Living arrangements of second generation immigrants in Spain: A cross-classified multilevel analysis

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CITATION

Vitali, A., & Arpino, B. (2015). Living arrangements of second-generation immigrants in Spain: A cross-classified multilevel analysis. *Regional Studies*, *49*(2), 189-203.

ABSTRACT

This paper analyses living arrangements of second generation immigrants in Spain. Cross-classified multilevel models and micro-census data enable to simultaneously take into account two sources of heterogeneity: the country of origin and the province of residence, while considering all main immigrants groups. Results show that the cultural heritage of the country of origin plays an important role in living arrangement decisions of second generation immigrants; the province of residence effect is not negligible, even though less pronounced than that the country effect. This paper demonstrates how research on immigrants can benefit from multilevel cross-classified modelling.

Keywords

Living arrangements, young adults, second generation immigrants, cross-classified multilevel models, Spain.

JEL

J13; R23

INTRODUCTION

Young adults who grew up in families of immigrant origin are different from their parents and also from native-born peers. They are exposed to different normative sets: they learn the culture of the country of origin from their parents and family, while peers and the surrounding social contexts are vehicles for the culture of the country of residence. During their life cycle, they mix the two different cultures they have been exposed to. These two cultures may have different traditions regarding the transition to adulthood, in terms for example of age at leaving the parental home, destination after the first move and conditions that are expected to be met for the move to take place (WAKIL et al., 1981; NAUCK, 2001; FUSSELL and FURSTENBERG, 2005; RUMBAUT and KOMAIE, 2010).

A number of North American studies document ethnic differences in the living arrangements of the immigrant population in comparison to natives. In particular, evidence is provided that patterns of co-residence between young adults and their immigrant parents vary by origin (BURR and MUTCHLER, 1993; GLICK and VAN HOOK, 2002; MITCHELL, 2004; MITCHELL et al. 2004). Cultural explanations have mainly been proposed to explain the variation in the observed proportions of young adults co-residing with their immigrant parents (GOLDSCHEIDER and GOLDSCHEIDER, 1988; BOYD, 2000; DE VALK and BILLARI, 2007). Analyzing second generation Western-European immigrants in the US, GIULIANO (2007) finds that young adults' living arrangement decisions reflect their country of origin more than their present country of residence.

Less is known about the living arrangements of immigrants' children in Western European countries. This is particularly true for Mediterranean countries which only recently started to attract substantial flows of immigrants. In these countries, the role of immigrants is widely discussed in

public debates on issues such as their impact on the labour market and criminality, but their role for future demographic trends is usually overlooked.

Particularly interesting is the case of Spain on which this paper focuses. First, in Spain, as in other Southern European countries, young adults leave the parental home rather late, so that the label "latest-late" has been introduced to describe the transition to adulthood in these countries (BILLARI et al, 2002). Second, in the recent past Spain has experienced a steady increase in immigration flows, together with the rapid diversification of immigrant origins. In a "latest-late" context like Spain, the comparison between second generation immigrants and natives' demographic behaviours is important to better understand possible future dynamics of an increasing portion of the population. Finally, past research has emphasized the non-homogeneity of young Spaniards' transition to adulthood over the different Spanish geographical areas (REHER, 1991; HOLDSWORTH et al, 2002; VITALI, 2010), while the role of the local context for immigrants is less documented.

This paper focuses on the analysis of two sources of contextual heterogeneity that characterise second generation immigrants' living arrangement decisions in Spain: the effect of the immigrants' country of origin and the effect of the province of residence in Spain. By using cross-classified multilevel models the authors are allowed to adopt a double comparative design (LEVELS et al., 2008) and take simultaneously into account the influence of the country of origin and that of the province of residence. This modelling approach enables to avoid focusing on a selected number of countries of origin and to exploit the whole heterogeneity of immigrant origins. This paper assesses if second generation immigrants conform to the latest-late pattern of transition to adulthood which is prevalent among young Spaniards or whether the culture of their country of origin still plays a role with respect to the living arrangement decisions. The paper further

investigates if the province of residence in Spain matters for living arrangement decisions and if it has a different effect for native and immigrant young adults.

