

Enterprise in a globalised context and public and private statistical setups

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Abstract Production functions of enterprises that wish to be competitive in a globalised environment today differ deeply from the past (increasing role of FDIs, trade-marks, patents, ...), and official public statistics, also due to increasing restraints on public sector finances, are only able to meet in part the new needs that have arisen in terms of analysis. The matching of several private databases (to integrate public databases), however, allows the establishment of company panels that can provide the basis for numerous analyses, that are functional to a new approach to business. To this avail, Intesa Sanpaolo is implementing a project, concerning Italian manufacturing, that has already produced good results in terms of understanding the incidence of the factors described above on the performance of enterprises.

1 Introduction

Production functions of enterprises that wish to be competitive in a globalised environment today differ deeply from the past, and official public statistics, also due to increasing restraints on public sector finances, are only able to meet in part the new needs that have arisen in terms of analysis.

This is the case for data on both the aggregate level (country, sector, region) and especially on the disaggregated level (individual enterprises).

In particular, Italy's public statistical setup remains functional to companies aiming to sell on the domestic and international markets, working with non-differentiated work units and fixed capital, and located on the domestic territory, with a set capacity to step up productivity and change vertical integration. Today's enterprises, instead, are increasingly focused on foreign direct investment (while only sample data are available

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on numerousness, with no information on the activities of foreign subsidiaries); on research and innovation (on which only sample data are available, with little time-series significance); on brands (no official information); on human capital (approximate information); on production chain interactions with strategic suppliers (no information on exchanges between companies); on high ICT content organisation (approximate information); on increasingly M&A-based growth (no official information); on the quality of certified processes (no official information). The competitive context is also increasingly heterogeneous, in terms of enterprises, and therefore requires greater sample sizes than in the past.

The matching of several private databases (to integrate public databases), however, allows the establishment of company panels that can provide the basis for numerous analyses, that are functional to a new approach to business. To this avail, Intesa Sanpaolo is implementing a project that has already produced good results in terms of understanding the incidence of the factors described above on the performance of enterprises.

2. A new playing field requiring new statistics

In recent years, the relative importance of individual components of enterprise “production functions” has changed, with some becoming decisively more important than before and compared to others. Understanding how closely enterprises follow a winning mix of strategies is fundamental for the country as a whole. Indeed, this is the main problem facing Italy: the number of enterprises that meet the new needs of the market is still too low. Yet it is not a matter of inventing radical new business models, but simply introducing models already successfully adopted by others.

The competitiveness of an enterprise is increasingly based on the following factors:

- Innovation and R&D;
- Intangibles (such as human capital, brands, quality and environmental awareness);
- Foreign direct investment.

In the past, these factors were often considered of residual importance, which partly explains why enterprises have performed below their potential. The statistics available are also very limited.

Innovation and R&D

If we take innovation in a broad and not just technological sense, Italian enterprises absolutely match their competitors in other developed nations in their capacity to innovate. However, historically, they have excelled more in “adaptation” (incremental innovation) than in producing radical innovation. Our enterprises invest very little in R&D; in Italy expenditure is equal to 0.65% of GDP compared to 1.32% in France, 1.86% in Germany, and 0.74% in Spain. This situation is no longer sustainable, especially for sales directed at markets as saturated as Western markets are.

Intangibles: human capital, brands and certified quality

Enterprises are made up of men and women, so choosing personnel is fundamental. On this front though, Italian industry suffers from a lack of supply (few graduates) and a

lack of demand (few enterprises recruit skilled workers). Although the number of graduates has grown in recent years, the gap in the number of young graduates (aged 25–34 years) compared to the OECD average has widened. Investment in the development of human capital within companies is also very low: in Italy only 32% of enterprises invest in training, compared to 74% in France, 69% in Germany, and 47% in Spain. Italian enterprises similarly trail behind when it comes to brands, which are becoming more and more important in reaching an ever-larger audience of customers. Policies are often found to be inadequate, with investments spread across several brands which are individually “weak”, and generally little attention focused on the issue. Finally, quality must be “certified” as far as possible. Enterprises are increasingly seeking out new customers, who are unlikely to have any direct knowledge of the product; for them, ISO certification, for example, can provide suitable reassurance. Environmental strategies, too, may help firms to improve their competitiveness, reducing costs and increasing sales through better access to new markets and differentiating products (Molina-Azorin et alii, 2009).

