

# *Introduction*

## **MONITORING ITALY 2007**

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### **1. - Introduction**

In 2005, ISAE and *Rivista di Politica Economica* organized a conference dealing with the problem of the correct measurement and possible explanations for the large productivity differentials observed between Italy and the other main industrial countries since the mid-nineties<sup>1</sup>. One of the main conclusions was that existing productivity differentials stem primarily from the diffusion of IT technologies in non-IT producing industries, with a particularly important role played by the service sector. The contribution of human resource management and organization efficiency was also mentioned, albeit not analyzed in full detail. Building on these results, in 2007 ISAE and *Rivista di Politica Economica* launched the project *Monitoring Italy 2007*, with the goal of focusing on the role of management practices and organizational capital in influencing innovation efforts and differences in economic performance. *Rivista di Politica Economica* is now proud to host in this issue a selection of the

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<sup>1</sup> MALGARINI M. - PIGA G. (2006).

papers presented at the conference, together with the invited lectures based on the papers by Bloom, Sadun, Van Reenen and by Gambardella at the opening, all papers being previously unpublished.

The invited lecture of Prof. Bloom focused on the performance of Italian firms with respect to management efficiency; Gambardella adds a careful study on the characteristics of the invention system in Italy, stressing the possibility of raising the Italian innovative rate with appropriate policy measures. The rest of the volume is devoted to the analysis of organizational changes and their impact on innovation activity at the firm level. A session focusing on the effects of different models of ownership and levels of entrepreneurship on firms' performance concludes this volume.

## **2. - Management Practices, Innovation and Efficiency**

As a general purpose technology (GPT), ICT gives rise to a whole range of opportunities of improvements in labour and total factor productivity; yet, empirical evidence generally shows that ICT diffusion does not warrant, per se, that such opportunities are effectively seized by firms. As argued by Bresnahan (2001), advances in ICT "shift the innovation possibility frontier of the economy rather than directly shifting the production frontier". Actual productivity gains depend on firm-level application of ICT and filling the gap separating the availability of this GPT from its successful implementation may require considerable and costly investment in complementary capital, active plant-level co-invention by users of ICT and, in general, substantial efforts by managers in finding the best way to introduce new technologies in work places. Capacity of firms to exploit cheaper and more powerful computation and data processing facilities crucially depends on reorganizing and accumulating intangible organizational capital. According to Basu and Fernald (2006), there is a strict analogy between organizational and physical capital, in the sense that complementary capital may be thought as just another input entering standard neoclassical production functions; the only difference from ordinary capital and

labour inputs being that it is not observed, but it exerts a vital influence and has to be somehow inferred.

What is this unobservable/intangible complementary capital input made of? A crucial ingredient is clearly represented by organizational and management practices, which encompass several attitudes and skills: from the capacity to efficiently combine factor inputs in the production process, to the ability of providing the right targets and incentives to workers and of monitoring and rewarding their performances, to the propensity to take risks and to be open to modifications in the *statu quo*, like experimenting new managerial ideas, reshuffling product lines, investing in new initiatives, searching alternative routines in internal organization.

Although macroeconomists and business analysts have long stressed the role of good management practices in enhancing firm-level productivity, a major problem for the empirical analysis has been the absence of good data sets to conduct cross-country and cross-firm comparisons. This gap has recently been filled by Bloom and Van Reenen (2007) that developed a new approach to robustly measure and assess, with appropriate *ad hoc* surveys and scoring methods, a quite comprehensive range of managerial activities. In their invited paper, Bloom, Sadun and Van Reenen take stock of this former work and focus their attention on the Italian experience in comparison with the US, the UK, Germany and France. Their study shows that in overall performance, Italian manufacturing companies are lagging behind (together with those of France and the UK), with significantly lower management scores than the US and German firms. While Italy scores for operation management relatively high, indicating that Italian manufacturing firms have adopted the most modern production techniques, it is a laggard for worker management practices. Particularly, Italian firms are among the best in establishing and tracking effective targets at the shop floor and striving to achieve operational efficiency, but they rank worse in attracting talents and in motivating people with the use of appropriate incentives and effective systems of evaluation and performance rewards.

