Economics of Migration

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Diversity in Cities

- Ottaviano and Peri (2006) take a different perspective on the effect that immigration has in destination countries.
- Instead of focusing on the effects on native's wages, a problem typically casted in standard supply/demand framework, this article makes the following research question: "what is the economic value of 'diversity' that the foreign born bring to each city"? (Ottaviano and Peri, 2006, p. 10)
- The focus is on "cultural diversity", proxied by the country of birth of foreign US residents. This captures, to say the least, linguistic diversity, on the assumption that most foreign-born citizens speak their original language at home.
- The conjecture of the article is that: "cultural diversity may very well be an important aspect of urban diversity, influencing local production and/or consumption." (Ottaviano and Peri, 2006, p. 10)

Diversity in Cities

- In fact, there might be arguments in favor of a positive role in production, if diversity in the form of different skills that complement natives' skills, implies higher productivity (for natives and for immigrants), or in consumption, if diversity allows for the production of a higher variety of consumption goods for which consumers may have taste (sometimes called "love of variety")
- On the other hand, if natives do not like cultural heterogeneity, they may derive negative utility from diversity. Along similar lines, if there are "intercultural frictions" (Ottaviano and Peri, 2006, p. 10) in the workplace, productivity may be reduced.

Diversity in Cities

- The aim of this paper is to assess the values of cultural diversity for US citizens.
- In particular the effect of cultural diversity on the average wage received and average rent paid by US citizen which, together, proxy for the average productivity of US workers.
- The article considers 160 metropolitan areas of the US for the period 1970-1990. Similarly to the fractionalization index described in the works of Weil (2013) and Alesina and La Ferrara (2005), Ottaviano and Peri (2006) construct a diversity index based on country of birth for the US cities they consider.

Diversity in Cities

- The index measures the probability that two randomly chosen individuals in a city were born in different countries.
- If the citizens are all US born, the index would take on the value of 0, if all citizens are born in different countries, the index would take on the value of 1 (an alternative measure used in the article is simply the share of foreign-born population).
- The authors find a positive correlation between cultural diversity and the productivity of US citizens, since they find positive effects, on average, on the wage received and the rent paid by US citizens.

Diversity in Cities

- Ottaviano and Peri (2006) are cautious about making claims on causality for two reasons: i) endogeneity, ii) spatial selection of natives.
- i) An endogeneity problem might arise, as we know, for the following reason: a city may experience an economic boom, and this can attract immigrants. In this sense, if we detect that an increasing share of immigrants is correlated to a higher natives' wages, the causation channel might go from the higher wages (due to the economic boom) to the presence of immigrants (and not the other way around).
- In this sense the variation of the immigrant population is endogenous with respect to the change in the wages.

Diversity in Cities

- ii) Spatial selection of natives may occur if diverse cities attract US citizens with a taste for diversity (people can move after all).
- If more tolerant people are also more productive, than it is possible that an estimated positive correlation between the immigrants' share and natives' wages does not imply a causal effect of the former on the latter.
- As said, differently from the literature that focuses on the labor market consequences of immigration, having in mind a labor market segmented by skills (and/or experience), Ottaviano and Peri (2006) aim at estimating the average effect of immigration on the wage of US workers.

Diversity in Cities

- This average effect includes the (possibly negative) effects on wages due to competition between immigrants and native workers, and the positive effects due to complementarity between immigrant and native workers, and externalities from immigrant workers, notably from highly-skilled immigrants.
- As mentioned, this effects refers to the productivity of US workers (i.e. an increase in wage signals an increase in their productivity, as long as wage is determined in standard, competitive, labor markets). This is an effect on production.

Diversity in Cities

- Another effect, as mentioned, can go from diversity to utility, as long as natives have a taste for diversity. This is an effect on consumption.
- Ottaviano and Peri (2006) measure the average wage of US workers as the average wages of male US-born workers of age 40-50 from Census (micro)data, and the average rent value by the average rent per room paid by US-born male residents of working age (16-65 years).