Effect of the immigrants' country of origin

Many authors have recently acknowledged the need for a design that uses data on immigrants from a multitude of countries of origin (FARLEY and ALBA, 2002; CRUL and VERMEULEN, 2003; VAN TUBERGEN et al., 2004; LEVELS and DRONKERS, 2008; CLARK et al., 2009). However, the inclusion into the analysis of all immigrant groups present in a country has to face two obstacles relating to data availability and the method of analysis.

First of all, available data can limit the possibility of considering more than a few immigrant origins. General surveys usually have limited sample sizes and do not allow the implementation of reliable analyses for many immigrant groups. This paper instead relies on public use micro-census data that allow having a representative sample of all immigrant groups present in Spain together with a sample of natives.

As for the methodology, empirical analyses usually rely on estimating separate statistical models for each immigrant group (e.g. BOMAN, 2010) or on using dummy variables to represent heterogeneity across immigrant groups (e.g., GIULIANO, 2007; CORTINA TRILLA et al., 2008). With this approach, however, it is impractical to consider more than a few immigrant origins. Instead, by taking a multilevel approach, heterogeneity among immigrant groups can be modelled through a single random effect. In this way, not only there is no limitation on the number of immigrant origins that can be included, but also small immigrant groups can be considered since they are appropriately weighted in the estimation, depending on the immigrant group sample sizes (SNIJDERS and BOSKER, 1999).

In order to assess the role of the cultural heritage on second generation immigrants' living arrangements, it would be interesting to include in the analyses the age at leaving home that is typical (median or average) in each country of origin, which would be a direct measure of normative behaviours. However, data on the timing of leaving home are not available on all the countries of origin considered. Instead, the mean age at marriage in the country of origin is used as a proxy. The idea is that if there is a strong intergenerational transmission of cultural values from immigrants to their children, co-residence probabilities are expected to be higher for those immigrant groups characterised by high mean age at marriage and vice versa. On the contrary, if immigrant children adapt to natives' behaviours, no significant association between this variable measured on the countries of origin and the probability of co-residence with parents is expected to be found.

Effect of the province of residence

Previous research documented that the timing and quantum of home leaving and marriage in Spain are characterized by substantial regional diversity (REHER, 1991; HOLDSWORTH, 1998). Consistently with this literature, Spain is not considered as a homogeneous destination for immigrants, but the role of geographical differences is assessed. Therefore, the provincial level is included in the multilevel analyses to investigate if the place of residence matters for the living arrangement decisions and if it has a different effect for natives and immigrant young adults.

A number of socio-demographic studies have called attention to the influence of the residential context on young adults' living arrangements. Structural-economic, institutional and cultural factors have been found to explain much of the existing variability in the transition to independent living experienced by young adults (BILLARI, 2004; MULDER, 2006; LIEFBROER et al., 2010). According to this literature, in areas where the entrance into the labour and housing

markets is restricted by structural limitations, the process of gaining residential independence in young adulthood is postponed. AASSVE et al. (2012) show that unemployment rate is positively associated with the perceived age deadline for leaving home, i.e., in areas where the labour market conditions are worse people tend to "tolerate" a higher age at leaving the parental home. It is therefore useful to incorporate in the analysis some measures describing the economic situation of the residential context in order to study young adults' living arrangements. In line with the established literature, two key indicators are chosen: the provincial youth unemployment rate and the proportion of owner-occupied households. The first one is aimed at representing the labour market conditions. Young adults residing in provinces with a high unemployment rate are more likely to find it difficult to gain economic independence and will tend to postpone their residential independence. Therefore, it is expected that young adults living in provinces with high unemployment rate are more likely to co-reside with their parents, compared to young adults living in provinces where the labour market conditions are more favourable.

