International immigration and sectoral preference structure: The case of Italy*

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VERY PRELIMINARY DRAFT, PLEASE DO NOT CIRCULATE

Abstract

This paper aims at investigating the influence of immigration flows on the aggregate preferences for sectoral consumption goods, classified according to the twelve COICOP 2-digit codes. To this purpose, a structural model characterized by non-homothetic preferences is applied to elicit the sectoral preferences in both the destination and origin geographical areas (respectively, the Italian regions and the countries providing the highest flows of immigrants to these regions). The econometric analysis indicates a statistically significant impact of immigrants' preferences on sectoral preference dynamics in the destination areas. The influence is higher the higher the immigrant population share in the destination area. This result confirms the role of the interdependency between preferences in consumption choices. Furthermore, it shows that, similarly to other latent variables (such as TFP), preferences have a structure which is worth studying at macroeconomic level and which can be transmitted through social interactions.

Journal of Economic Literature Classification Numbers: D12, O15, O41, R23
Keywords: preference shifts; multi-sector models; consumption; migration.

*We thank Giovanni Peri for helpful comments and suggestions
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1 Introduction

This paper refers to two streams of literature, one studying the impact of migration on the economic system and the other investigating the determinants of sectoral final consumption expenditure. The main purpose is to study the influence of immigration on sectoral preferences, focusing on the role of the difference in the households' preference structure between destination and origin geographical areasand on the pre-existing community of immigrants as transmission channel.

Most of the literature on the economic impact of immigration focuses on the supply side of the economy and analyzes the effects on labor market outcomes and on other economic aspects such as trade, productivity, firms' performances, to mention a few (see Peri, 2016). However, though it is well known that immigrants are also consumers, thereby they affect the demand for goods and services in the hosting economy, very little research investigates the effect of immigrants on the demand side. The economic theory recognizes that ethnic groups differ in their consumption patterns and that these differences might be persistent (Chiswick, 2009)[1]. Differences in consumption between immigrants and the hosting community might be due to the consumption of ethnic goods (Chiswick, 2009), by the status-seeking of minorities (Charles, Hurst and Roussanov, 2009) or simply by differences in tastes and preferences. Once recognized that immigrants have different consumption patterns that might show persistency, the further question arises as whether and to what extent these differences might influence tastes and preferences of other consumers in the hosting economies. This sort of transferability can act through different channels. A first one is the direct effect that immigrants exert on local consumption patterns by becoming consumers themselves. This effect is mostly driven by the consumption of ethnic goods. A second channel is represented by intermarriage through which immigrants' tastes and preferences

[1]Moreover, as pointed out by Greenwood (1994), immigration induced changes in the demand for final goods and services eventually affect the labor demand as well.

can be transferred to natives, thus increasing their influence on the hosting community. There is a third channel acting through the supply side. Indeed, immigrants not only have preferences for the consumption of ethnic goods, but they also have comparative advantage for their production, this in turn can increase product diversity and ultimately the sectoral composition of products available to consumers (Mazzolari and Neumark, 2012). Moreover, the strong empirical evidence in favor of the led-tourism migration hypothesis suggests that immigrants increase the tourism demand (Williams and Hall, 2002; Seetaram and Dwyer, 2009; Etzo et al. 2014; Massidda et al. 2015) and accordingly the demand for different consumption categories to which the tourism-related products belong (i.e. transport, hotel and restaurants and cultural products) [2]. Furthermore, the idea that aggregate immigrants' preferences might exert an influence on the aggregate preferences of residents relates to the literature of interdependent preferences and its importance for the explanation of consumer behavior. (Gaertner, 1974; Pollak, 1976; Alessie and Kapteyn, 1991; Kapteyn, Van de Geer, Van de Stadt and Wansbeek, 1997). In fact, the more pluralistic a community is the higher the interaction level that is likely to occur between natives and immigrants and the higher will be the influences of immigrants' tastes and preferences on the tastes and preferences of all (i.e. both natives and also previous immigrants) consumers. In our empirical analysis we assume that the effect of the transmission channel through social interactions between residents and immigrants increases with the share of immigrants in the population of the destination region.

The literature interested in the analysis of the determinants of the sectoral composition of the macroeconomic systems has investigated several mechanisms related to both the supply and demand side.[3] When focusing on the analysis of the final expenditure, it

[2]It is worth to note that in the present analysis the strength of this channel depends mostly on the effect that immigrants exert on outbound tourism of residents (see Etzo et al. 2014), in particular on the share of tourism expenditure spent by tourists in their country of origin.

