



**Università Ca' Foscari – Venezia**

**L'ORGANIZZAZIONE FA LA DIFFERENZA?**

**IX Workshop dei Docenti e dei Ricercatori di Organizzazione  
Aziendale**

**7 – 8 Febbraio 2008**

**Track: Antecedenti, forme, meccanismi, dinamiche evolutive ed effetti  
sulle performance dei network e delle relazioni inter-organizzative**

**GOING GLOBAL SERIOUSLY:  
AN INDUSTRY LEVEL ANALYSIS OF  
ITALIAN FIRMS'  
INTERNATIONALIZATION**

**DIEGO CAMPAGNOLO**

Università di Padova

diego.campagnolo@unipd.it

**ARNALDO CAMUFFO**

Università Commerciale “L. Bocconi”, Milano

arnaldo.camuffo@unibocconi.it

## **Abstract**

We use data from 69 Italian manufacturing industries to identify what affects the degree of industry internationalization. The degree of firm level innovation and the amount of R&D investment have a positive impact on the degree of industry internationalization, which is consistent with the research conducted in other countries and the literature on internationalization. The presence of industrial districts and the presence of small and medium enterprises (SMEs) do not negatively impact on the degree of industry internationalization. Our findings suggest that economics based on mature and relatively low-tech industries, like Italy, can remain competitive if they point out innovation and leverage their historical heritage.

## **Introduction**

The Italian economic system is characterized by the prevalence of mature, low-tech industries, as well as SMEs mainly clustered around specific territorial areas (industrial districts). This way of organizing production, known worldwide as *flexible specialization*, has *made the difference* for a long time, so that it has been widely studied and imitated (Sabel, Piore, 1984; Brusco, 1982). In the era of globalization and technological change, it seems to still make the difference but in a *negative* sense, so that it is becoming one of the main arguments for the loss of international competitiveness of the Italian economic system. Indeed, the overall increase in the process of consolidation of world markets both for inputs and end products is bringing about new challenges to this model. The new economic landscape privileges *global* rather than *localized* value chains where the production process is cross-border fragmented either within or between several autonomous firms (Gereffi et

al. 2005; Arndt and Kierzkowski, 2001; Berger, 2006, Sturgeon, 2002). Such evolution is driven both by resource and market-seeking strategies and may involve all the intermediate production phases between procurements and selling. Firms need to be able to access global networks of division of labor through modes of internationalization that allow them to get a deeper knowledge on the opportunities (and threats) of the foreign markets, including foreign direct investments (FDI), foreign commercial expansions and strategic alliances with foreign partners. These are “knowledge enhancing forms of internationalization”.

These changes have promoted, in all industrialized countries, the international extension of national supply chains, even if the Italian manufacturing system seems to retain a disadvantaged position. On one hand, more than 30% of the Italian GDP comes from *supplier dominated* (Pavitt, 1984) industries such as agriculture, textile and apparel, furniture. As a consequence, the poor technological content of the products negatively affect the opportunity to codify and transfer their specifications and in turn its internationalization strategies. On the other hand, firms have privileged export activities rather than *stable* modes of internationalization such as foreign direct investments. These remarks are reinforced within industrial districts which are acknowledged as closed systems that communicate outside their boundaries through (weak) links at the end of the local value chain (Grandinetti, Corò 1999; Rullani 1995).

The mainstream literature about internationalization has not fully investigated the fostering factors of the adoption of “knowledge enhancing” forms of internationalization. No study has looked into what promotes them in mature, labor intensive industries. Moreover no one has considered the industry as a worthwhile unit of analysis. In line with other works, we think that this unit of analysis may provide further insights concerning what forces create the menu of available choices at firm level

(Jacobides, 2005).

The research question of the paper may be formulated as follow: what drives firms to use “knowledge enhancing” forms of internationalization? Why some industries are generally more internationalized (on the base of these forms) than others. We propose a theoretical model concerning the forces affecting the use of foreign direct investments, foreign commercial expansion and strategic alliances and empirically test it using data from 69 Italian manufacturing industries at three-digit Ateco<sup>1</sup> level. The Italian manufacturing sector is a worthwhile setting for its distinctive configuration and specialization and because it is not well-represented in mainstream literature.

By adopting the industry as unit of analysis and by considering different entry-modes of internationalization this work can enlarge existing knowledge about underlying factors affecting the internationalization strategies of Italian firms, independently of context- or firm-specific peculiarities. The paper has both managerial and for policy maker implications.

The primary contribution of this research is the development of a model making easier to predict when more international dispersed production configurations are likely. We also provide insights about the factors on which a mature and labor-intensive economic should leverage to keep competitive.