Investigating the determinants of the overall management gap of Italian firms the authors find that family-run firms are a crucial

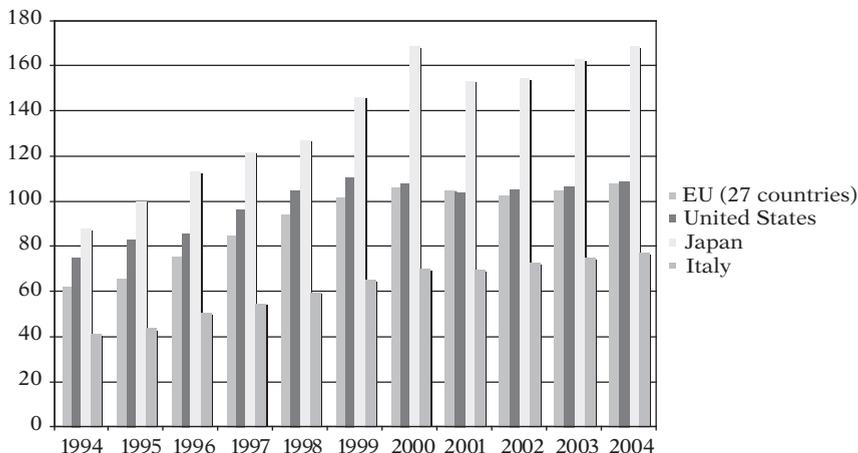
factor in explaining the distance. This should not be interpreted as a proof of an intrinsic weakness of family ownership, since management performance of family-owned firms run by external CEOs are not worse than non-family companies. The culprit for low Italian management scores is the extensive attitude in founder-run firms to employ younger members of the family in managerial positions, rather than selecting professional figures in the market on the grounds of merit considerations. Besides this, lower competition in the product market and lower managerial skills explain the insufficient Italian performance; all together these factors (family firm status, competition and skills) account for about 60% of the managerial gap of Italian companies *vis-à-vis* the US benchmark.

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In his contribution, Gambardella considers the role of knowledge and ideas as the main factor of production driving economic growth in modern capitalistic societies; at the firm level, the use of this new factor of production implies the emergence of new specific managerial techniques, while at the system level new institutions have to be developed in order to govern it, especially concerning intellectual property rights (IPRs). Gambardella shows indeed that three main trends have emerged in recent years at the international level: a steady growth of annual patent applications, a parallel growth of open source approaches and a growing market for technology. Given these trends, he argues that the best combination of private and public property of knowledge should be pursued in order to maximize the return of knowledge: in particular, there is now a quite general consensus that narrow innovations should be protected by clear and crisp patents, whilst more general fields and output should be kept public (using open source approaches such as GPL licensing). In this respect, Italy is lagging behind both in terms of managing knowledge at the firm level and developing appropriate systemic institutions: at the firm level, Italy has a much lower level of patents per million inhabitants, nor has shown signals of catching up in recent years (Graph 1); data from an EU survey (Giuri *et al.*, 2007) also shows

GRAPH 1

## EPO PATENTS PER MILLION INHABITANTS



Source: EUROSTAT.

that Italian firms lack formal planning for innovation, which seems to be still primarily based on individual efforts rather than on R&D activity. The same survey also shows that Italy has the lowest share of patents licensed on the market, indicating a low participation of Italian firms to the international market for knowledge. At the systemic level, the data also show that Italy is not part of the international debate on the institutions and management of knowledge-related assets. As a conclusion, results presented here demonstrate that Italian firms should start investing in the management of intellectual assets and participating in the debate regarding the development of new institutions for knowledge in the XXI century.