Diversity in Cities

- In the sample of Ottaviano and Peri (2006), diverse cities like New York or Los Angeles, have a fractionalization index value around 0.5 or 0.6.
- By putting this in the context of cross-country values, this index is comparable to those of countries such as Rhodesia or Pakistan, which are plagued by ethnic conflicts.

Diversity in Cities

- On the other hand, culturally homogeneous cities like Cincinnati or Pittsburgh have a diversity index of approximately 0.05, which is similar to those of European countries such as Norway of Denmark in the sixties.

Diversity in Cities

- The main result of Ottaviano and Peri (2006) is that: "ceteris paribus, US-born workers living in cities with higher cultural diversity are paid, on average, higher wages, and pay higher rents, than those living in cities with lower cultural diversity".
- Two scatterplots (Figures 1 and 2) exemplify these results:

Diversity in Cities

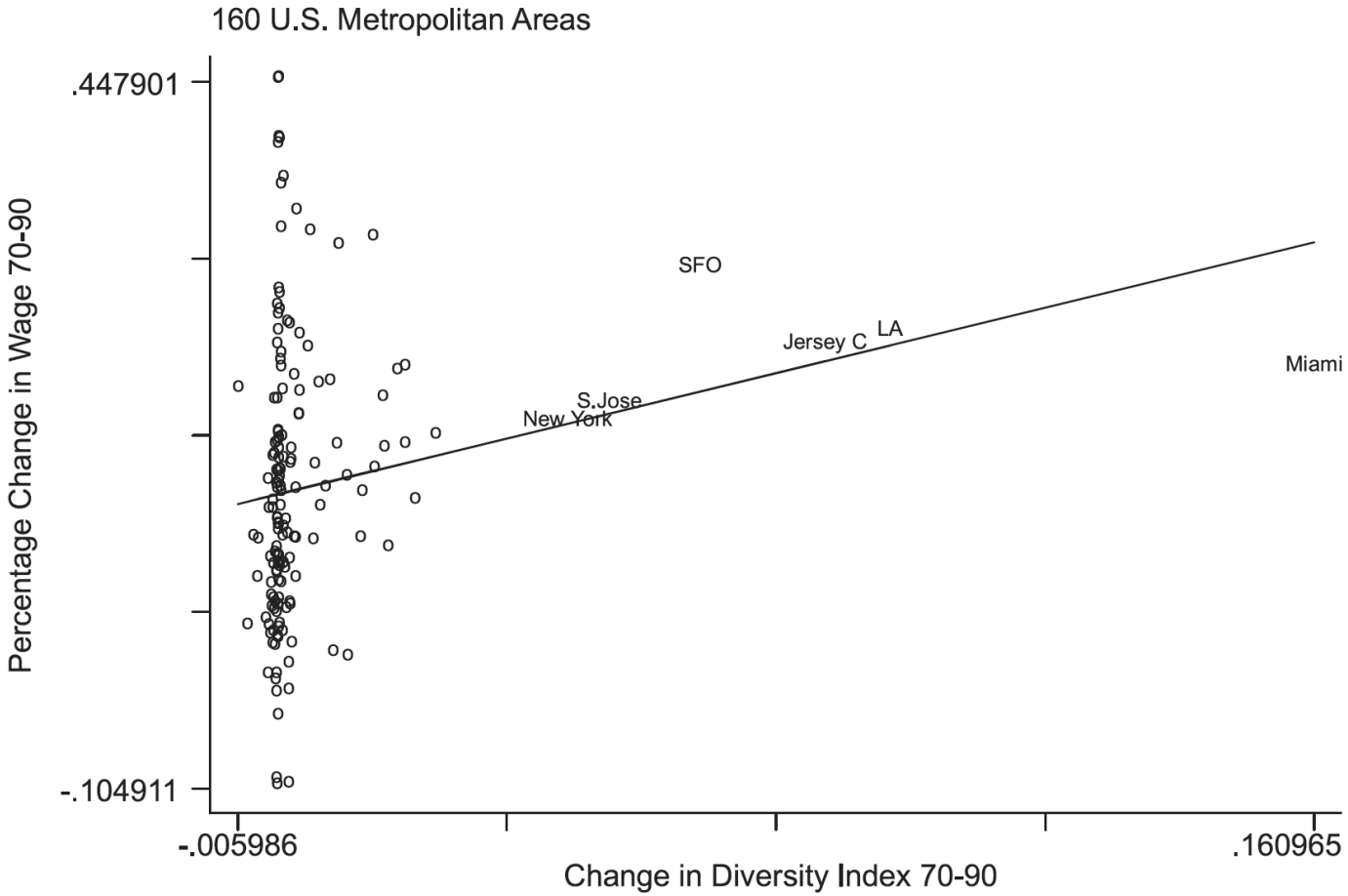

Figure 1: Wages of US-born and diversity. Source: Ottaviano and Peri (2006)

