

Do young people impact innovation and productivity of marginal and advanced areas? An empirical study on Italian Nuts 3 regions.

Introduction

In recent years, issues involving young people are at the very heart of the political debate. In this respect, EU framed a *Youth Strategy* to plan several actions for the specific roles of young people in society and their specific needs at national, regional, and local level. Also, innovation and productivity, being two of the most critical aspects related with (sustainable) growth, prosperity, and economic development, are traditionally subjects of several strategies. For example, recently EU developed policies that help speed up innovation at the regional level as well as productivity strategies to face the slow growth path Europe is experiencing after the beginning of the Covid pandemics.

The relationship between youth, productivity and innovation has been taken into account in some contributions even if mainly tacitly. On the one hand, a part of the literature argued that young people can positively influence innovation (Rodriguez-Pose and Wilkie, 2019) because they are likely to be highly creative, they find original solutions to old and new problems, they are prone to use new technologies, and they tend to create new forms of entrepreneurship (Prskawetz et al., 2006). However, others suggested that young people have only limited resources and opportunities necessary to express their innovative potential (Druker, 2014). On the other hand, similar factors can also affect the role played by young people for productivity (Rodriguez-Pose and Crescenzi, 2008), even if it should be taken into account that a relevant part of them can study or be neither working nor studying, thus decreasing their participation rate in the labor system (Bruno et al., 2014).

Structural factors at the context level can certainly affect the above-mentioned mechanisms. Particularly, territorial heterogeneity and specifically the distinction between marginal and economically advanced areas, offer different instruments, possibilities, and opportunities for young people to express and put into practice their innovative and productive potentials. Thus, also places hosting different typologies of what we could name a “youthful atmosphere” can reach different levels of both innovation and productivity.

Nevertheless, an empirical study aiming at testing such relationships – being them positive or negative – is still missing.

Theory and research aims

Today societies face strong unequal distributions of opportunities to live and work across places. This has had several serious implications for people in economically advanced areas in comparison with those at the margins. This phenomenon has various scales that could be represented by a center-periphery or by an economically advanced-marginal dichotomization. Certainly, this structure has relevant implications also for innovation and productivity of places. In fact, specific branches of literature showed that the most productive and innovative people of a society (e.g., those belonging to the creative class) have positive effects for economic development (Florida et al., 2008). However, both innovation and productivity are unevenly distributed across places as well as individuals and their capabilities.

Due to the rapid technological change we are facing over the last years, a primary role in this dynamics is played by young people as those having relevant potentials in terms of innovation and productivity. For example, generation Y, or Millennials, as those born between 1981-1995, is a quasi-digital native generation, so it is more prone to mix their competences in a technological-driven competitive environment than previous generations (Howe and Strauss, 2000). In general, they are increasingly less prone to work with old-fashioned working rules and they prefer the adoption of

novel instruments such as flexible and agile working. This is encouraging firms to implement new strategies for matching young needs and their engagement within the company (Cattermole, 2018; Jha et al., 2019).

If young people enhance firms' productivity and competitiveness, assuming a territorial perspective in studying such impact is relevant as well. In fact, economically advanced places (especially highly urbanized regions as for example those hosting big cities) are exploiting emigrational flows for seizing young and well-educated people, but depriving peripheries and marginal territories (Rodriguez-Pose, 2018; Iammarino et al., 2019). In other words, such an approach is a zero-sum game; the advantages of a group of places often imply a loss for the others. As a consequence, the relevant part of human capital represented by young people is not created, reproduced and equally distributed across regions, but it is likely to be trapped within lavish territories.

Notwithstanding that, to what extent young people are more (or less) innovative and productive in a technological-shifted panorama from a territorial point of view is under-investigated. Hence, this paper aims at investigating to what extent the presence of young-related specific regional characteristics are able to foster innovation and productivity. This is particularly relevant because productivity, innovation (e.g., in terms of opportunities and results), and the presence of young people are heterogeneous across places and these relevant features of places can activate very dynamic interconnections. For example, on the one hand, some young people leave depressed, fragile, deprived, and peripheral areas to – mostly urban – economically advanced ones (so influencing also their economic performance and development); on the other hand, some others are reversing this trend and they are moving back to locations usually considered “left-behind places”. A similar complex picture is present when the focus moves to innovation and productivity. In fact, if some urban areas are considered by default sources of innovation and productivity, alternative forms of it (e.g., rural innovation, cultural-driven economic development) can take place also in other contexts (Kalantaridis et al., 2019).

