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How does spatial proximity of firms contribute to the transition of the EU-Med region? Empirical evidence from Turkey, Italy and Tunisia*

in collaboration with :



CENTRO
DI ECONOMIA DEL LAVORO
E DI POLITICA ECONOMICA
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by Anna M. Ferragina

1. Summary

*In this policy brief we provide policy implications and recommendations on how firms' productivity react to spatial economic drivers of growth related to agglomeration economies, clustering of innovation, and localisation of FDI. We observe how these features interact with firm characteristics (specifically size, ownership, and innovation) focusing on three case studies: Turkey, Italy, and Tunisia. Overall, the estimation results suggest significant productivity enhancing agglomeration and innovation effects, in particular spillovers are higher between firms operating in the same sector and region and having small technology divides. In addition, evidence on productivity spillovers from neighbouring foreign firms is less robust. The results of the study confirm the efficiency of clusters of SMEs in South Mediterranean countries and helps identifying key drivers and patterns of localised production providing a benchmark of analysis. The evidence support policies which pay **specific effort to enhance the absorptive capacity of less technologically sophisticated firms by supporting R&D investment and human capital qualification** allowing firms to compete and benefit of surrounding spillovers in agglomerated areas. Another policy target for the government should be **investing in transportation infrastructure, easing access to housing and developing regional complementarities**. This would lead to a more sustainable convergence of standards of living among regions in the long-term, and would reduce the exploitation of resources along the coast and the pressure on natural resources.*

2. Introduction

Clustering of economic activities has been traditionally seen as a crucial mechanism for firms' growth and resilience, allowing improving industrial productivity in a number of countries via localisation and urbanisation economies. Concentration also generates dynamic processes of knowledge creation, learning, innovation, and knowledge transfer (Marshall, 1920; Glaeser et al. 1992; Porter, 1998; Jacobs, 1969; Audretsch and Feldman, 1996). Besides, the location choice of foreign multinational enterprises (MNEs) might generate potential spillovers through a range of different channels: forward and backward linkages, competitive and demonstration effects, transfer of skilled workforce and transfer of

(pecuniary and non-pecuniary) externalities to local firms (Aitken and Harrison, 1999; Gorg and Greenaway, 2004; Javorcik, 2004). The aim of this policy brief is to discuss policy implications and recommendations developed as a result of a research project^[1] which investigated the productivity impact on firm's performance of location-based economies due to agglomeration of firms, clustering of innovation, and localisation of Foreign Direct Investment (FDI) focusing on three case studies: Turkey, Italy, and Tunisia.

The specific focus of this research is on agglomeration economies and innovation spillovers, with an eye on a multidimensional approach at spatial and firm level, in the effort to catch both regional characteristics of the economic systems and firm heterogeneity. Micro and macro factors, which affect the efficiency conditions of firms are combined in the analysis. The analysis at firm level was crucial to detect agglomeration economies as some factors are firm-specific, being related to the individual skills of owners, workers and managers, different company sizes, specific approaches to production and different innovation and management strategies (Bloom and Van Reenen, 2010). Hence, we control for the impact of firm characteristics (specifically the role of size, ownership and firm innovation). Furthermore, we also check whether the endowment of territories where firms are located, and location of foreign multinationals and their R&D, exerts a positive effect on firms' production.

By focusing on the agglomeration economies in the local context within which firms operate and at the same time concentrating on firm-specific determinants of productivity, make this research fills a gap in the literature on the Mediterranean area. There is quite a large literature on the impact of agglomeration economies on productivity in Italy, however only recent studies use firm level data and try to catch the underlying microeconomic determinants (Ferragina and Mazzotta, 2015; Lamieri and Sangalli, 2013). Most of the studies on Turkey are carried out at industry level and only a recent analysis exploit firm level information on R&D spillovers in Turkey using spatial econometrics (Çetin and Kalayci, 2016). There is a relatively recent literature on Tunisia built on firm level data, but it is especially based on surveys or on interviews carried out on specific innovation clusters (Achy, 2015; Ayadi and Mattoussi, 2014).