Diversity in Cities

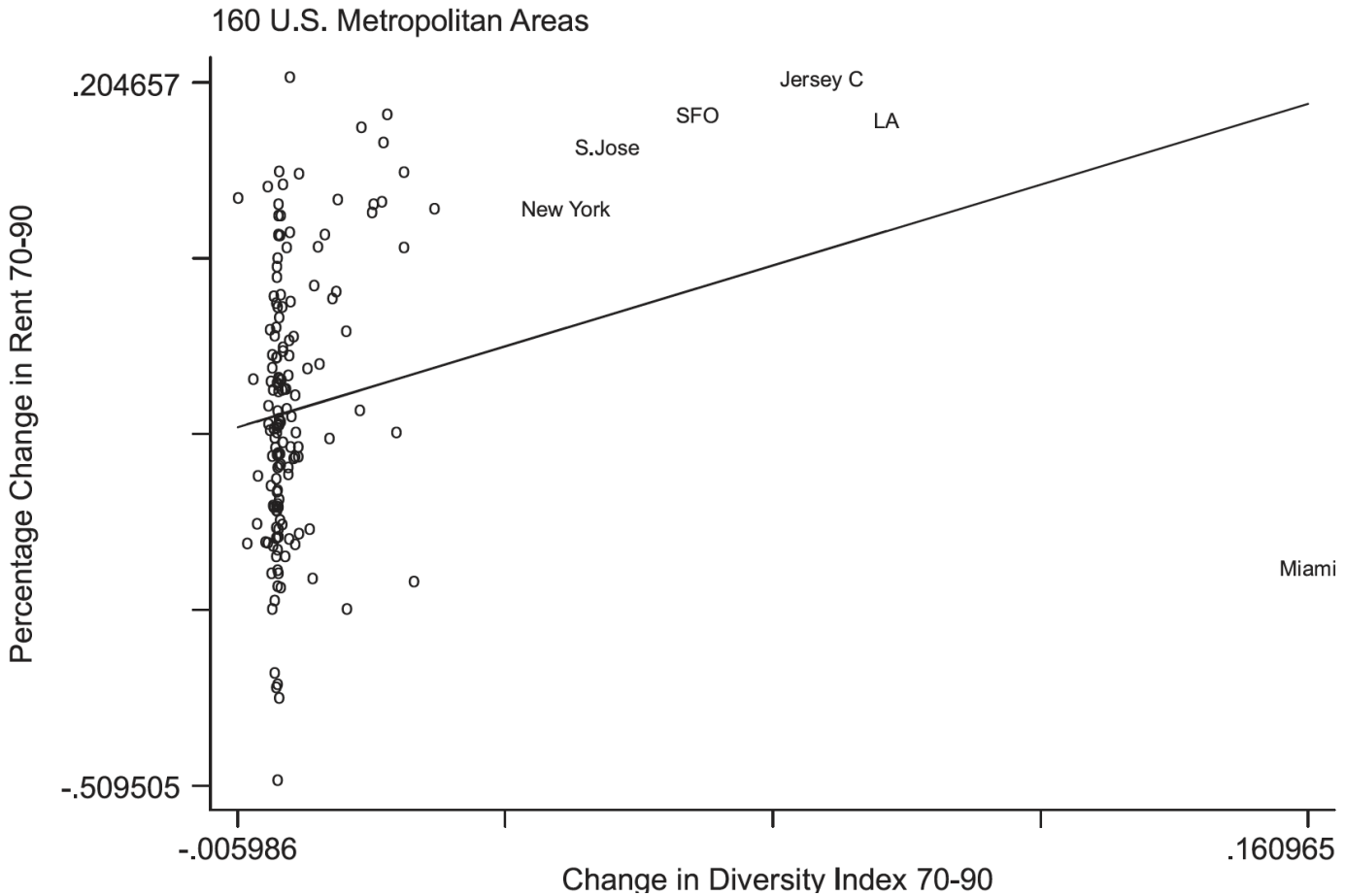

Figure 2: Rents of US-born and diversity. Source: Ottaviano and Peri (2006)

Diversity in Cities

- In Figures 1 and 2 we see that a change in the diversity index over the period 1970-90 is positively correlated to the change in, respectively, wages and rents of US-born workers/citizens.
- Ottaviano and Peri (2006) present a theoretical model which helps to identify the connections between the diversity in a city and the variable of interest, wages and rents.

Diversity in Cities

- In this model there exists a number of N cities indexed by $c = 1, ..., N$. There are two factors of production, labor and land, to produce one good.
- Workers belong to M different groups, that is they differ for an exogenous cultural attribute (i.e. something that cannot be acquired on the market). L_c is the number of workers who live and work in city c, H_c is the amount of land available in city c.

Diversity in Cities

- The way diversity enters individuals' activities is the following.
- First of all, diversity enters indviduals' consumption, described by the following utility function:

$$U_{ic} = A_U(d_c) H_{ic}^{1-\mu} Y_{ic}^{\mu} \tag{1}$$

where $0 < \mu < 1$, H_{ic} and Y_{ic} are the land and good consumption of individual i in city c.

- Land is locally owned by landlords, who receive a rent.

Diversity in Cities

- The diversity effect is captured by the term $A_U(d_c)$: it is a parameter that "shifts" the utility function, in which d_c is a measure of diversity.
- In particular, if A_U increases with d_c then local diversity is considered as an "amenity", if A_U decreases with d_c then local diversity is considered as a "dis-amenity".

Diversity in Cities

- On the other hand, diversity also affects local production. That is, the production function in every city is assumed to take the following form:

