Do sectors and geography really matter to explain TFP heterogeneity across firms? Evidence from Italy.

Aiello Francesco 1, Pupo Valeria, Ricotta Fernanda
1 : University of Calabria, Dept. of Economics, Statistics and Finance (DiSESF)
P. Bucci 19A I-87036 Rende (Cosenza) - Italie
* : Auteur correspondant

Italy is a well-known case-study of a developed country with marked productivity variability across regions and sectors. For instance, a strand of literature shows that firms located in the North of the country take the advantages to operate in regions which are rich in terms of endowment of territorial resources, while the contrary holds when firms work in the South of Italy which still suffers from a widespread structural poverty. From this perspective, it is clear that location matters in explaining firms' performance. Beside the spatial dimension, the specialisation model of the Italian economy is also of great interest to explain the variability of firms productivity. In general terms, we know that the current product specialisation offers few opportunities for productivity gains because the proportion of firms operating in high-tech sectors is limited, whereas is high when considering traditional sectors (agri-food, furnishings, clothing and machinery). This is due to the policy decisions taken in the past which determined the abandon from high-tech sectors (chemicals, ITC, heavy engineering, nuclear technology) while in other countries these sectors not only spur technological advances but also offer relevant growth opportunities.

From this brief discussion it emerges that there are at least three key levels of analysis useful to better understand the differences in firms' performance. Firstly, firms differ each other in several ways. For instance, they have different size, a specific approach to produce and different innovation strategies which render persistent their innovation process (Teece et al, 1997). Again, every learning process is firm-specific, because it is driven by factors related to the individual skills of owner, workers and managers (Bloom and John Van Reenen, 2010). It is not surprising that all this heterogeneity in firm-specific behavior translates to heterogeneity in performance. Another source of variability is location. As mentioned before, the case of regional economic divide in Italy is far-sighted in this regards. Finally firms operate in different sectors having specific technological regimes (conditions of appropriability, technological opportunity, and knowledge cumulativeness) that impact, ceteris paribus, on firms' innovation activity and then on performance (Ngai and Samaniego 2011; Castellucci and Zheng 2010).

Therefore we expect is that there are substantial differences of productivity when comparing individual firms and when grouping them by region or sector. If this is the case, some questions remain, however, unaddressed. For instance, the main issue concerns the evaluation of the importance of firms heterogeneity to explain individual performance compared to the effects of location and sector. This remains to be tackled on empirical grounds. Again, location and sector affect firms, but there is no evidence quantifying the order of these effects. It is also likely that the two dimensions, sector and territorial conditions, interact in influencing firms productivity.

To the best of our knowledge no paper provides evidence on how much difference in firms performance is due to individual heterogeneity and how much to territorial and sectoral conditions. This paper contributes to this debate by providing new evidence of the

determinants of Italian firms productivity, the evaluation of which is based on a cross-classified multilevel model which allows to disentangle the impact on firm exerted by firms-specific factors, location and sector. With respect to the related literature, the distinguishing features of the study are as follows.

Firstly, this study focuses on firms heterogeneity in TFP. This is done because differences in Italian regional development depend on differences in TFP (Aiello and Scoppa 2000; Quartaro, 2006). Furthermore, it is worth noticing that the use of TFP is a novelty in itself when evaluating the sources of heterogeneity observed at firm level. The related literature is scant and addresses research questions other than ours. For example, some papers are based on business strategy and compare sectoral regimes and firm-level variety. This literature goes back to the contributions by Schmalensee (1985), and was further explored by McGahan and Porter (1997), or Kaniovski and Peneder (2002). Another piece of research deeply investigates the role of sector membership to firms' innovation activities. It refers to the evolutionary theory of innovation and explores how innovation activities made by firms are strongly dependent on the economic sector they belong to. Finally, some recent studies support the views that sectors are important in explain TFP growth. With regards the Italian case, the only comparable paper with our work is Fazio and Piacentino (2010). In their study, the authors do not consider the relationship between sectors contingencies and firms variety, by they only treat the role of location in explaining the variability of labour productivity of Italian firms across Italian provinces (NUTS 3) from 1999 to 2003. Another distinguishing element of this paper concerns the data used in the empirical setting. As far as the units of analysis of the is concerned, we focus on firms instead of considering only higher level of aggregation, namely regions/provinces or sectors. This ensures to avoid the ecological fallacy, occurring when a correlation found at regional (or sectoral) level does not hold at individual firm level. The third innovation of the paper comes from the method used in the empirical setting. To handle data identified at different levels of analysis, the paper refers to a cross-classified multilevel models, which permits to evaluate the role of each dimension in explaining the variety in firms' results. Having found that TFP heterogeneity at firm level is mainly due to differences in internal firms' characteristics, we show that sector plays a prominent role compared to location. To be more punctual, 86% of variance of firms' TFP is explained by variables defined at individual level, 3.4% is ascribable to space, while the proportion of TFP firms' heterogeneity due to sectors is 10%. When detailing the role of industry membership in explaining firms heterogeneity we find that several proxies of sector innovativeness play a crucial role. From a policy perspective, the evidence that industry matters more than location seems to be quite important, because much public-support has been activated in order to reduce regional gaps, while, at the same time, the country lacks of a industrial policy.