Foreign direct investment

Until 10–15 years ago, an extremely limited number of Italian enterprises had foreign direct investments (FDI); today, internationalisation has become a mainstream phenomenon and thousands of enterprises have become involved. Nevertheless, there is still enormous ground to be covered, as the gap between Italy and other countries bears out. In Italy, outward FDI stock totals USD 578 billion, compared to USD 1,720 billion in France, USD 1,378 billion in Germany, and USD 646 billion in Spain.

3. The Intesa Sanpaolo integrated database

Integrated databases are essential to measure the spread of said strategies and their quantitative effect on performance. Accordingly, Intesa Sanpaolo has created a panel that draws from several diverse private databases, which provide a part of the statistical basis needed:

- Financial statements (CEBI);
- EPO patents (Thomson Scientific);
- Foreign direct investment (Reprint);
- ISO certificates (Accredia);
- Trade-marks (UIBM, OIHM, USPTO, WIPO);
- Credit ratings (CEBI, Intesa Sanpaolo);
- Corporate Group charts (Intesa Sanpaolo).

The archives are matched using “tax ID No.” as the key. However, only some of the archives contain that information at their source. In particular, patent, certification and trade-mark archives contain only the business name and address of the enterprise. As a result, an algorithm was developed for matching a business name and address to other databases containing both the same information and the tax ID No. The main problem is that different business names and addresses may appear for the same enterprise (for instance, abbreviated names, acronyms with or without full stops, presence of the abbreviated legal form, etc.). The tax ID No. of an enterprise may also change over the years.

4. Some results

Numerous analyses have been performed using the database. This paper focuses on the role of four variables: foreign direct investment, patents, quality certificates, and trademarks.

Intesa Sanpaolo (2011) conducted a study on 45,495 enterprises specialising in sectors typical of industrial districts. The model specification was straightforward, exploiting a growth equation used in other studies in which growth (measured as the logarithmic differential of sales in the two years 2008 and 2010) is presented in relation to the initial size of the enterprise, including a squared term to account for the possibility of non-linear growth in enterprises. Besides the control variables concerning sales, a series of dummy variables were introduced for each sector along with other variables to give an approximation of the competitive positioning of the enterprises:

- an innovation variable, which takes the value 1 if the enterprise filed a patent application between 1998 and 2007 or, otherwise, 0;
- a “quality certificate” variable which takes the value 1 if the enterprise has obtained certification of its quality management system;
- an “environment certificate” variable which takes the value 1 if the enterprise has obtained certification of its environmental management system;
- an “FDI OUT” variable which takes the value 1 if the enterprise has invested in at least one foreign enterprise;
- an “FDI IN” variable which takes the value 1 if the enterprise has foreign investors;
- a “district” variable which takes the value 1 if the enterprise belongs to a district;
- “export propensity” (not available at the enterprise level) was estimated for each combination of province–sector (3 digits) on the basis of the ratio of exports to employees in 2007, with the latter taken from the Italian National Institute for Statistics (ISTAT)’s ASIA database. The variable was introduced to see if enterprises in sectors/areas with a high propensity to export were more or less affected over the three-year period by the collapse in international demand in 2009 and the subsequent recovery in 2010.

An estimate was then produced of the impact of innovation, quality and environment certificates and internationalisation on the sales growth between 2008 and 2010 of Italian enterprises operating in district sectors.

Table 1 clearly shows a positive link between the sales growth and innovation, after taking into account enterprise size and sector of operation (see *inter alia* Archibugi, Pianta, 1996; Robertson, Jacobson, Langlois, 2009; Blake, Pain, 1994).