The analysis for each economy aims to provide a measure of spillovers from geographical and sectorial clustering of firms and from their innovation. We build specific indexes of agglomeration and innovation activity at territorial level (regions for Turkey, governorates for Tunisia, provinces for Italy). We also use indicators of innovation performed by domestic and by foreign multinationals at the spatial level of analysis adopted. The questions we try to answer are: do firms localised in clusters of production exhibit a higher productivity? How far concentration of innovation of co-located firms is able to increase productivity? Is there a complementarity between domestic and foreign firms?

3. Approach and Results

The choice of Turkey, Italy and Tunisia as case studies is based on the relevance that "economies of agglomeration" play in these countries (Figures 1-3). Italy provides an important benchmarking and is the most critical observatory among North Mediterranean countries for analysing the positive and negative impact of regional agglomeration of activities due to the traditional relevance of regional clusters of development (Industrial Districts). Turkey and Tunisia are two very interesting case studies due to the emergence of innovation clusters, science parks, incubators, special economic zones (SEZs), centre business districts (CBDs) (in Tunisia) and by an increasing role of foreign MNEs. These countries were also chosen to reflect a large dispersion of income, development, and infrastructural levels at regional level.

Figure 1: Turkish total factor prod. (TFP) by regions (1997, 2006)

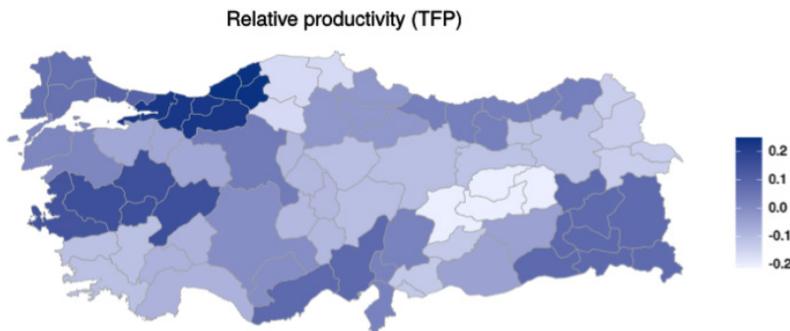


Figure 2: Italian TFP by provinces (2006)

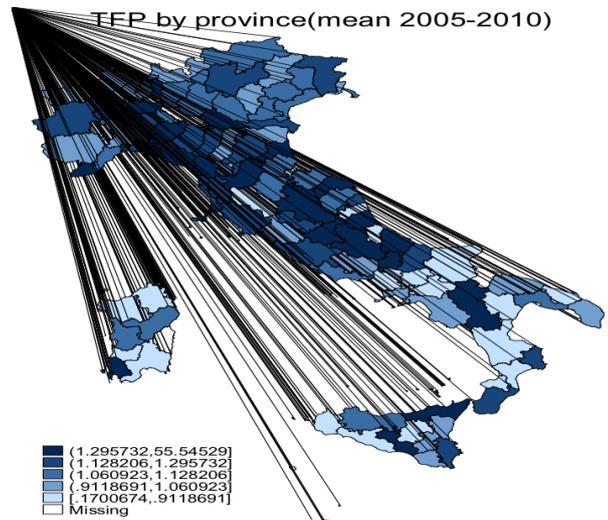
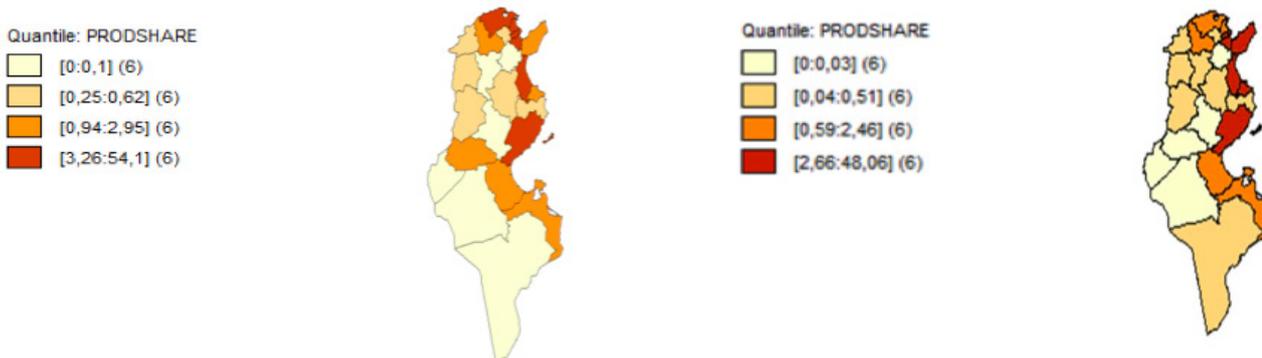