### 3. - Product and Process Innovation and Work Organization

The first session of the conference is devoted to the analysis of innovation activity of Italian firms and its effect on firms' performances. In their contribution, Cristini, Gai and Leoni

investigate the interaction between the introduction of new technologies and changes in workplace practices: more specifically, they look at complementarity between innovation and organizational change, testing if the increase in the former augments the return of the latter (or *vice versa*) in terms of productivity gains. The authors use a rich database based on two sources: a survey on workplace practices of 100 firms based in an Italian Northern province and the balance sheets for the same firms for the period 1991-1999. The former provides information on the introduction of new technologies, changes in working hours, organization and techniques and in the level of involvement of employees; a second section of the questionnaire digs deeper into workplace practices, asking for an assessment on the level of employees' autonomy, job rotation and work intensity. In the literature, job rotation and job autonomy are usually associated with an innovative working environment, whilst work intensity may be also viewed as a possible byproduct of a high performance workplace (Green, 2004). The authors estimate the gains of complementing innovation investments with organizational changes in terms of productivity levels and growth; the empirical test allows for both direct and indirect complementarity.

TABLE 1

COMPLEMENTARITY GAINS ON PRODUCTIVITY LEVELS  
AND GROWTH, AVERAGE

	Productivity growth	Productivity levels		
		1 <sup>st</sup> Quartile	2 <sup>nd</sup> Quartile	3 <sup>rd</sup> Quartile
Increase in:				
Work intensity	-0.07	0.32	0.37	0.42
Job rotation	-0.31	0.05	-0.02	-0.1
Job autonomy	-0.48	-0.21	-0.23	-0.24
Changes in:				
Working hours	-0.37	0.09	-0.15	-0.43
Organization	0.47	-0.18	-0.03	0.14
Work techniques	0.09	0.19	0.26	0.34
New initiatives of employees involvement	-0.04	-0.01	0.07	0.15

Source: CRISTINI A. - GAI A. - LEONI R., this volume.

One of the main result of the study is that the introduction of new ICT technology is strongly complemented by an increase in work intensity, across all types of firms, if productivity levels are considered; in terms of productivity growth, best results are on the other hand obtained by coupling innovation with changes in work organization (see Table 1). However, some particular workplace changes may be counter-productive when innovative investments are made: an increase in job autonomy going together with ICT investments may indeed result in a negative gain regardless of the characteristics of the firm; similarly, gains of complementing new technologies with changes in working hours are rather small on average and positive only for labor intensive firms. To sum up, the main conclusion of the paper is that technological innovation may be complemented with new specific working practices in order to maximize productivity gains.

However, Cristini, Gai and Leoni consider innovation as an undifferentiated phenomenon, regardless of the innovative strategy adopted by the firm. In this respect, Crespi and Pianta look more deeply into the innovative process, trying to capture the possibility of different behavior among Italian and European firms. In fact, according to most of the existing literature (see for instance Ferrari et al., 2007), in Italy the competitive model has historically been based on price competition and process innovation, rather than on technological competition impinging on product innovation (Pianta, 2001). Is the hypothesis confirmed by the data? And what are the determinants of such a strategy? In order to answer these questions, the authors estimate a model for innovation activity, where the evolution over time and across countries of the share of firms introducing product or process innovation is explained by the structure of the industry (in terms of average firm size), innovation inputs (R&D activities and investment in machinery and equipment linked to innovation), strategies (in terms of technological or price competition) and sources of knowledge for innovation activity (percentage of firms with cooperative arrangements and percentage of firms acquiring information from universities). Data are extracted from three editions of the Community Innovation Survey, including

