SAGE, London.

Tiffin, S., Torres, X. and Neira, F. (2008), "Actividades ecoturísticas y clusters en Chile", *Estudios y perspectivas en turismo*, Vol. 17 No. 14, pp. 339-363.

Todaro, M. (2000), *Economic Development*, Addison-Wesley, Essex.

USA Department of Commerce (2000), "What is Economic Development", USA Department of Commerce.

UNIDO United Nation Industrial Development Organization (2009), "Cluster development for pro-poor growth: the UNIDO approach, Business, Investment and Technology Services Branch", Technical Paper Series, UNIDO.

Van de Ven, A.H. (1993), "The development of an infrastructure for entrepreneurship", *Journal of Business Venturing*, Vol. 8, pp. 211-230.

van der Linde, C. (2003), "The demography of clusters – findings from the cluster meta-study", in Brocker, J., Dohse, D. and Soltwedel, R.E. (Eds), *Innovation Clusters and Interregional Competition*, Springer-Verlag, Berlin, Heilderberg, NY.

Van Dijk, M.P.V. and Sverrisson, Á. (2003), "Enterprise clusters in developing countries: mechanisms of transition and stagnation", *Entrepreneurship & Regional Development*, Vol. 15 No. 3, pp. 183-206.

Vassolo, R., Castro, J., Gomez-Mejia, L. (2011), "Managing in Latin America: common issues and a research agenda", *Academy of Management Perspectives*, Vol. 25 No. 4, pp. 22-36.

Vicens, L. and Martínez, E. (1998), *The International Competitiveness of the Garments and Apparel Industry of the Dominican Republic*, Economic Commission for Latin America and the Caribbean (ECLAC).

Visser, E. (1999), "A comparison of clustered and dispersed firms in the small-scale clothing industry of Lima", *World Development*, Vol. 27 No. 9, pp. 1553-1570.

Visser, E.J. (2004), *A Chilean Wine Cluster? Governance and Upgrading in the Phase of Internationalization*, Naciones Unidas, Santiago de Chile.

Waddock, S.A. and Graves, S.B. (1997), "The corporate social performance-financial performance link", *Strategic Management Journal*, Vol. 18 No. 4, pp. 303-319.

Walsh, J.P., Weber, K. and Margolis, J.D. (2003), "Social issues and management: our lost cause found", *Journal of Management*, Vol. 29 No. 6, pp. 859-881.

Whittington, K.B., Owen-Smith, J. and Powell, W.W. (2009), "Networks, propinquity, and innovation in knowledge-intensive industries", *Administrative Science Quarterly*, Vol. 54 No. 1, pp. 90-122.

Yin, R.K. (1994), *Case Study Research. Design and Methods*, Sage Publications, Newbury Park, CA.

Yoguel, G. and Boscherini, F. (2001), "The environment in the development of firms' innovative capacities: argentine industrial SMEs from different local systems", Mimeo.

Yoguel, G.N.M., Milesi, D., Roitter, S. and Borello, J. (2003), "Knowledge and information: the diffusion of ICT in the Argentinean manufacturing industry", Universidad Nacional de General Sarmiento/LITTEC, Buenos Aires.

Zepeda, M.E. (2004), "Segusino: Auge y Caída de la Exportación de Muebles", Agorà.

Zhao, M. and Alcácer, J. (2007), *Global Competitors as Next-Door Neighbors: Competition and Geographic Concentration in the Semiconductor Industry*, Ross School of Business, MI.

Further reading

Acs, Z.J. and Armington, C. (2004), "Employment growth and entrepreneurial activity in cities", *Regional Studies*, Vol. 38 No. 8, pp. 911-927.

Albach, H. and Tengler, H. (1988), *Industrial Competitive Development in Three Regions in the Federal Republic of Germany: The Case of Kassel, Bonn, and Duisburg*, Quorum Books, New York, NY.

Albaladejo, M. (2001), "Determinants and policies to foster the competitiveness of SME clusters: evidence from Latin America", Queen Elizabeth House Working Paper Series.

Audretsch, D.B. and Fritsch, M. (2002), "Growth regimes over time and space", *Regional Studies*, Vol. 36 No. 2, pp. 113-124.