The paper continues as follow: in the next paragraph we discuss different “knowledge enhancing” forms of internationalization and underlying hypotheses of the theoretical model. Method and data are described in the subsequent session. Main findings and discussion

---

<sup>1</sup> ATECO is the acronym of *economic activities*. It is the classification system used in Italy coherently with the NACE REV 1.1, that is the industry classification system approved at the European level, in turn is coherent with the ISIC REV 3.1 elaborated by the United Nations.

conclude the paper.

### **Forms of internationalization**

Internationalization is a complex, firm-specific phenomenon. It is also a dynamic incremental process that changes according to the accumulation of local knowledge concerning customers' tastes, suppliers capacity and institutional characteristics (Johanson and Vahlne 1977; Camuffo, Furlan, Romano, Vinelli, 2006).

Different internationalization modes (being exports, foreign direct investments or collaborations with foreign partners) are characterized by different opportunities to learn about local markets' characteristics, which in turn deeply affects the ability to access global networks, establish stable relationships and remain connected with multiple customers. Conherently with the aim of the paper we therefore concentrate on "knowledge enhancing" forms of internationalization, including foreign direct investments, operations of commercial penetration and strategic alliances with foreign partners. They have in common an higher degree of stability and pervasiveness in the foreign markets than import and export operations.

Import and export operations are by their nature examples of *weak* ties between the national firm and the international context which hardly allow to infer anything as regard the extent of firms' foreign operations.

FDI, operations of commercial penetration and strategic alliances with foreign partners, on the contrary involve a geographical dispersion of the firm value chain and highlight the ability of the firm to stable enter international networks' of division of labor, extending the supply chain(s) in which a firm operates outside the country borders.

FIGURE 1 describes the model and the corresponding hypotheses. It

includes the following research constructs: industry internationalization, information technology, product and process innovations, R&D, competitive intensity, industrial districts and firm size.

Insert FIGURE 1 about here

### *Industry internationalization*

Industry internationalization varies according to the use of *foreign direct investments*, *foreign commercial expansions*, and *strategic alliances with foreign partners*.

*Foreign direct investments* (FDI) refer to investments that a firm allocates to geographically expand its operations. This type of investments deals with the manufacturing phase and usually represents a steady entry in a foreign production system. Seyf (2001) argues that there are many reasons behind foreign direct investments including import-substitution or export-platform strategies, with the aim of exploring new markets or acquiring new technologies.

Other researches point out that the propensity of SMEs towards foreign direct investments is affected by local features including the presence of qualified localized capabilities such as advanced specialized services, the existence of a “marshallian atmosphere”, and an environment conducive to innovation and learning (Mariotti and Piscitello, 2001)

*Foreign commercial expansion* deals with the organization of distribution channels and aims at steadily settling on foreign markets by creating their own sales networks, having agents abroad or other promotional activities (Basile, Giunta, Nugent, 2003).

*International strategic alliances*. Consistently with the mainstream literature on alliances it is possible to distinguish between learning and

business alliances. In the former firms decide to sign an alliance with a foreign partner in order to access, transfer or co-create resources that do not reside in-house (or would be costly to replicate) (Lu, Beamish, 2002)<sup>1</sup>. The latter deals with those alliances in which parties aim at maximizing the utilization of complementary assets (Lei, Slocum 1992; Koza, Lewin, 1998), for example market shares and customer knowledge.

### *Information technology and industry standards*

The literature concerning internationalization of production systems characterized by a greater presence of SMEs argues that to enter extended (global) networks of production it is necessary to share knowledge with others, be able to use devices for electronic communications, be accredited by independent institutions (certification, adoption of quality standards), and coordinate the internal operating systems with those of external partners (Corò, Volpe, 2003: 98). According to the same stream of literature, this would improve the ability to *create*, *utilize* and *sell* abstract knowledge, which is depicted as the most relevant missing dimension of Italian manufacturing firms (Corò, Volpe, 2003). These also appear to be unavoidable conditions for SMEs rooted in a particular socio-economic context, such as industrial districts. The investments in information and communication technologies (ICT), would allow the opportunity to re-create on a virtual basis those platforms that allow cognitive exchange and development of innovation at a larger level (Chiarvesio et al. 2003). Thus, hypothesis 1 follows.

---

<sup>1</sup> Lu and Beamish, by studying the relationship between internationalization and performance, found that “alliances with partners with local knowledge can be an effective strategy to overcome the deficiencies SMEs face in resources and capabilities, when they expand into international markets” (2002: 565).

Hypothesis 1. *The higher the investments in information technology at the industry level, the higher the degree of industry internationalization.*

The most influential literature about standards (Farrell, Saloner 1985; 1986; Langlois Robertson 1992) argues that there are basically two main classes of standards: those that create economies of scale since the increase in the extent of the market, and those that lower transaction costs by ensuring more efficient coordination and monitoring (Kindleberger 1983, cited in Langlois, Savage, 2001). Costs of coordination are reduced since standards help to align expectations, and so costs of monitoring, whereas costs of opportunistic behaviors become higher.