[3]See Herrendorf *et al.*, 2014, for a survey.

has emerged that prices do not explain a relevant part of the evolution of the expenditure shares, stimulating research on other determinants of sectoral demand.[4] A first consequence has been the introduction of non-homothetic preference as driving force to explain long-run paths. Anyway, even with the introduction of the income effect, a significant part of the expenditure-share dynamics remains to be explained, especially when the analysis goes beyond the classification in agriculture, manufacturing, and services. Trying to identify elements explaining the black box represented by sectoral preferences, we investigate the role of immigrants and their preference structure.[5] Our intention is to identify specific preference structures for each geographical area and to verify whether immigration represents a transmission channel of the sectoral preferences. In this sense, our exercise has similarities to the literature using structural models to elicit (the unobserved) technological processes and studying the way they propagate.

2 Data

In order to develop our analysis, three sets of data are needed. The first two sets of information concern the international immigration data and are both issued by the Italian National Institute of Statistics (ISTAT). The first dataset reports the number of foreign citizenships that moved their administrative residency from their country to Italy by year[6]. This source is used to weight the preferences of each immigration country in order to construct a preference structure profile of the rapresentative immigrant which changes yearly according to the relative flows shares of immigrants by country of origin[7].

[4] See van Neuss, 2019, for a discussion.

[5] In this sense our contribution differs significantly from Addessi (2018), not just because the cited paper focused on the role of the age composition in European countries, but also because migration flows enter the econometric specification weighted with their own preference structure.

[6] Available at the online databank of the Italian National Statistics (www.demo.istat.it).

[7] We consider the twenty countries that sent the highest number of migrants over the considered time period.

The second set of data regards the stock of foreign citizens by country of origin at regional level. This information serves to compute the share of immigrants in total population by region and year, which is used as an indicator for the level of interaction between immigrants and the local community and thus captures the transferability degree of immigrants' tastes and preferences to local consumers.

With regards to Households' final consumption expenditure in the Italian regions, data are issued by the Italian National Institute of Statistics (ISTAT) and the time series cover the period from 1995 to 2016[8]. Finally, data about the final consumption expenditure of the countries of origin of immigrants have been taken from the 2011 International Comparison Program (ICP) [9]. Unfortunately, time series for these data are not available, the reason is that immigrants come from low developed countries where household expenditure surveys are not carried out on a regular basis. Notwithstanding this limitation, the main advantage of these data is that they have been collected following the ICP standards, thus the COICOP consumption classes (2-digit level used in our analysis) match perfectly with the one adopted for the Italian regions.

3 Methodology

This section is composed by two main parts. Initially, it describes the procedures followed to build up consistent time series of sectoral preferences characterizing the Italian regions and the countries of origin of the migration flows. Successively, it describes the econometric specification used to assess the impact of migration flows on the sectoral preferences in the Italian regions. More specifically, it is possible to distinguish the following steps: *i*) The identification of the sectoral preferences in both destination and origin geographical areas;

[8]Available at National accounts / Regional accounts / Final consumption expenditure of households by expenditure item and durability.

[9]Available at the World Bank Databank.

ii) The definition of immmigrants' sectoral preferences for each destination area and the normalization of the preference structures; *iii*) The estimation of the impact of immigrants' preferences on the preference structure of the destination areas.

With regards to the identification of the sectoral preferences we follow Comin *et al.* (2019),[10] where the utility function is monotonically increasing in the composite consumption bundle C_t which is implicitly defined over the sectoral goods $C_{i,t}$

$$\sum_{i=1}^{n} \Omega_{i,t}^{\frac{1}{\sigma}} \left(\frac{C_{i,t}}{C_t^{\epsilon_i}} \right)^{\frac{\sigma-1}{\sigma}} = 1 \tag{1}$$

where $C_{i,t}$ is the real consumption of sector i goods at time t, $\Omega_{i,t}$ represents the sectoral preference weight, σ is the price elasticity of substitution, and ϵ_i determines the sectoral "income effect". Under standard conditions and model specifications, the optimality conditions associated to Eq. (1) conduce to the following system of equations:

$$ln\left(\frac{\omega_{it}^r}{\omega_{ft}^r}\right) = (1-\sigma) ln\left(\frac{P_{it}^r}{P_{ft}^r}\right) + (\epsilon_i - 1) ln\left(C_t^r\right) + \zeta_i^r + \varepsilon_{it}^r \tag{2}$$