Avila, J.A. and Whitehead, B.W. (1993), "What is environmental strategy?", *The McKinsey Quarterly*, Vol. 4, pp. 53-69.

Brocker, J., Dohse, D. and Soltwedel, R. (2003), *Innovation Clusters and Interregional Competition*, Springer-Verlag, Berlin, Heilderberg, NY.

Camagni, R. (1991), *"Local Milieu", Uncertainty and Innovation Networks: Towards a New Dynamic Theory of Economic Space*, Belhaven Press, London.

Coleman, J. (1990), *Foundations of Social Theory*, Harvard University Press, Cambridge, MA.

Enright, M. (2001), "Regional clusters: what we know and what we should know", Kiel Institute International Workshop on Innovation Clusters and Interregional Competition.

Fabiani, S., Pellegrini, G. and Romagnano, E. and Signorini, L.F. (2000), "L'efficienza delle imprese nei distretti industriali Italiani", in Signorini, F.E. (Ed.), *Lo Sviluppo Locale. Un'indagine della Banca d'Italia sui Distretti Industriali*, Meridiana Libri, Corigliano Calabro (CS), Rome.

Feser, E.J. and Bergman, E.M. (2000), "National industry cluster templates: a framework for applied regional cluster analysis", *Regional Studies*, Vol. 34 No. 1, pp. 1-19.

Grant, R.M. (Ed.) (1998), *Contemporary Strategy Analysis, Concepts Techniques Applications*, Blackwell Publishers, Oxford.

Hennart, J.F. (1988), "A transaction costs theory of equity joint ventures", *Strategic Management Journal*, Vol. 9 No. 4, pp. 361-374.

Hoover, E. (1937), *Location Theory and the Shoe and Leather Industries*, Harvard University Press, Cambridge, MA.

Inter-American Development Bank (IADB) (1998), *Facing up to Inequality*, IADB.

Inter-American Development Bank (IADB) (2000), *Development Beyond Economics*, IADB.

Isard, W. (1956), *Location and Space-Economy*, Wiley, New York, NY.

Johannisson, B., Ramirez-Pasillas, M. and Karlsson, G. (2002), "The institutional embeddedness of local inter-firm networks: a leverage for business creation", *Entrepreneurship and Regional Development*, Vol. 14, pp. 297-315.

Keeble, D. and Wilkinson, F. (2000), *High-Technology Clusters, Networking and Collective Learning in Europe*, Ashgate, Aldershot.

Martin, R. and Sunley, P. (2003), "Deconstructing clusters: chaotic concept or policy panacea?", *Journal of Economic Geography*, Vol. 3 No. 1, pp. 5-35.

Nohria, N. and Eccles, R.G. (1992), *Networks and Organizations*, Harvard University Press, Cambridge, MA.

Observatory of European SMEs (2002), *Regional Clusters in Europe*, Enterprise Publications, European Commission, Belgium.

OECD (1996), *SMEs: Employment, Innovation and Growth: The Washington Workshop*, OECD, Paris.

OECD (2001), *World Congress on Local Clusters – Proceedings*, OECD DATAR, Paris.

OECD (2002), *International Conference on Territorial Development: Local Clusters, Restructuring Territories, and Environment-Enterprises-Districts*, OECD – DATAR, Paris.

Piore, M.J. and Sabel, C.F. (1984), *The Second Industrial Divide: Possibilities for Prosperity*, Basic Books, New York, NY.

Polanyi, K. (1957), *The Great Transformation: The Political and Economic Origins of Our Time*, Beacon Press, Boston, MA.

Reynolds, P.D., Miller, B. and Maki, W.R. (1995), "Explaining regional variation in business births and deaths – US 1976-1988", *Small Business Economics*, Vol. 7 No. 5, pp. 389-407.

Roelandt, T.J.A. and Hertog, P. (1999), "Cluster analysis and cluster-based policy making: the state of the art", in OECD (Eds), *Boosting Innovation: The Cluster Approach*, OECD, Paris.

Scott, W.R. (1998), *Organizations: Rational, Natural and Open Systems*, Prentice-Hall, Englewood Cliffs.

Sengenberger, W. and Pyke, F. (1992), "Industrial districts and local economic regeneration: research and policy issues", in Pyke, F. and Sengerberger, W. (Eds), *Industrial Districts and Local Economic Regeneration*, International Institute for Labour Studies, Geneva.