$$Y_{jc} = A_Y(d_c) H_{jc}^{1-\alpha} L_{jc}^{\alpha} \tag{2}$$

  where j indexes firms.
- Diversity in the production function represented by Eq. (2) can affect the parameter A_Y, measuring total factor productivity.
- This is one of the ways we saw about the way in which technological progress can enter a production function.

Diversity in Cities

- The idea of total factor productivity captures an effects that should apply to all productive factors (or, better, to any combination of their utilization levels).
- The idea here is that, if A_Y increases with d_c, then diversity has positive effects given by imperfect substitutability between workers of different groups and externalities from their cultural background (e.g. problem solving capacities, etc.).
- On the other hand, if A_Y decreases with d_c, this can imply that cultural frictions dominate and have an negative effect on the productive potential of a city.

Diversity in Cities

- By focusing on the effect of diversity on wages, Ottaviano and Peri (2006) estimate equations such as:

$$ln(\bar{w}_{US,c,t}) = \beta_1(Controls_{c,t}) + \beta_2 div_{c,t} + e_c + e_t + \epsilon_{c,t} \qquad (3)$$

- where $\bar{w}_{US,c,t}$ is the average wage of US-born workers in city c (160 cities) at time t (two years, 1970 and 1990); ($Controls_{c,t}$ capture the effects of other possible determinants of wages, such as schooling; e_c and e_t are fixed effects, aimed at capturing time-invariant features of the cities (e.g. its latitude, its administrative district, etc.), and common time-effects, i.e. factors affecting all cities at the same time (e.g national economic conditions, etc.); $\epsilon_{c,t}$ is a random variable, meant to capture the effects of other factors not explicitly accounted for in the analysis in city c at time t.