ISO is an international general standard that is “mainly concerned with the quality management system, (...), i.e., whether a firm has done everything to ensure that its products conform to the customer’s requirements” (Yeung, Mork, 2005: 143). Many scholars focused their contribution on ISO adoption effects. Naveh and Marcus (2004) sustain that the adoption of ISO 9000 makes an organization more attractive. Thus, hypothesis 2 follows.

Hypothesis 2. *The higher the diffusion of formalized standard procedures at the industry level, the higher the degree of industry internationalization.*

### *Innovation and R&D*

The relationship between innovation and internationalization is depicted by several studies both in industrialized and in developing countries (Ozcelik, Taymaz, 2004). It also appears particularly strong in the Italian case (Basile, 2001; Corò, Volpe, 2003; Garonna, Gros-Pietro

(eds), 2004). This because the Italian model has been rooted in processes of mainly informal innovation and is characterized by a great presence of small and medium enterprises in mature low tech industries. According to our perspective the rapid and continued introduction of product, process and or managerial innovations reveals the ability to serve differentiated segments of customers, facilitating the opportunity for a firm to participate in international networks of labor division. Thus, hypothesis 3 follows.

*Hypothesis 3. The higher the presence of innovative firms at the industry level, the higher the degree of industry internationalization.*

The effects of R&D investments are to some extent coherent with those cited above concerning product and process innovations. The underlying idea is that industries that invest more on R&D activities are also more internationally open. In so doing firms may build more opportunities to access international networks of division of cognitive labor by enhancing their *absorptive capacity* (Cohen, Levinthal 1990), in order to access new knowledge and/or to share the risks associated with R&D projects. Thus, hypothesis 4 follows.

*Hypothesis 4. The higher the R&D investments at the industry level, the higher the degree of industry internationalization.*

#### *Competitive intensity*

The level of competitive intensity that characterizes an industry is likely to affect the urgency towards a greater or lower degree of international opening. The higher the level of competition, the more urgent is searching for new resources or end-markets. Whereas, the lower the

level of competition in the internal market, the lower the pressure on local firms to improve their competitive position, both internally and abroad (Porter, 1990; Sakakibara, Porter, 2001). Thus, hypothesis 5 follows.

*Hypothesis 5. The higher the level of competitive intensity of the industry, the higher the degree of industry internationalization.*

#### *Industrial districts and firm size*

The mainstream literature concerning the relationship between industrial districts and internationalization argues that they favor the internationalization of the entire production system (Corò, Grandinetti, 1999; Mariotti, Piscitello, 2001; Rullani, 1995). The so called Canadian school (Rugman, Verbeke, 2003) goes further arguing that the international vocation of industrial district is positively affected by the presence of leading firms (Lazerson, Lorenzoni, 1999). Many of these contributions, however, focus on internationalization only from a merchant point of view.

Firms of different sizes may follow different trajectories of internationalization. Indeed large firms are more likely to have those (financial, managerial, and/or information) resources necessary to develop and support connections in global networks of division of labor.

#### **Methods and Data**

We adopted the industry as unit of analysis, at three digit level of the ATECO industry classification system. In so doing this work differentiates itself from the previous ones which focused on the territorial level (by studying internationalization process of industrial districts) (Corò, Grandinetti 1999; Corò, Volpe 2003) or on firm level strategies (Basile

2001; Basile et al., 2003).

We left a 3 years time lag between dependent and independent variables to improve inference causation.

We proposed the construct *industry internationalization* (II) as a multidimensional variable stemming from the combination of three different measures: *foreign direct investments* (FDI), *foreign commercial expansion* (FCE) and *international strategic alliances* (ISA). Each one of the three measures was standardized and equally weighted according to the following formula:

$$\mathbf{II} = \frac{[\mathbf{FDIstd} + \mathbf{FCEstd} + \mathbf{ISAstd}]}{3}$$

We developed a multidimensional construct because, as recognized by several authors (Geringer, Beamish, Dacosta. 1989), internationalization is a complex topic and mono-dimensional measures risk to highlight only a specific part of the phenomenon. We also ran our model for each single form of internationalization.

#### *Foreign direct investments*

Data on Foreign direct investments are collected from the 8<sup>th</sup> *Indagine sulle imprese manifatturiere* by Capitalia. It reports data on foreign direct investments per economic region of destination (UE, other industrialized countries, non-industrialized countries) and the amount invested on a three-year basis. We counted the number of firms with foreign direct investments over the period 1998-2000 and divided them by the total number of firms in the industry.

### *Foreign commercial expansion*

For the Foreign commercial expansion we gathered data from the same database. The 8<sup>th</sup> *Indagine sulle imprese manifatturiere* also provides data concerning projects of international commercial penetration per host country (UE, other industrialized countries, non-industrialized countries) and per type of penetration (offices directly managed, offices managed by local leaders, offices managed by partly owned firms). We counted the number of firms which undertook projects of commercial penetration over the period 1998-2000 and divided them by the total number of firms in the industry.