Sforzi, F. (1990), *The Quantitative Importance of Marshallian Industrial Districts in the Italian Economy*, International Labor Organization, Geneva.

UNDP United Nations Program for Development (1992), *Human Development Report 1992*, Oxford University Press, Oxford.

UNIDO United Nation Industrial Development Organization (2001), *Development of Clusters and Networks of SMEs – The UNIDO Programme*, UNIDO, Vienna.

Appendix. List of articles examined

Publications (72)

Henderson and Cockburn (1996), Hilhorst (1998), Hodgetts (1993), Bianchi (1994), Requier-Desjardin *et al.* (2003), Perez-Aleman (2003), Altenburg and Meyer-Stamer (1999), Schmitz (1995, 1999), Teltscher (1994), Pietrobelli and Barrera (2002); Paladino and Jauregui (2002), Paladino and Hasman (2002), Yoguel and Boscherini (2001), Visser (1999), Bagella and Pietrobelli (1997), Casaburi (1999), IDI (1999, 2001, 2002), Meyer-Stamer (1995, 1998), Rabellotti (1997, 1999), Meyer-Stamer *et al.* (2001), Bair and Gereffi (2001), van der Linde (2003), Nadvi and Schimtz (1994), Van Dijk and Sverrison (2003), Solvell *et al.* (2003), Humphrey (2003), Rabellotti

and Schmitz (1999), Bell and Albu (1999), Schmitz and Musyck (1994), Humphrey (1995), Cunha Resende (2003), Cunha Resende and Oliveira Gomes (2003), Grenier *et al.* (2008), Borello *et al.* (2005), Robert *et al.* (2010), Bas *et al.* (2008), Sfeir Yazigi *et al.* (2006), Zhao and Alcácer (2007), Jovanović (2003), Nooteboom (2004), Tiffin *et al.* (2008), Hernández *et al.* (2006), Gwynne (2008), Dávila Flores (2007), Salvatierra (2006), Pedroso da Silva (2004), Felzensztein (2008), Bitrán (2004), Kantis (2005), Ciravegna and Giuliani (2007), Maggi Campos (2004), Mossi (2003), Coehlo (2007), Giuliani (2007), McDonald *et al.* (2007), Kesidou *et al.* (2007), Giuliani (2006), Hodgetts (1993), CEPAL (2002), Döring and Schnellenbach (2006), Bas and Kunc (2008), Lugones and Porta (1999), Menéndez Gallegos (2000), Giuliani *et al.* (2004), Pietrobelli and Rabellotti (2007), McDermott and Rocha (2010), Ferraro (2010).

Conference papers and presentations (12)

Porter, 2001a, 2001b, Giuliani (2003), d'Avila Garcez (2000), Albornoz *et al.* (2002), Rocha *et al.* (2004), Mata and Mata Marín (2008), Kesidou and Romijn (2005), Bazán and Navas-Alemán (2003), Dávila Flores (2003), Held (2003), Giuliani and SPRU (2006), Bejarano Avila *et al.* (1998).

Policy documents (27)

Lugones and Porta (1999), Pietrobelli and Rabellotti (2004), Ceglie and Dini (1999), Alburquerque and Castillo (2002), IDB (1998), Mortimore (2003), Quintar *et al.* (1993), Zepeda (2004), Teixeira and Ferraro (2009), Mortimore and Boron (2005), Mazorra *et al.* (2005), Visser (2004), Marchese and Sakamoto (2008), Montero (2004), Dini *et al.* (2007), Ferrero and Maffioli (2004), López and Ramoz (2007), Pietrobelli (2007), Sarghini (2001), Otero (2002a, 2002b, 2005a, 2005b), Yoguel *et al.* (2003), Mortimore (2003), Rodriguez Mansfield (2000), Segura and Inman (1998).

Other unpublished documents and websites (12)

Moori Koenig *et al.* (2001), Porter and van der Linde (2002) (www.isc.hbs.edu), Avila (2003), Menéndez Gallegos (2000), Segura and Inman (1998); Boari *et al.* (2008); Fleming *et al.* (2006); www.unido.org; www.iadb.org; www.eclac.org; www.worldbank.org

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