The same link emerged between sales growth and both quality and environment certificates (see Heras, Dick, Casadéus, 2002; Chapman, Murray, Mellor, 1997; Chow-Chua, Goh, Boon Wan, 2003; Naser, Karbhari, Mokhtar, 2004), which paid off in terms of customer retention, achieved by guaranteeing compliance with quality standards and control of environmental impact. The district variable was also positive, though it was not significantly above zero.

Similarly interesting outcomes emerged on the internationalisation front. Export propensity showed a significant positive result, confirming that even during the worst of the crisis, the capacity to sell one’s products abroad brought rewards, especially with the good recovery in international demand in 2010. The link can also be explained by

the presence of positive externalities to trade in regions/sectors showing good knowledge of foreign markets.

Table 1: Determinants of sales growth 2008-10 - Model 1

	<i>Parameter</i>	<i>T</i>	<i>P</i>
Intercept	-0.319	-2.410	0.016
Log (sales 2008)	0.010	0.340	0.731
Log (sales 2008) ²	-0.001	-0.660	0.511
Quality certific.	0.103	9.060	<.0001
Environ. certific.	0.074	2.740	0.006
Patents	0.036	2.450	0.014
FDI OUT	-0.005	-0.290	0.775
FDI IN	0.058	2.870	0.004
District	0.002	0.270	0.787
Export propensity	0.008	3.060	0.002
Sector dummies			
R ² = 0.0164 Adj R ² = 0.0158			
F = 60.23 Pr > F = < 0.0001			

Table 2: Determinants of sales growth 2008-10 - Model 2

	<i>Parameter</i>	<i>t</i>	<i>P</i>
Intercept	-0.048	-0.330	0.742
Log (sales 2008)	-0.032	-1.000	0.319
Log (sales 2008) ²	0.001	0.540	0.588
Environ. Certificates	0.086	3.220	0.001
Patents	0.034	2.190	0.028
FDI OUT	-0.028	-1.670	0.095
FDI IN	0.075	2.720	0.007
District	-0.008	-0.870	0.385
Export propensity	0.008	2.780	0.006
FDI* Quality certif.	0.096	2.240	0.025
District*Qual. cert.	0.109	3.940	<.0001
Short term loans	-0.040	-3.480	0.001
Financial Leverage	-0.025	-32.11	<.0001
Sector dummies			
R ² = 0.0164 Adj R ² = 0.0158			
F = 60.23 Pr > F = < 0.0001			

In confirmation of outcomes documented in the literature, local branches of multinationals were found to have had the strongest growth performances, driven by their competitiveness but also their cross-border nature. Indeed, foreign branches are a bridge for accessing local markets and bordering areas, towards which trade flows - also intra-firm - are activated (O'Sullivan, 1993; Blake e Pain, 1994).

The effects of outgoing internationalisation were instead negative, though not significant (see Amighini, Rabellotti, 2006; Chiarvesio, Di Maria, Micelli, 2006;

Mariotti, Mutinelli, Piscitello, 2006; Tattara, 2009). The sign and significance of this variable may have been influenced by problems of an accounting and statistical nature and economic reasons. From an accounting point of view, econometric estimates draw from the financial statements of the parent company and not from consolidated financial statements, which also report the results of delocalized production facilities and hence give a better picture of the effects of foreign direct investment on performance. Economically, the opening of foreign production facilities may adversely affect technical efficiency and have negative repercussions on production control, logistics and quality standards.

In order to account for an enterprise's capacity to manage the greater complexity that comes with the internationalisation of production processes, we decided to introduce an interaction term between foreign direct investment and quality certificates, in the assumption that these certificates may represent an indirect measure of an enterprise's capacity to organize and control such greater complexity, by overseeing and coordinating cross-border operations that are geographically dispersed. Table 2 shows the outcomes of the new model, which also includes an interaction term between the dummy "district" and "quality certificates" variables, along with two financial variables: short-term bank loans and financial leverage in 2008. The aim was to determine whether quality certificates - which are not widespread in industrial districts - may be of help to district enterprises in a competitive scenario demanding ever greater international openness and cross-border production and commercial ties. The financial variables were instead introduced to gauge their effect on the management of operations in a period shaped by strong financial instability.