where on the left hand side it is reported the ratio between the expenditure share of each sector i, ω_{it}, and the expenditure share of the COICOP sector 01 (Food and nonalcoholic beverages), ω_{if}, while r indicates the Italian region. After estimating the system of equation described by Eq. (2), through Seemingly Unrelated Regression, we extract the regional r preferences for sector i as: $\pi_{it}^r = \zeta_i^r + \varepsilon_{it}^r$, where the former represents the deterministic constant component of the preferences and the latter is the stochastic component.[11] We estimate all the regional system simultaneously imposing, across regions,

[10] The approach proposed in Comin *et al.*, 2019, has been applied in several papers. Among the others Sposi (2019) and Matsuyama (2019). Stone-Geary preferences are also used in the structural change literature (see among the many Kongsamut *et al.*, 2001, and Herrendorf *et al.*, 2013). Some weaknesses of this approach has been highlighted for example in Buera and Kaboski (2009).

[11] Both ζ_i^r and ε_{it}^r, and consequently π_{it}^r should be interpreted in relative terms with respect to the reference sector, food in our case. For more details about the normalization applied to estimate Eq. (2)

the same price elasticity of substitution and the same value for sectoral income elasticities. Similar procedure is applied to elicit sectoral preferences in the countries of origin of the migration flows. Since only one observation per country is available, also the deterministic part of the preferences are assumed to be the same across countries. In this case, the estimation residuals (interpreted as the stochastic part of the preferences) are the only elements which differentiate sectoral preferences in the different countries.

After that sectoral preferences in the different geographical areas are identified, they are normalized to sum up to one in each area, so that it is possible to compare the preference structure of the different regions and countries. Furthermore, in order to build a unique preference structure representing the preferences of the immigration flows, $\pi^{r,o}_{i,t-1}$, country-specific preferences are aggregated applying weights that are proportional to the incidence in the migration flows. At this stage, it is possible to estimate the baseline version of our model, where the variations in sectoral preferences in the Italian regions depend on the difference between its own preferences and the preferences characterizing the immigration flows. Specifically:

$$\pi^{r,d}_{i,t} - \pi^{r,d}_{i,t-1} = \alpha_i + \beta^r_1 * \gamma^r_t * \left(\pi^{r,o}_{i,t-1} - \pi^{r,d}_{i,t-1}\right) \tag{3}$$

where: $\pi^{r,d}_{i,t} - \pi^{r,d}_{i,t-1}$ is the time variation in the preference for sector i in region r, α_i control for the presence of temporal trend in the preference for sector i (common to all regions), $\left(\pi^{r,o}_{i,t-1} - \pi^{r,d}_{i,t-1}\right)$ is the difference in preferences for sector i between the origin and destination area observed at time $t-1$, β_1 is the main parameter testing the hipothesis that the higher the difference in preferences the higher is the impact of migration flows on preference dynamics. Finally, γ^r_t measures the incidence of non-native people in the destination area.

refers to Comin et al. (2019).

Since Eq. (3) represents a linearly dependent system of equations, the actual estimation is run on the system resulting after subtracting from each sector i the equation referred to sector food. It follows that the final estimation is given by:

$$y_{i,t} = \alpha_{if} + \beta_1^r * \gamma_t^r * x_{i,t-1} + \phi_{if,t} \tag{4}$$

where $y_{i,t} = \left(\pi_{i,t}^{r,d} - \pi_{i,t-1}^{r,d}\right) - \left(\pi_{f,t}^{r,d} - \pi_{f,t-1}^{r,d}\right)$, $\alpha_{if} = \alpha_i - \alpha_f$, $x_{i,t-1} = \left(\pi_{i,t-1}^{r,o} - \pi_{i,t-1}^{r,d}\right) - \left(\pi_{f,t-1}^{r,o} - \pi_{f,t-1}^{r,d}\right)$, and $\phi_{if,t}$ is the residual.

The system of equation described by Eq. (4) has been estimated both through SUR and Fixed Effect panel.

4 Results

This section resumes the main results concerning the characteristics, particularly the heterogeneity, of sectoral preferences and the estimates of the impact of immigration on the preference structure of the Italian regions.