information for 8 European countries covering 22 Manufacturing and 17 Services sectors, covering the period 1994-2004. The model is separately estimated for innovation activity in general and specifically for process and product innovation decisions; data for different countries and sectors are pooled together, and country and industry individual Fixed Effects are included in the analysis; the model is estimated in levels and considering the first-difference transformation in order to test for possible endogeneity problems. Indeed, for Italy the objective of reducing labor costs and the acquisition of machinery and equipment plays a particular significant part in explaining innovation decisions; as a source of knowledge, cooperation with other firms plays a major role. Results provide a first confirmation that in Italy innovation is mainly driven by price competitiveness strategies involving process innovation; they are confirmed by the model estimated including the specific process innovation as a dependent variable. Some industry differences also emerge: in fact, in manufacturing, technological change embodied in new machinery plays a major role, whilst in the service sector the main driver of innovation decision is the knowledge cooperatively developed with other actors. On the other hand, product innovation activity in Italy is mainly explained by strategical motivations linked to the opening of new markets, whilst the impact of R&D activity is lower with respect to the European average. Results are not influenced by possible endogeneity of the regressors.

#### **4. - Ownership, Entrepreneurship and Internationalization**

The contributions of Cucculelli and Brasili-Federico are much in line with the findings of the introductory lecture given by Bloom, Sadun, Van Reenen. In fact, the issue of the “owner identity” is central to the study of Cucculelli that explores, for a sample of European companies, the interplay between the ownership structure and some firm’s performance indicators. Particularly, the paper makes use of the response of firm-level sales to industry demand shocks as a measure of the propensity of the

owner/manager toward undertaking risk to reap opportunities of growth. Results seem quite meaningful for the Italian experience. Empirical evidence shows that the owner identity significantly influences the attitude of firms in reacting to demand shocks and, consistently with the hypothesis of risk aversion on the side of smaller producers, that small and medium-sized family owned companies tend to under-react, with respect to non-family owned firms, to shifts in market demand; this holds specifically when ownership is very concentrated and there are significant options to grow larger. Nevertheless, the small and medium sized producers appear to be good performers from the point of view of pure profitability; a result that seems consistent with what argued above about the good operative efficiency noted for the case of Italian firms, even the family-owned ones. However, the finding of under-reaction of family firms to demand shocks, interpreted as an indicator of risk-avoidance behaviour, introduces a further channel through which family-owned, family-run firms may affect negatively competitiveness at the industry level: the larger is the incidence in a sector of this typology of firms, the lower is the capacity and willingness to face instability, the higher is the tendency to adopt conservative, less risky strategies and, hence, the less intense is the propensity to achieve sustained growth.

Weakness of market incentives to adopt best management practices in Italy is the point of departure of the analysis of Brasili and Federico. These authors follow two methods to evaluate the contribution of entrepreneurship in productivity performance. The first route consists in constructing an index of managerial or entrepreneurial capital based on alternative measures of business activity (birth of new firms, number of ceasing firms, number of active firms) and in introducing it, along the arguments of Basu and Fernald, as another factor input into a neoclassical production function according to a stochastic frontier model (SFA) specification with constant parameters; the evidence shows the significant and heterogeneous, according to industries, influence of this index of entrepreneurship on output growth and efficiency. The second method abandons the route of getting a direct mea-

sure of managerial ability and considers it for what it actually is: an unobservable variable. The authors try to extract it from the data on output and ordinary factor inputs (physical capital and labour), following a random coefficient SFA specification, and find that accounting for the potential effect of management on production allows to arrive to more correct estimates of industry's technical efficiency, confirming the role played by managerial factor input. These findings point to the fact that an industry that is characterised by high managerial abilities will be able to choose more appropriate techniques (combination of factor inputs) and, hence, will get closer to the efficiency frontier. Policy implications from these studies are quite immediate. Differences of management performance across firms and industries suggest that fostering management practices is not only a matter of business environment, but regards economic policy too. Setting the incentives right, by reinforcing competition in the output and input markets, and removing red tape and redundant bureaucratic obstacles to entrepreneurial activity and firm growth may play an important part in inducing good management behaviour and in supporting aggregate productivity.

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