### *International strategic alliances*

Data on International strategic alliances were also collected from the 8<sup>th</sup> *Indagine sulle imprese manifatturiere* by Capitalia. The database provides information about the alliances signed by each firm on a temporal lag of three years: from 1998 to 2000, sorted according to the nationality of the partners and the scope of the alliance (commercial or technical-productive). For each industry we counted the number of firms which reported as having signed international alliances, during the period 1998-2000. We then divided this sum by the total number of firms in the industry to get a measure of the propensity of international alliance formation for each industry.

### *Independent variables*

Information technology, industry standards, innovation, R&D investments and competitive intensity are the independent variables.

### *Information Technology*

We retrieved data concerning information technology investments

from the 7<sup>th</sup> *Indagine sulle imprese manifatturiere* published by Capitalia. The database contains data on the amount invested during the period 1995-1997 in hardware, software, digital networks and telecommunications. We divided the total amount invested by the total revenue of the same period.

#### *Industry Standards*

The adoption of formalized standard procedures at industry level was measured according to the number of certified firms, divided by the total number of firms in the industry. We collected data about the number of certified firms through the 7<sup>th</sup> *Indagine sulle Imprese Manifatturiere* published by Capitalia. This database provides data on the number of firms adopting the ISO9000 certification standard.

#### *Innovation*

Innovation is a multidimensional variable stemming from product, process and managerial innovations. Data concerning these types of innovation are provided by the 7<sup>th</sup> *Indagine sulle Imprese Manifatturiere* of Capitalia. We counted the number of firms introducing product, process and managerial innovations in each industry during the period 1995-1997. We divided the number of “innovative” firms in each industry by the total number of firms.

#### *R&D investments*

We collected data on R&D investments from the 7<sup>th</sup> *Indagine sulle Imprese Manifatturiere* from Capitalia. This database provides information on the amount spent on R&D during the period 1995-1997. We calculated the mean invested by dividing the mean spent over the period by the mean revenue of the same period.

### *Competitive Intensity*

The level of competition at the industry three-digit ATECO level was obtained by multiplying two different measures: the number of competitors in the industry and the inverse of the so-called concentration ratio for the first five firms in the industry. Data concerning the number of industry competitors and the concentration ratio were taken from the Istat *1996 Conti Economici delle Imprese* database.

### *Control variables*

We use industrial districts, firm size and labor intensity as control variables.

### *Industrial Districts*

Industrial Districts is the variable that captures the presence of clustered configurations of the production system. On the basis of the data of the *8<sup>th</sup> Censimento generale dell'industria e dei servizi 2001* (Istat 2005) we learned that there are currently 156 industrial districts. In order to capture the presence of industrial districts per industry, we counted the number of districts per industry.

### *Firm Size*

We gathered data concerning Firm Size from the *Conti Economici delle Imprese* database by Istat. We divided, for each industry, the number of employees at the industry level by the total number of firms in that industry.

### *Labor Intensity*

Labor intensity was expressed as the total cost of employees over sales for each industry. The database *Conti Economici delle Imprese*

*published* by Istat provides such data.

## **Findings**

TABLE 1 summarizes the mean and standard deviation of the variables, while TABLE 2 shows the corresponding correlations.

Insert TABLE 1 about here

Insert TABLE 2 about here

TABLE 3 shows the regression analysis, on the base of the ordinary least squares results<sup>1</sup>. We ran four separate models: Model 1 refers to the regression analysis on the industry internationalization index, Model 2 to foreign direct investments, Model 3 to foreign commercial expansion and Model 4 to international strategic alliances.

Insert TABLE 3 about here

Overall, data confirm only partially our hypotheses. The results of Model 1 confirm hypotheses 3 and 4. Therefore industries characterized by a greater presence of innovative firms also appear to be those in which firms' value chain is more internationally extended. The idea of a positive influence of R&D activities on foreign expansion is also confirmed. It is worth noting that the latter is much stronger than the former.

We kept these characteristics (innovations and R&D) separate because they may reveal different dynamics in terms of internationalization modes: the first result is related to the output, while

---

<sup>1</sup> We also performed the usual diagnostic analysis (heteroskedasticity and multicollinearity) to check the validity of the ordinary least squares assumptions. In Model 2 we present robust instead of ordinary standard errors.

the second is related to the input of the innovation process.

Hypotheses 3 and 4 are supported in all the models (but with regard to R&D in Model 2) and in all these cases the effect of R&D is much stronger than that of product and process innovation.

Firms with an *effective* innovative process are likely to establish stable connections in global value chains both as a market share strategy and in order to increase the opportunity to capture new ideas and concepts.