4.1 Preference estimation

The estimation of the system associated to Eq. (2) and the following normalization of the sectoral preferences shows marked differences in the preference structures. Table 1 reports the estimates results for the main parameters of Eq. (2), that is the the complement to one of the price elasticity $(1 - \sigma)$ and the ones determining the sectoral income elasticities $(\epsilon_i - 1)$. Starting from the former, the outcomes are in line with the estimates of Comin et al. (2019) and most of the reference literature, in that the resulting value of σ is positive and lower than one for both samples. As with regard to the income elasticity parameters, it is worth to point out that a comparison between the two samples' estimates is beyond the

scope of our study. Moreover, this task is not straightforward because these parameters represent differences with respect to the income elasticity of the reference sector which is normalized to one. Nevertheless, what is important for our investigation is that the outcomes show that we are able to control for the income effect and that the income elasticities differ significantly across consumption sectors. Overall, these results indicate that our model seems to capture both price and income effects, thus we can proceed to elicitate the preference structure from the sector fixed effects and the residuals. Figure 1 shows the heterogeneity emerging among Italian regions with regard to the difference in preferences' structure compared to the one of the representative immigrant.

4.2 The impact of migration flows on preferences

As mentioned, the system of equations associated to Eq. (4) has been estimated both through panel (within) fixed effect estimator and SUR technique. Overall, the results from the two estimators reported in Table 2 are very close to each other and they indicate the presence of a significant effect of immigrants' preferences on the dynamic of residents' preference structure. Interestingly, the regions with highest coefficients are the regions which experienced the highest growth of the immigrants population share during the period (see Figure A2 in the Appendix).

Table 1: Estimation results of Eq. (2)

COICOP	Italy - regions $(\epsilon_i - 1)$	Immig. countries $(\epsilon_i - 1)$
Alcoholic beverages and tobacco	0.264^{***}	0.511^{***}
	(0.069)	(0.104)
Clothing and footwear	0.322^{***}	-0.112
	(0.041)	(0.126)
Housing	-0.118	0.202^{***}
	(0.118)	(0.059)
Furnishings	0.445^{***}	0.182^{**}
	(0.054)	(0.095)
Health	-0.156	0.421^{***}
	(0.083)	(0.102)
Transport	0.913^{***}	0.322^{***}
	(0.054)	(0.100)
Communication	2.314^{***}	0.469^{***}
	(0.169)	(0.104)
Education	0.613^{***}	0.728^{***}
	(0.065)	(0.120)
Restaurants and hotels	0.377^{***}	0.183^{**}
	(0.091)	(0.087)
Recreation and culture	0.535^{***}	0.867^{***}
	(0.123)	(0.245)
Miscellaneous goods and services	0.457^{***}	0.305^{***}
	(0.68)	(0.099)
$(1 - \sigma)$	0.323^{***}	0.418^{***}
	(0.007)	(0.059)
Obs.	440	20

*Notes: Standard errors in parenthesis; *, **, and *** indicate statistical significance, respectively, at 10%, 5%, and 1%.*