Diversity in Cities

- For the effect of diversity on rents, Ottaviano and Peri (2006) estimate a similar equation.
- They results are that: "diversity has positive and highly significant correlations with both wages and ... rents" (Ottaviano and Peri, 2006, p. 24).
- They also check for the robustness of their results by using instrumental variables (IV), i.e. variables that should affect diversity but not wages or rent (remember that here the issue is endogeneity: it can be the case that wages affect diversity and not the other way around).

Diversity in Cities

- The IV they use, as in other migration studies, are past share of immigrants, under the hypothesis that they can predict the current shares of immigrants, based on the evidence that, often, immigrants settle where in the past immigrant from the same country settled.
- Results are confirmed when using IV.
- In another paper, Ottaviano and Peri (2005), the authors utilize another measure of diversity, i.e. linguistic diversity. The main linguistic groups in the US in the period of observation (1970-1990) are: English, German, Italian, Spanish, Chinese.

Diversity in Cities

- They carry out a similar analysis of Ottaviano and Peri (2006). In particular, the scatterplots they present to motivate the analysis are:

Diversity in Cities

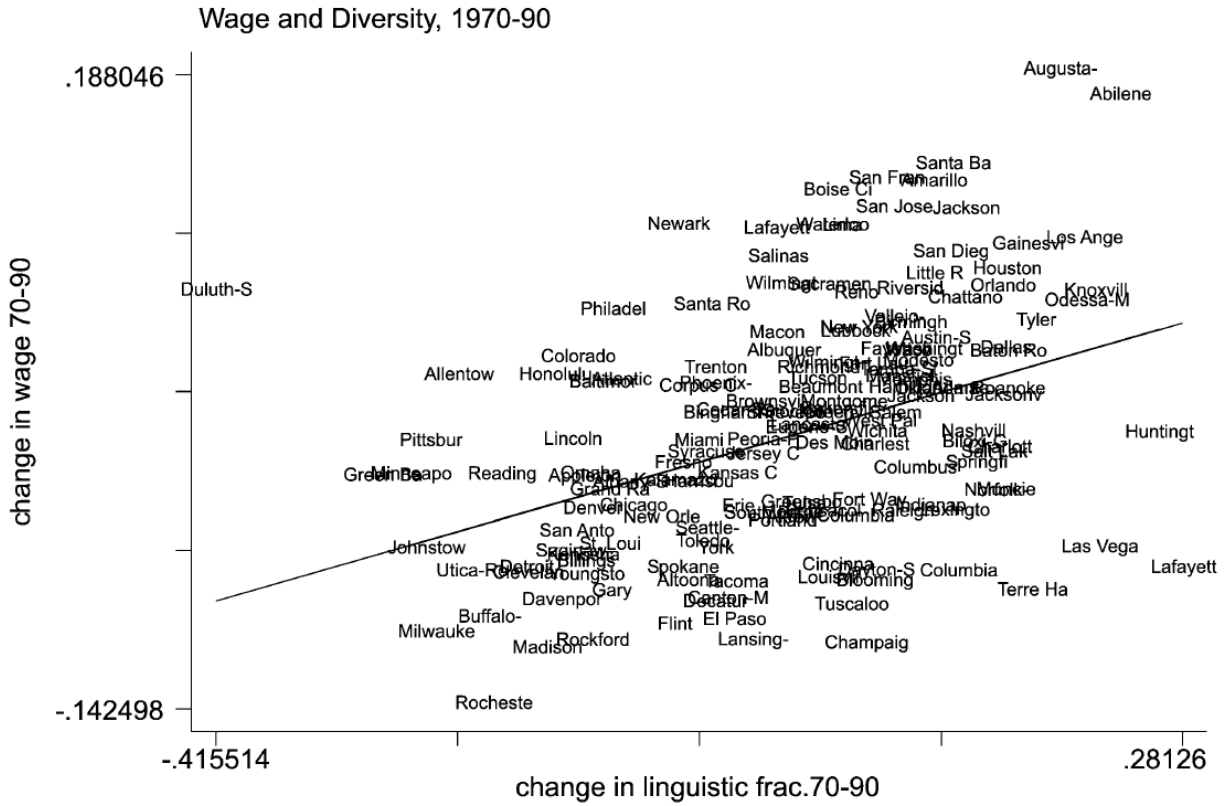

Figure 3: Wages and linguistic diversity. Source: Ottaviano and Peri (2005)

Diversity in Cities

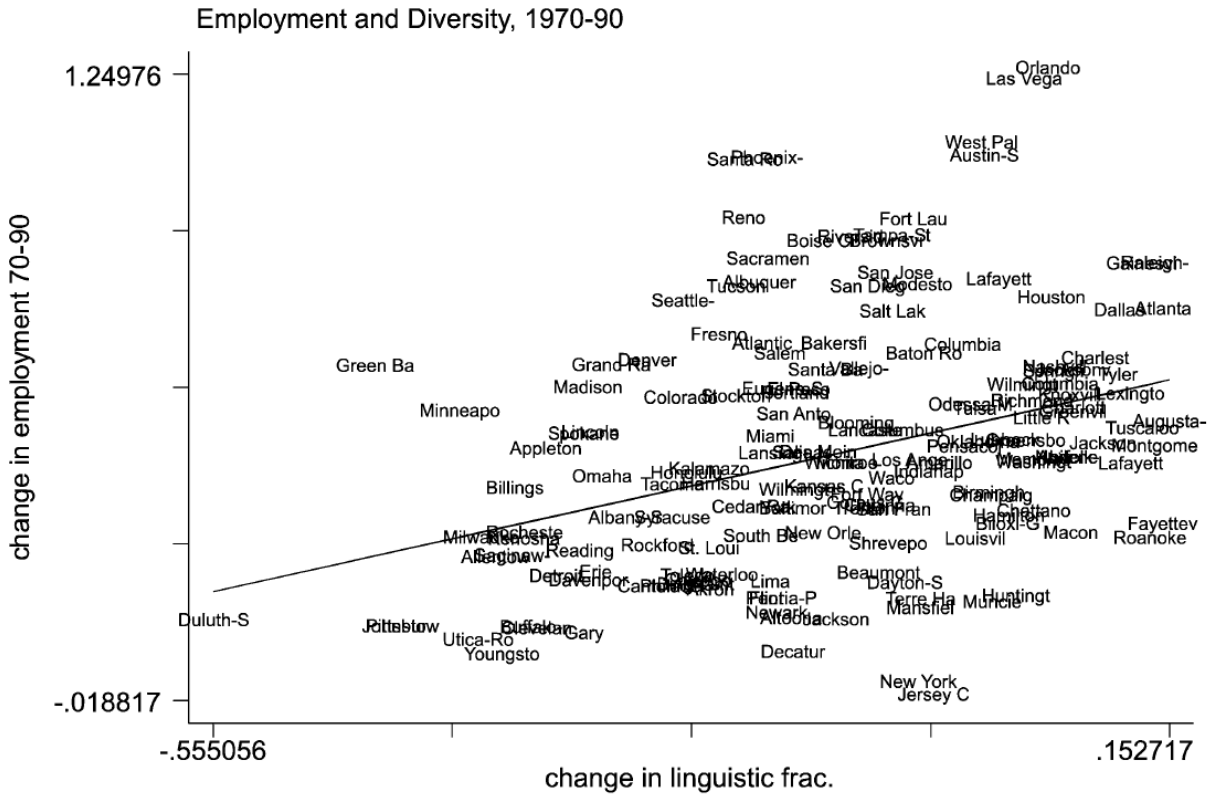

Figure 4: Employment and linguistic diversity. Source: Ottaviano and Peri (2005)

Diversity in Cities

- In Figures 3 and 4 the correlations are very similar to those found in Ottaviano and Peri (2006), although the focus here is on employment and not on rents.
- Interestingly they find the effect of linguistic diversity if positive and significant for all workers, but also when considering subgroups of white workers, of highly skilled workers or low-skilled workers.