The investment in R&D activities creates, according to our analysis, more opportunities for entering international networks of division of (cognitive) labor. Firms are not only more *attractive* than others with less R&D investments (because they possess knowledge that foreign firms may not), but also because they develop the *absorptive capacity* (Cohen, Levinthal 1990) that allow them to exploit the knowledge that foreign partners possess.

Results of our analysis only partially support hypothesis 2, while they do not sustain hypotheses 1 and 5.

The supposed positive effect of the adoption of formalized standards on industry internationalization is confirmed only when looking at strategic alliances with foreign partners. In this case ISO certification has a double effect. On the one hand it signals the adoption of formalized procedures that is even more relevant in the case of small and medium enterprises. On the other hand, it reduces transaction costs both during the preliminary phase of signing agreements between the parties and during their execution.

As regards information technology investments, data do not support the hypothesis. The reason could lie in the type of internationalization modes we considered. Information and communication technologies allow a more efficient transfer of codified information. This benefit may be less relevant in internationalization strategies that involve direct investments by

the firm. The role of information technology appears to be more prominent in internationalization decisions based on exports, when information technologies are adopted as “marketing tools” facilitating electronic commerce (Aspelund, Moen 2004; Moini, Tesar, 2005). Moreover the reason may lie in the fact that we grouped hardware, software and telecommunication investments all together. Different types of investment may have different effects (Basile, Giunta, 2004). In addition the effect of this variable could be partially explained by innovation and industry standards. Indeed information technology is positively and significantly correlated with them (0.23 and 0.22 respectively).

The results of our analysis do not confirm hypothesis 5. The effect of competitive intensity may be to some extent grasped by the variable Industrial District: they show a positive significant correlation of 0.27.

Industrial districts and firm size play different roles when looking at different internationalization strategies. Industries with a greater presence of industrial districts are also more internationally open than industries with a lower presence of geographically clustered economic settings. The positive effect is also supported when looking at international alliances while it is not when considering foreign direct investments or foreign commercial expansion projects alone. This result is to some extent contrary to the mainstream literature arguing about the closure of Italian industrial districts. It points out that firms, because located within industrial districts, benefit, internationally, from the positive network externalities that the district creates in terms of innovation and learning opportunities. However this is not true for all the internationalization patterns a firm can undertake. Indeed the propensity for foreign direct investments is much more positively affected by firm size.

We used labor intensity as a control variable. It does not seem to play any statistically significant role, but it could be the case that the effect is

partially absorbed by the variable Industrial Districts with which it is significantly and positively correlated (0.26).

## **Discussion**

In this work we aimed at investigating those factors affecting the international configuration of a production systems. In so doing we tested a model of foreign expansion at the industry level in the Italian manufacturing sector. Foreign expansion has been measured on the base of the adoption of different modes, each one testifying the international *stable* dispersion of the firm's value chain through "knowledge enhancing" forms of internationalization: foreign direct investments, foreign commercial expansion and strategic alliances with foreign partners.

From the analysis it comes out that different forms of internationalization are affected by different factors, albeit some factors play a statistically significant role in all the forms we studied.

A second remark is that each foreign expansion mode greatly benefits from innovation capabilities and R&D investments. Our results confirm the existence of a strong tie between innovation and internationalization, coherently with previous studies in different countries (Basile, 2001; Basile et al., 2003; Corò, Volpe 2003; Ozcelick, Taymaz 2004). Building on these previous works mainly centered on export operations, our results maintain that *innovation* positively affects even the ability to access global networks, establishing and supporting *stable* relations with multiple foreign partners. In other words the overall opportunity for Italian firms to enter international networks of division of labor resides mostly on their

capabilities to introduce product and process innovations<sup>1</sup>. These capabilities become even more important if we consider the weight of mature industries in the Italian production system. Firms, therefore, should be spurred to improve their capabilities in combining different technologies into end-products and controlling their distribution channels (adjusting upstream and/or downstream their supply chain operations). The capability of introducing product and process innovations is therefore the key point on which investing, also as a complement of the smaller investment on base technologies.

R&D investments affect, according to our results, the propensity towards strategic alliances and foreign commercial expansion, while it has no statistically significant effect on FDI. The huge presence of SMEs in the Italian production system, suggests specialized R&D investments devoted to on-the-shelf technologies. This encourages domestic firms to cooperate with external sources of innovation and foreign firms to complement their base of knowledge collaborating with domestic firms.

Our result would suggest that innovation is relevant for industry internationalization independently, to some extent, of the objective that innovations deal with. Internationalization is positively affected both by formal R&D investments and informal (emerging) processes of product and process innovation. From the policy maker point of view this finding suggests that it is important to support both types of innovative processes.