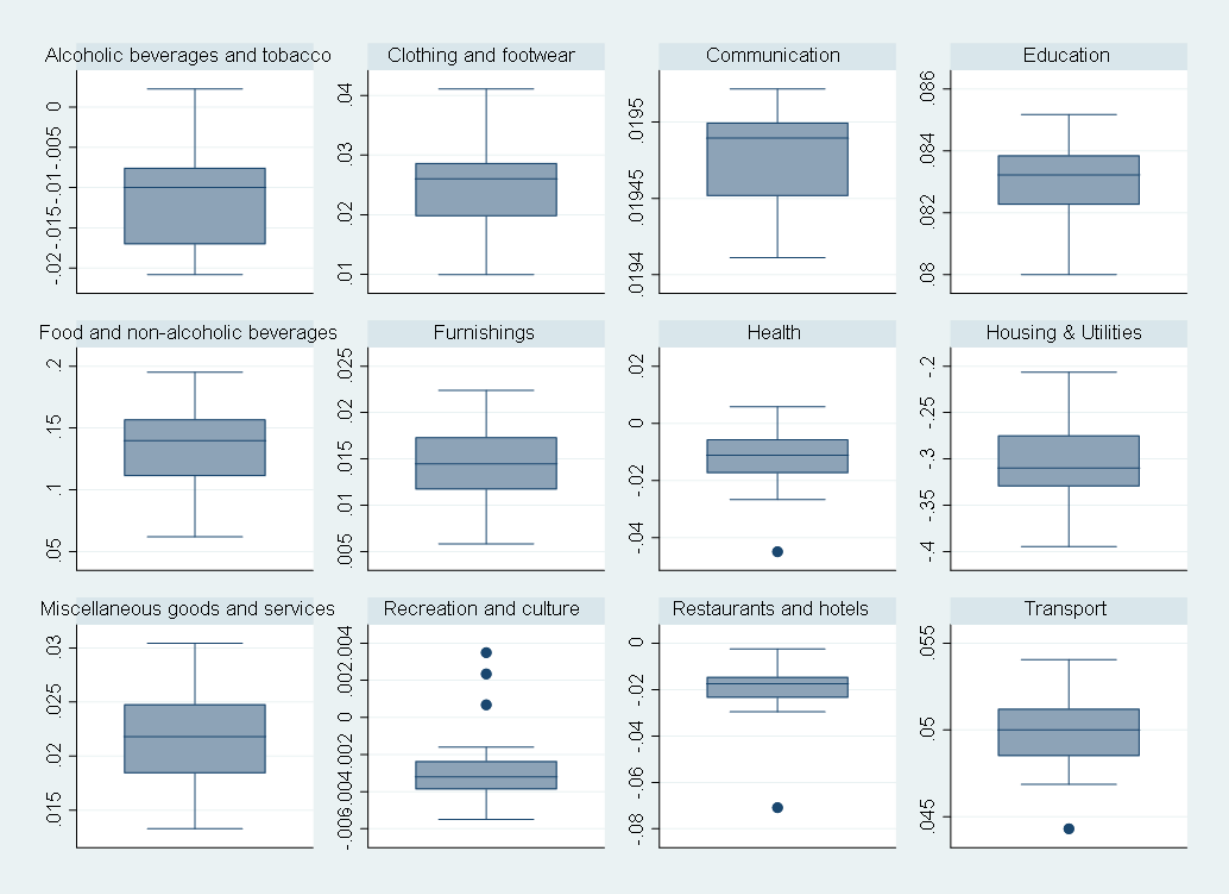

Figure 1: Differences in elicited preferences between immigrants and residents in Italian regions by coicop (Averages: 1995-2016) $\Rightarrow \Delta\bar{\pi}^{r}_{i,t} = \frac{1}{T}\sum_{t=1}^{T}\left(\pi^{r,o}_{i,t} - \pi^{r,d}_{i,t}\right)$

Table 2: Estimation results of Eq. (4)

Region	Panel FE	SUR	Region	Panel FE	SUR
Abruzzo	0.456*** (0.040)	0.555*** (0.025)	Molise	1.266*** (0.068)	1.166*** (0.085)
Basilicata	2.164*** (0.342)	1.794*** (0.238)	Piemonte	0.287*** (0.30)	0.192*** (0.021)
Calabria	0.829*** (0.97)	0.549*** (0.081)	Puglia	1.392*** (0.96)	1.345*** (1.345)
Campania	1.346*** (0.137)	1.422*** (0.043)	Sardegna	1.601*** (0.348)	0.680*** (0.134)
Emilia-Romagna	0.280*** (0.018)	0.213*** (0.035)	Sicilia	1.034*** (0.129)	1.511*** (0.071)
Friuli-Venezia Giulia	0.504*** (0.044)	0.382*** (0.034)	Toscana	0.374*** (0.016)	0.298*** (0.051)
Lazio	0.541*** (0.050)	0.410*** (0.035)	Trentino-Alto Adige	0.608*** (0.144)	0.390*** (0.012)
Liguria	0.217*** (0.032)	0.096*** (0.019)	Umbria	0.362*** (0.025)	0.195** (0.060)
Lombardia	0.305*** (0.098)	0.150*** (0.009)	Valle d'Aosta	0.327*** (0.043)	0.367*** (0.019)
Marche	0.277*** (0.078)	0.029*** (0.006)	Veneto	0.378*** (0.070)	0.161*** (0.031)

*Notes: Standard errors in parenthesis; *, **, and *** indicate statistical significance, respectively, at 10%, 5%, and 1%.*

5 Conclusions

This paper intended to investigate the impact of immigration flows on the sectoral preference structure of the Italian regions. Immigrants have been characterized not only by their nationality but also by the preference structure of their origin country. Furthermore, it has been tested if the impact of these flows is influenced by the size of immigrants' community in the destination region. We found robust evidence of the transportability of immigrants' preferences and that such effect is amplified by the presence of immigrants in the destination region.