Figure 3: Tunisia production share by governorates (1997, 2006) [2]



We adopt the same estimation strategies and similar specifications for the three case studies: estimates for output by GMM system dynamic panel controlling for time fixed effects. Using system GMM techniques we try to address simultaneity and endogeneity on inputs and also the possible endogeneity between agglomeration and productivity. We also adopt other methodologies (OLS, Fixed Effects, Levinshon and Petrin, Olley and Pakes) to check the robustness of our results.

We indeed found robust results in our three cases. **In Turkey**, agglomerations externalities, measured by different proxies, show a strong positive effect on productivity due to specialisation economies and intra-industry spillovers. Foreign firms' agglomeration measured by the number and the output of foreign firms in the region at sector level are both significant. Conversely the externalities from agglomeration of domestic firms are negative suggesting congestion effects. Concerning the innovation spillovers from the number and the output of domestic and foreign firms which carry out R&D we find positive and highly significant returns. The third finding concerns the relevance of spillovers related to the foreign firms share in the sector and in the region. The evidence is in favour of high FDI spillovers at local level. The estimation results for Turkey also suggest that spillovers emanating from foreign firms are stronger than those from domestic firms. Besides, there seems to be no spillovers specific to large firms but there are spillovers specific to technologically more sophisticated firms.

For Italy, we also find evidence in favour of agglomeration and innovation spillovers at local level on firm productivity. However, horizontal spillovers from agglomeration at local level are mainly stemming from non-multinational firms rather than from the localisation of foreign multinationals. Firms also benefit from innovation of domestic and foreign companies operating in the same sector and province. Hence, spillovers

spread positively within geographical and sectoral-based neighbourhoods. Besides, in the specific case of Italy, unlike for the Turkish firms, agglomeration economies and innovation spillovers are more beneficial to small firms than to large ones. Hence, clustering is a way for small firms to overcome problems stemming from their size. Finally, also in this case there are innovation spillovers from domestic firms specific to more technologically advanced firms. Hence, more innovative firms seem to have a higher absorptive capacity.

The analysis for **Tunisia** is conducive to quite similar results. Overall, there is evidence in favour of a positive impact of specialisation economies, as suggested by the positive impact of the concentration of domestic firms and domestic R&D performers and also by the positive impact of higher shares of a sector in a region. It seems that specialisation is a strong pushing factor of output at regional level. However, like in the case of Italy, innovation spillovers from foreign firms' localisation in the region are not verified. The analysis allows us to conclude that output is higher where there is regional clustering of activity and conclude that there is positive evidence of regional spillovers from agglomeration and from innovation, although there is only a weak evidence of a positive impact of foreign firms.

4. Conclusions

Our study confirms that the model of development based on polarization in most cases enhances firm performance and growth. Hence, in spite of the challenges of globalization, localization still makes a difference. We find support to such conclusion in all the three country cases.

The results of our study also confirm that firms belonging to the same industry benefit more from each other as they are more technologically similar than firms belonging to different industries, this is because less sector distance facilitates the flow and absorption of knowledge among firms.

In the three cases, high level of technology endowment of firms plays a critical role in benefiting more from productivity spillovers.

We finally observe that FDI impact may be limited, and the territorial and social redistribution seems to be depending on the local system of production and on the distribution by sectors.

5. Implications and Recommendations

The experience drawn from this analysis may give support in identifying key drivers and patterns of localised production and provide a benchmark to analyse the issue of efficiency of clusters of SMEs in South Mediterranean countries. In particular, results may be useful to support the projects of Euro-Med clusters of cooperation on industry and innovation and the emerging innovation clusters based in Tunisia, Morocco and Lebanon.