Firm size plays a significant (negative) role only on foreign direct investments. It means that the overall limited size of Italian manufacturing

---

<sup>1</sup> This ability of Italian firms is also pointed out by the *2004 European Innovation Scoreboard*: the index which measures the new or seriously improved products introduced in the market gives Italy 162 against the mean for the EU15 which is 100.

firms<sup>1</sup> does not necessarily represent a hurdle on the ability to access international networks of division of labor. The *size of innovative operations* matters much more as regard the opportunity to penetrate foreign markets or to cooperate with foreign partners. A certain part of the literature sustains that foreign direct investments may leverage a network of relationships within the hosting country, enhancing the overall ability of the firm to enter international networks of labor division (Corò, Grandinetti, 1999; Corò, Volpe, 2003; among others). Further analysis could be addressed to develop a sequential process of foreign expansion.

Our analysis also highlights that industries characterized by a greater presence of industrial districts are also those with a higher use of “knowledge enhancing” forms of internationalization, particularly in the case of strategic alliances with foreign partners. As we argued above, this result is particularly interesting and to some extent counterintuitive with respect to the mainstream literature maintaining that firms in industrial districts mainly rely on merchant-based forms of internationalization (exports).

Thus some characteristics of the Italian mainstream way of organizing production maintain the chance to *make the difference* even in the global economy, provided by innovation investments.

Finally, our work points out that the adoption of internationally accepted procedures, such as ISO certification, positively affects the ability of the firm to sign alliances with foreign partners, acting as a transaction cost reducer.

Overall our findings imply that industrial systems based on mature and relatively low- tech industries, like Italy, can remain competitive and

---

<sup>1</sup> According to ASIA (the database of the Italian operating firms) in 2003 the mean size was 3.8 employees per firm. In relative terms, firms with less than 10 employees represent the 95% of the total number of firms.

access global supply chains, by grounding their competitive models on innovation and leveraging the historical heritage.

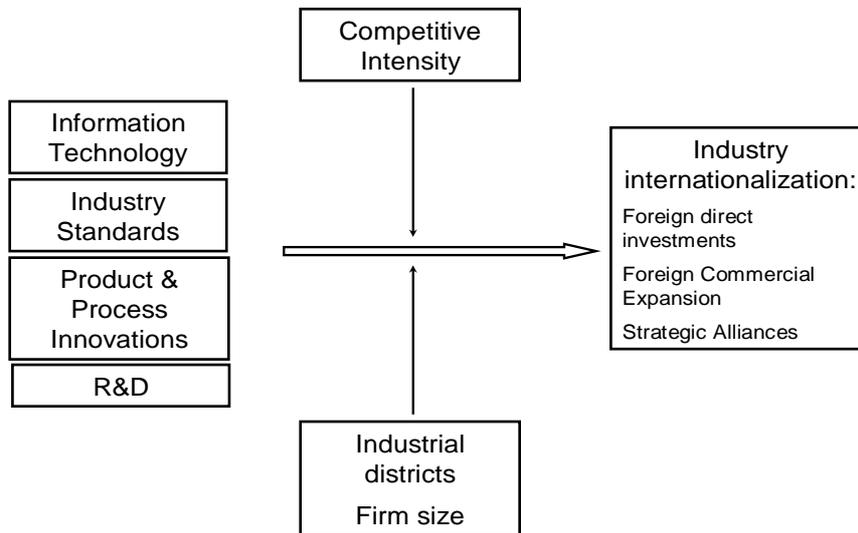
## References

- Arndt, S.W. and H. Kierzkowski, eds (2001), *Fragmentation: new production patterns in the world economy*. Oxford University Press: Oxford.
- Aspelund, A., Moen, Ø. 2004. Internationalization of Small High-Tech Firms: The Role of Information Technology. *Journal of Euromarketing*, 13 (2/3): 85-105.
- Basile, R. 2001. Export behaviour of Italian manufacturing firms over the nineties: the role of innovation. *Research Policy*, 30: 1185-1201.
- Basile, R., Giunta, A. 2004. Things change. Foreign market penetration and firms' behaviours in industrial districts: an empirical analysis. Working paper n. 48 (downloadable from [http://www.isae.it/pubbli\\_lista\\_elenco\\_wp.htm](http://www.isae.it/pubbli_lista_elenco_wp.htm)).
- Basile, R., Giunta, A., Nugent, J.B. 2003. Foreign Expansion by Italian Manufacturing Firms in the Nineties: an Ordered Probit Analysis. *Review of Industrial Organization*, 23: 1-24.
- Berger, S., 2006, *How we compete. What companies around the world are doing to make it in today's global economy*, Currency Doubleday, New York
- Brusco, S. 1982. The Emilian model: productive decentralization and social integration. *Cambridge Journal of Economics*, 6: 167-184.
- Camuffo, A., Furlan, A., Romano, P., Vinelli, A. 2006. The process of supply network internationalisation. *Journal of Purchasing & Supply Management*, 12 (3): 135-147.
- Capitalia, 1999. *Settima indagine sulle imprese manifatturiere. Rapporto sul sistema produttivo e sulla politica industriale*, Osservatorio sulle piccole e medie imprese.
- Capitalia, 2002. *Ottava indagine sulle imprese manifatturiere. Rapporto sul sistema produttivo e sulla politica industriale*, Osservatorio sulle piccole e medie imprese.
- Chiarvesio, M., Di Maria, E., Micelli, S. 2003. Processi di internazionalizzazione e strategie delle imprese distrettuali. *Economia e Società Regionale*, 1:108-133.
- Cohen, W.M., Levinthal, D.A. 1990. Absorptive capacity: a new perspective on learning and innovation. *Administrative Science Quarterly*, 35: 128-152.
- Corò, G., Grandinetti, R. 1999. Strategie di delocalizzazione e processi evolutivi nei distretti industriali italiani. *L'Industria. Rivista di economie e politica industriale*, 4: 897-924.
- Corò, G., Volpe, M. 2003. Frammentazione produttiva e apertura internazionale nei sistemi di piccola e media impresa. *Economia e Società Regionale*, 1: 67-107.