6 References

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Appendix

TABLE A.1

Sector classification and description

COICOP	Description
01. Food	Food and non-alcoholic beverages
02. Alcoholic beverages	Alcoholic beverages, tobacco and narcotics
03. Clothing	Clothing and footwear
04. Housing	Housing, water, electricity, gas and other fuels
05. Furnishings	Furnishings, household equipment and routine household maintenance
06. Health	Health
07. Transport	Transport
08. Communication	Communication
09. Recreation and culture	Recreation and culture
10. Education	Education
11. Restaurants	Restaurants and hotels
12. Miscellaneous	Miscellaneous goods and services

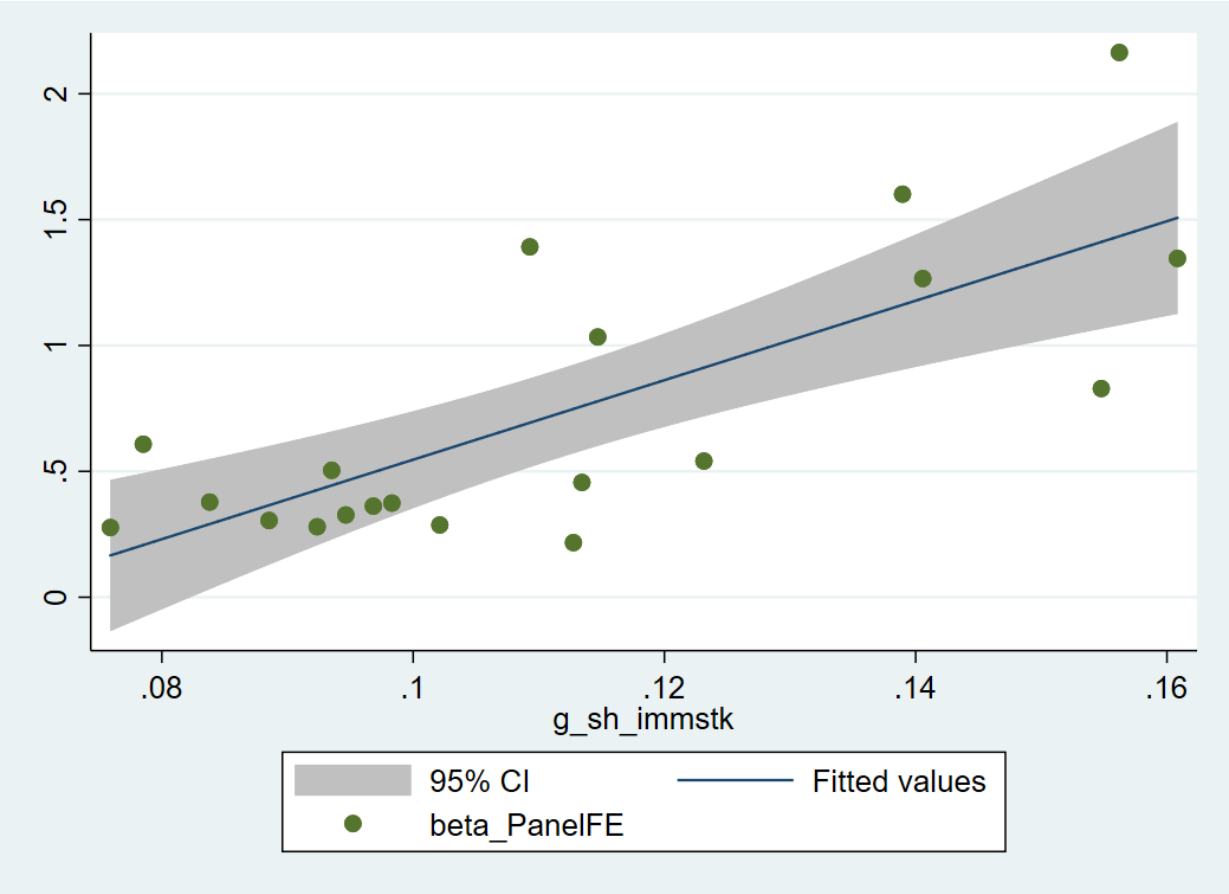

Figure 2: Linear prediction for the estimated parameter (Panel FE) and the average annual growth rate of the immigrants population share by region (period: 2003-2016)