Immigration and Innovation

- One of the aspects mentioned above is that diversity may favor innovations.
- The effects detected by works such as Ottaviano and Peri (2006, 2005), indirectly suggest that this can be the case as diversity is positively associated to higher productivity, and innovations is one of the key factors behind increases in productivity.

Immigration and Innovation

- In economics, innovations take typically two forms: i) product innovation: a new good/service or new varieties of existing goods/services is created; ii) process innovation: a reorganization of existing productive factors is introduced, bringing to higher productivity/lower costs.
- Innovations can affect not only firms, in particular through higher productivity, lower costs and higher profits, but also consumers, if they benefit from a higher number of consumption goods.

Immigration and Innovation

- There are a number of reasons why immigration can spur innovative activities, and cultural diversity is one.
- Other reasons can reside in the young age of immigrants, which makes them more risk-prone and in their human capital (see Bratti and Conti, 2018, pp. 934-35 for details). These aspects are referred to the aspect of selection of immigrants.
- In general, when the focus is on the effects on innovation, attention is given to high-skill immigration. High-skill innovation, however, is particularly relevant for some countries, notably the US, but less for others.

Immigration and Innovation

- For many European countries, in particular, the share of high-skill immigration is much lower: "in 2001 the percentages of tertiary educated immigrants were 16.4% for France, 21.8% for Germany, 15.4% for Italy and 18.5% for Spain" (Bratti and Conti, 2018, p. 935).
- But, what happens if immigrants are mostly low-skilled? Economic theory suggest that, if low-skilled labor becomes abundant, firms may choose technologies, i.e. combinations or production factors, essentially baed on the abundant factor, in this way reducing their propensity to: "invest in skill-intensive production technologies, hampering innovation and physical capital investment." (Bratti and Conti, 2018, p. 935).

Immigration and Innovation

- Bratti and Conti (2018) study the case of Italy. Italy experienced a strong increase in immigrations flows , especially from the early 2000s. The skill composition of the immigration flows is characterized by a high component of low-skilled (i.e. with low levels of education) individuals.
- However, the skill composition of the immigrants is not very different from the skill composition of Italians, according to Bratti and Conti (2018, p. 937): "Considering the population in the age group 25-64 years, the percentages of migrants (natives) with less than upper-secondary, upper-secondary and tertiary education in 2001 were 52.6% (57.2%), 32.0% (32.0%), and 15.4% (10.8%) respectively".

Immigration and Innovation

- What correlates with this skill structure is the composition of the Italian productive mix: Italy's production is: "characterized by specialization in traditional industries ... producing and exporting low-skilled, labour-intensive goods. At the same time, Italy performs weakly in science-based industries (telecommunications, measuring and testing instruments, chemical and pharmaceutical products etc.), characterized by intensive use of technical and scientific knowledge inputs. Lack of attractiveness to highly skilled immigrants is also due to the lower returns to human capital for immigrants than for natives." (Bratti and Conti, 2018, p. 937).

Immigration and Innovation

- The results of Bratti and Conti (2018) refer to Italian provinces and of two types of innovations: i) those patented (i.e. product innovations); ii) those not patented but self-reported (i.e. referring to process innovations).
- Bratti and Conti (2018) show that, when focusing on low-skill immigration only (i.e. immigrants without secondary school degree) there is no effect on patenting or on self-reporting of innovations. This result is obtained when controlling for endogeneity of the immigrants shares, i.e. when using instrumental variables (IV).
- However, they do not find that the effect on innovations is negative either, and this probably depend from the very similar skill structure of the pool of immigrants to the one of the Italian (working) population.

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