- Farrel, J., Saloner, J. 1985. Standardization, compatibility and innovation. *Rand Journal of Economics*, 16.
- Garonna, P, Gros-Pietro, G.M.(eds). 2004. *Il modello italiano di competitività*, Milano: Il Sole 24 Ore.
- Gereffi, G., Humphrey, J., Sturgeon. T. 2005. The governance of global value chains. *Review of International Political Economy*, 12 (1): 78-104.
- Geringer, J.M., Beamish P.W., Dacosta, R.C. 1989. Diversification strategy and internationalization: implications for MNE performance. *Strategic management journal*, 10 (22): 109-119.
- Grandinetti, R., Corò, G., 1999, Strategie di delocalizzazione e processi evolutivi nei distretti industriali italiani. *L'Industria*, 4.
- Gros-Pietro G.M. 2004. Il sistema industriale italiano a un bivio. In Garonna, P, Gros-Pietro G.M.(eds), *Il modello italiano di competitività*. Milano: Il Sole 24 Ore.
- Istat. 2001. *Conti Economici delle Imprese*, (downloadable from [www.istat.it](http://www.istat.it)).
- Istat. 2005. *I distretti industriali*, (downloadable from [www.istat.it](http://www.istat.it)).
- Jacobides, M.G., 2005, Industry change through vertical disintegration: how and why markets emerged in mortgage banking, *Academy of Management Journal*, 48, 465-498.
- Johanson, J.U., Vahlne, J.E. 1977. The mechanism of internationalisation. *International Marketing Review*. 7 (4): 11-24.
- Koza, M.P., Lewin, A.Y. 1998. The Co-Evolution of Strategic Alliances. *Organization Science*, 9 (3): 255-264.
- Langlois, R.N., Robertson, P.L. 1992. Networks and innovation in a modular system: lessons from the microcomputer and stereo component industries. *Research Policy*, 21 (4).
- Langlois, R.N., Savage, D.A. 2001. Standards, Modularity, and Innovation: the Case of Medical Practice. In Garud, R., Karnoe P.,(eds). *Path dependence and creation*, Lawrence Earlbaum Associates.
- Lazerson, M.H., Lorenzoni G. 1999. The firms that feed industrial districts: a return to the Italian source. *Industrial and Corporate Change*, 8: 235-266.
- Lei, D., Slocum, J.W. 1992. Global Strategy, Competence-Building and Strategic Alliances. *California Management Review*, 31 (1): 81-97.
- Lu, J.W., Beamish, P.W. 2001. The internationalization and performance of SMEs. *Strategic Management Journal*; 22 (6/7): 565-587.
- Mariotti S., Piscitello, L. 2001. Localized capabilities and the internationalization of manufacturing activities by SMEs. *Entrepreneurship & Regional Development*, 13 (1): 65-80.
- Mariotti, S. (Ed). 2005. *Internazionalizzazione, innovazione e crescita dell'industria italiana*. Milano: Franco Angeli.
- Moini, H., Tesar, G. 2005. The Internet and Internationalization of Smaller Manufacturing Enterprises. *Journal of Global Marketing*, 18 (3/4): 79-94.
- Naveh E., Marcus, A.A. 2004. When does the ISO 9000 quality assurance standard lead to performance improvement? Assimilation and going