However, the downside that should be avoided is the increasing unbalanced process of regional growth in most Mediterranean countries which can lead to large income and employment gaps across regions, the consequent massive migration and concentration of population in large cities and along the coast, the degradation and isolation of internal areas, the environmental abandonment on one hand and impoverishment on the other that the recent decades witnessed.

Reallocation of resources to less developed regions could be costly and counterproductive given that regional tax incentives to poor regions may shift jobs away from territories that do not receive the subsidy, rather than create new ones. Instead, the policy target for the government should be **investing in transportation infrastructure, easing access to housing and developing regional complementarities**. Such policies would expand job opportunities for the people outside the core regions, which are mainly concentrated

along the coasts and lead in the long term to a more sustainable convergence of standards of living among regions reducing the exploitation of resources along the coast and the pressure on natural resources.

These results also represent the economic underpinning of policy analysis aimed at fostering innovation at regional level. Policies should be **supporting R&D investment and human capital qualification** to enhance the capacity of less technologically sophisticated firms in order to compete and benefit of surrounding spillovers.

Notes

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2. In the case of Tunisia due to lack of data on input we provide figures on production share instead of TFP measures.

References

- Achy L. (2015). Tunisia’s economic challenges Addressing Regional Disparities. Carnegie Middle East Centre.
- Aitken, B.J., Harrison, A.E. (1999). Do Domestic Firms Benefit from Direct Foreign Investment? Evidence from Venezuela. *American Economic Review*, 89 (3), 605-618.
- Ayadi M., Mattoussi, W. (2014). Disentangling the pattern of geographic concentration in Tunisian manufacturing sector, *Learning to compete*, Wider UNU, Working Paper, n. 15.
- Bloom N., Van Reenen, J. (2010). «Why Do Management Practices Differ across Firms and Countries?», *Journal of Economic Perspectives*, 24(1), p. 203-224.
- Çetin D., Kalaycı E. (2016), Spatial Econometric Analysis of R&D Spillovers in Turkey, *Journal of Applied Economics and Business Research*, 6 (1), 55-72 .
- Cardamone, P. (2017). «A Spatial Analysis of the R&D-Productivity Nexus at Firm Level,» *Growth and Change*, Wiley Blackwell, 48 (3), 313-335.
- Ferragina, A.M., Mazzotta, F. (2015). Agglomeration economies in Italy: impact on heterogeneous firms’ exit in a multilevel framework. *Journal of Industrial and Business Economics*, 42 (4), 395-440.
- Gorg, H., Greenaway, D. (2004). Much Ado about Nothing? Do Domestic Firms Really Benefit from Foreign Direct Investment? *World Bank Research Observer*, 19 (2), 171-97.
- Javorcik, B.S. (2004). Does foreign direct investment increase the productivity of domestic firms? In search of spillovers through backward linkages. *American Economic Review*, 94(3), 605-627.
- Lamieri, M., Sangalli, I. (2013). Produttività e innovazione: un approccio spaziale. *Economia e Politica industriale*, 40 (2), 67-89.
- Glaeser, E., Kallal, H., Scheinkman, J., Shleifer, A. (1992). Growth of cities. *Journal of Political Economy* 100, 1126-1152.
- Porter, M.E. (1998), Location, clusters and the ‘new’ microeconomics of competition, *Business Economics*, Vol. 33-1: 7-17.
- Audretsch D.B., Feldman M. (1996). Knowledge spillovers and the geography of innovation and production. *American Economic Review*, 86 (3), 630-640.

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FEMISE is a Euromed network established in June 2005 as a non-profit, non-governmental organisation (NGO) following 8 years of operation.

FEMISE is coordinated by the Economic Research Forum (Cairo, Egypt) and the Institut de la Méditerranée (Marseille, France) and gathers more than 100 members of economic research institutes, representing the 37 partners of the Barcelona Process.

Its main objectives are:

- *to contribute to the reinforcement of dialogue on economic and financial issues in the Euro- Mediterranean partnership, within the framework of the European Neighbourhood Policy and the Union for the Mediterranean,*
- *to improve the understanding of priority stakes in the economic and social spheres, and their repercussions on Mediterranean partners in the framework of implementation of EU Association Agreements and Action Plans,*
- *to consolidate the partners of the network of research institutes capable of North-South and South-South interactions, while it sets into motion a transfer of know-how and knowledge between members.*

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