If we focus on the new explanatory variables introduced, it is evident that financial management during the global financial crisis influenced the sales growth. Specifically, high levels of short-term bank loans and financial leverage penalized such growth. Hence, in our particular historical times, it would seem that having a balanced equity and financial situation is necessary to achieve sustainable growth.

Differences in growth also emerged between certified enterprises operating within districts and certified enterprises operating outside districts. Belonging to a district still has its advantages; however, unlike in the past, those advantages can only be acquired through strategic levers connected not only with production such as, for instance, quality certification.

Finally, it is interesting to observe how the internationalisation of production operations has positive effects on enterprises with quality certificates, that is, on those enterprises capable, according to our assumptions, of keeping the high organisational complexity connected with the need to manage and coordinate cross-border production operations under control. It remains unclear, however, the impact in the mid/long-term on local operations and, in particular, on the capacity to keep production know-how and the capacity to innovate high.

Again on the topic of internationalisation, an attempt was made to produce a model analogous to that shown in Table 1, but with interaction between FDI OUT and the patent variable, instead of between FDI OUT and quality certificates. The results show that such interaction is positive, confirming that international enterprises can exploit the outcomes of innovation on a much broader scale.

Another study (Intesa Sanpaolo, 2010) analysed the role of brands in driving growth (Beenstock, 1998; Tesar, 2006; Madden, Fehle, Fournier, 2006). The regressors used in the model included:

- the size of the enterprise, inserted as a control variable;

- an indicator measuring the “value” of a trade-mark on a continuous interval between 0 and 1. The indicator was used to quantify the renown and distinctiveness of a trade-mark with the public, also taking into consideration the geographic reach of the area in which it is known. The trade-mark value proposed takes into account the number of intellectual property offices with which a trade-mark is registered (USPTO, UIBM, OHIM, WIPO), the number of countries in which the trade-mark is protected, and the number of commodity sectors covered by the trade-mark over time. The assumption underlying this indirect measure of a trade-mark value is that the higher the number of countries in which trade-mark protection is requested and the higher the number of commodity sectors covered, the greater the value that the enterprise attributes to the trade-mark itself;
- the number of trade-marks filed by each enterprise.

Table 3: Determinants of sales growth 2007-09: role of trade-marks

	<i>Parameter</i>	<i>t</i>	<i>P</i>
Intercept	-0.327	-0.270	0.788
Log (sales 2007)	-0.010	-0.040	0.972
Log (sales 2007) ²	0.002	0.130	0.896
Nr of trade-marks	-0.033	-1.840	0.066
Value of trade-marks	0.267	2.210	0.028
R2 = 0.0304 F = 2.26			
Adj R-Sq = 0.0169 Pr > F = <0.0633			

On the basis of our estimates, it was found that registered trade-marks with little value (as they are largely unknown) did not influence the growth performance. By contrast, the trade-marks with value were clearly important as they had a positive and significant influence on an enterprise’s sales growth (Table 3). This clearly underscores the need for enterprises not only to create corporate and product brands but to give value to those brands by having them registered as distinctive marks to be used both in Italy and abroad in a number of commodity sectors. Furthermore, building a successful brand through the use of careful strategies at both the creative and distribution and promotional stages is easier to achieve and economically more sustainable if the enterprise focuses on a single brand. Multibrand policies can instead be costly, unsustainable and largely ineffective, especially in a globalized playing field in which enterprises need to reach several markets successfully. Such policies risk damaging the enterprise’s growth, as can be seen from the negative and significant value taken by the variable measuring the number of trade-marks filed by each single enterprise.

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