- beyond. *IEEE Transactions on engineering management*, 51 (3): 352-363.
- Ozcelik, E., Taymaz, E. 2004. Does innovativeness matter for international competitiveness in developing countries? The case of Turkish manufacturing industries. *Research Policy*, 33 (3): 409-424.
- Pavitt, K., 1984. Sectoral patterns of technological change: towards a taxonomy and a theory. *Research Policy*. 13: 343-373.
- Porter, M., 1990. *The competitive advantage of Nations*, New York: The Free Press.
- Rugman, A.M., Verkeke, A. 2003. Multinational enterprises and clusters: an organising framework. *Management International Review*, 43: 151-169.
- Rullani, E., 1995. Distretti industriali ed economia globale. *Oltre il Ponte*, 50: 5-61.
- Sabel, C.F., Piore M.J. 1984. *The second industrial divide: possibilities for prosperity*. New York: Basic Books.
- Sakakibara, M., Porter, M. 2001. Competing at home to win abroad: evidence from Japanese Industry. *The Review of Economics and Statistics*, 83: 310-322.
- Seyf, A. 2001. Can globalisation and global localisation explain foreign direct investments? Japanese firms in Europe. *International Journal of the Economics of Business*, 8 (1): 137-153.
- Sturgeon, T., 2002. Modular production networks: a new American model of industrial organization. *Industrial and Corporate Change*, 11 (3): 451-496.
- Yeung, G., Mork, V. 2005. What are the impacts of implementing ISOs on the competitiveness of manufacturing industry in China?. *Journal of World Business*, 40: 139-157.

**FIGURE 1**  
**Determinants of industry internationalization**



**TABLE 1**  
**Descriptive statistics**

	MEAN	STDDEV
Industry internationalization	-3.29e-09	0.64
Foreign direct investment	0.02	0.05
Foreign commercial expansion	0.17	0.12
International strategic alliances	0.19	0.18
Information Technology	0.02	0.12
Industry Standards	0.30	0.22
Innovation	-3.92e-11	0.89
R&D	0.03	0.17
Competitive intensity	1461.18	3835.24
Industrial districts	19.54	18.00
Firm size	41.56	164.68
Labor Intensity	0.15	0.05
95 obs at three-digit ATECO		

**TABLE 2**  
**Correlations**

	1	2	3	4	5	6	7	8	9	10	11	12
1 Industry internationalization	1											
2 Foreign direct investment	.53*	1										
3 Foreign commercial expansion	.67*	-.04	1									
4 International strategic alliances	.71*	.04	.32*	1								
5 Information Technology	.07	-.04	.06	.11	1							
6 Industry Standards	.40*	.29*	.16	.32*	.22*	1						
7 Innovation	.41*	.28*	.21*	.29*	.23*	.49*	1					
8 R&D	-.01	-.05	-.11	.16	-.00	.10	.03	1				
9 Competitive intensity	-.14	-.07	-.11	-.10	-.06	-.11	-.03	-.05	1			
10 Industrial districts	-0.01	.05	-.05	-.02	-.14	-.29*	.01	-.11	.27*	1		
11 Firm size	.34*	.21*	.02	.42*	-.01	.22*	.26*	-.00	-.08	.10	1	
12 Labor Intensity	.08	-.03	.13	.05	-.05	.27*	.24*	.04	.17	.26*	-.11	1

• p<.05;

**TABLE 3**

**Industry internationalization – OLS results- standard error in brackets**

VARIABLE	MODEL 1	MODEL 2	MODEL 3	MODEL 4
	INDUSTRY INTERNATIONALIZATI ON	FOREIGN DIRECT INVESTMEN TS (ROBUST STD ERR)	FOREIGN COMMERCIAL EXPANSION	INTERNATIONAL STRATEGIC ALLIANCES
Information Technology	-0.063 (0.049)	-0.06 (0.510)	-0.108 (0.072)	0.010 (0.058)
Industry Standards	0.136 (0.084)	0.063 (0.095)	0.151 (0.124)	<b>0.243*</b> (0.097)
Innovation	<b>0.258**</b> (0.091)	<b>0.208*</b> (0.079)	<b>0.319*</b> (0.135)	<b>0.200*</b> (0.106)
R&D	<b>3.037**</b> (1.027)	-1.406 (1.069)	<b>5.232***</b> (1.517)	<b>3.239*</b> (1.482)
Competitive intensity	-0.072 (0.049)	-0.013 (0.036)	-0.098 (0.073)	-0.073 (0.057)
Industrial districts	<b>0.130*</b> (0.066)	0.099 (0.094)	0.104 (0.098)	<b>0.164*</b> (0.077)
Firm size	-0.077 (0.583)	<b>1.874*</b> (0.738)	-1.126 (0.865)	-0.544 (0.702)
Labor Intensity	-0.031 (0.061)	-0.029 (0.094)	-0.097 (0.093)	-0.001 (0.072)
Constant	<b>0.309*</b> (0.154)	0.047 (0.094)	<b>0.430*</b> (0.228)	0.195 (0.195)
Adj R <sup>2</sup>	0.356***	0.246*	0.290***	0.327***
Observations	69	69	68	68

+ p<.10 \* p<.05 \*\* p<.01 \*\*\* p<.001