Methodology and context

Empirically we adopt several panel data estimations techniques implementing Pooled OLS Regressions, Fixed Effect Regressions and Generalized Method of Moments Regressions. The latter is particularly relevant in our case since it allows to disentangle causal effects between drivers and outcomes of the phenomenon under study. In fact, endogeneity issues like reverse causality can be imagined too; a large presence of youth in a region may be due to a pro-innovative or pro-productivity entrepreneurial fabric (i.e. migratory flows). Implementing two step system GMM and employing both first differences and lagged values of the dependent variables as instruments for specifying the model allow to overcome above-mentioned criticalities and to unravel a cause-effect relationship (Roodman, 2009). The econometric investigation relies on a dynamic model in which also levels of innovation and productivity at time t depend to their lagged values. So, the model aims at understanding to what extent young-related characteristics of places enhance productivity and innovation.

The context of the study is the Italian Nuts 3 regions (i.e., Italian provinces). This choice is driven by the fact that we aimed at disentangling the role of young opportunities, places, and material conditions of life at the most disaggregated geographical level available. Specifically it is composed by a sample of about 13 years and 110 Italian provinces. The Italian case is relevant because this country hosts both very advanced places and historically less developed and economically depressed areas. Places at the margins in this country, across their heterogeneities, can still benefit from environmental, natural, and cultural resources that might power up an innovative process as well as productivity.

Specifically, we investigate innovation proxied by provinces' propensity to patent and productivity proxied by the variations of GDP through different combinations of explanatory variables, distinguishing by:

- a) the provincial level of young occupation computed on the total population of young people (15-29 years old) of the province and the provincial share of young native people (not migrating elsewhere) computed as the complementary set ($100 - n$) of the ratio between young emigrants and young population (15-29 years old) at the provincial level.
- b) economically advanced (i.e., not marginal) areas and marginal areas. Marginal areas are identified as those fulfilling at least one on three following characteristics (Ietri and Pagetti, 2019):
 - 1) density of population lower than the 50% of the mean of total observations;
 - 2) GDP lower than the 85% of the mean of total observations;
 - 3) employment ratio lower than 85% of the mean of total observations.

We also control for several socio-economic factors at territorial level that can influence innovation and productivity such as real GDP (only when the dependent variable is innovation), level of innovation (only when the dependent variable is productivity), quantity of human capital, firms' density distinguishing by small-medium and large enterprise, etc. Also, we include time effects that capture the variability evenly affecting all the sample of provinces over time, and individual heterogeneity (i.e., provincial characteristics not changing over time). Finally, we insert dummy variables for marginal areas in order to catch hypothetical differential levels of the impact.

Results

Findings suggest that the provincial level of young employment has a positive influence on productivity. Moreover, being a marginal areas (provinces) have a detrimental effect on both innovation and productivity growth. However, the share of young native people (those not migrating elsewhere) positively impacts on productivity growth over time of marginal areas. In other terms, the more young people remain in their native provinces, the more productivity grows. Also, the share of young employment in marginal areas positively affects innovation.

Further analysis is implemented to investigate the role played by geographical distribution of our core variables across Italian provinces on both productivity growth and innovation. We calculated the share of youth related indicators on their respective national value. In this way we are able to study the provincial competition on such specific factors. Findings suggest that in general provinces able to seize young people are more likely to innovate. In this respect, a different effect on marginal and not marginal areas is not detected. Moreover, provinces able to retain the higher relative level of young native people in comparison with other provinces, are more likely to innovate. Interestingly, in this case there is no evidence of different impact between marginal and not marginal areas in respect to this phenomenon. Finally, provinces able to attract the higher relative level of young migrants in comparison with other provinces are more likely to both innovate and being more productive.

Discussion and policy implications

Findings can suggest several policy implications. In general, policies should reinforce already existent instruments or design new ones to limit young unemployment and to reduce unbalanced distribution of young people across different places. Moreover, some specific policy implications for marginal areas can be designed because, even if marginal areas seem to be less prone to innovate and grow, young people may reverse a part of this phenomenon. On the one hand, new instruments to maintain young people in marginal areas may be beneficial for productivity; on the other hand, also those addressed to attract young migrants in marginal areas may be beneficial for both innovation and

productivity. The repopulation of marginal areas as well as giving opportunities to young people is not just an ethical issue but a strategic and forward-looking economic choice. This certainly implies the design of a strategy for the rejuvenation of the productive fabric of marginal areas as well as their social and cultural attractiveness.

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