Also the conditions of the local housing market are an important ingredient in the decision to leave the parental home. Spain, as other Mediterranean countries, is characterized by a strong interconnection between the process of leaving the parental home and the acquisition of home ownership (HOLDWORTH and IRAZOQUI SOLDA, 2002). In Spain the percentage of owner occupied dwellings in 2001 was 82.9%, a level considerably above the European average of 71.5%.[i] Some authors argue that the strong preference for home ownership in Spain cannot be explained solely by a cultural attitude. For example, PAREJA-EASTAWAY (2007) notices that young adults prefer home ownership versus rental due to the similar housing expenditures associated to both forms of tenure. The preference for buying a house is also due to the implementation of certain housing policies (e.g., tax incentives) since the 60s that stimulated this form of tenure and to macroeconomic factors, such as the financial deregulation in the mortgage market and low interest

rates (BARRIOS and RODRÍGUEZ, 2008).[ii] Similarly to other studies on the living arrangements decisions (HOLDWORTH et al., 2002; VITALI 2010), the percentage of owner occupied households in the province of residence is used as a proxy of the general housing market conditions. A high percentage of owner occupied households indicates that is relatively easy to access to households (high availability, low prices). Independent living is expected to be easier for young adults who live in provinces where the percentage of owner occupied households is high.

On the other hand, there are also cultural peculiarities of the residential context which need to be considered in the study of regional variation in young adults' living arrangements. Young adults living in traditional contexts are expected to conform to the usual Southern European pattern of leaving the parental home for marriage (see, e.g., HOLDSWORTH and IRAZOQUI SOLDA, 2002; IACOVOU, 2002). Young people living in metropolitan contexts where postmodern values are more widespread instead, are expected to be more open to other forms of independent living – e.g. living alone, in a non-marital cohabitation or co-residing with non-relatives – before, eventually, getting married. These individuals are more likely to leave the parental home earlier than peers who wait the "right moment" for marriage. This cultural trait is measured by the proportion of non-marital cohabiting unions on the total number of co-residing unions in the province of residence. If the cultural climate of the province of residence has an effect on young adults living arrangements, it is expected that young people living in provinces where non-marital cohabitation is more widespread are more likely to live independently from their parents. This relationship will be also found for youth of immigrant origin if their behaviours are not exclusively influenced by cultural values typical of their countries of origin but also by the cultural environment of the province of residence.

For youth of immigrant origin the mean age at marriage of natives in the province of residence is also considered. If young adults of immigrant origin assimilate to natives' behaviours,

co-residence probabilities are expected to be higher for immigrants living in provinces characterised by high mean age at marriage and vice versa. If instead they maintained intact the cultural marital trait typical of their country of origin, no significant association between the mean age at marriage in the province of residence and the probability of co-residence with parents would be found. Measuring this indicator both on Spanish natives in the province of residence and on stayers in the countries of origin simultaneously allows understanding which of the two the cultural traits – i.e. the country of origin or the province of residence – is more influential on the living arrangement decision.

Interaction between country of origin and province of residence effects

The two contextual effects discussed so far, i.e., immigrants' country of origin and province of residence can interact. The literature on immigrants assimilation has put some attention on the so-called "community effect", i.e., the impact of specific characteristic of immigrants' communities in the area of residence such as the size of the local community on the speed of the assimilation process (VAN TUBERGEN et al., 2004; VAN TUBERGEN and KALMIJN, 2005; LEVELS et al. 2008). For example, in areas where a given immigrant community is large, it is more likely that members of that community keep familiarizing with peers of the same cultural background. As a consequence, the role of the country of origin will be stronger than in areas where the own immigrant community is small.

For the aim of this paper, it is of interest to assess if the bigger the immigrants' community in a given province, the more likely it is that norms regarding living arrangements remain more preserved within immigrants of that community, and thus the more likely it is that youth of immigrant origin will maintain behaviours typical of their countries of origin. The "community effect" hypothesis is tested by estimating an extended model with an additional random effect

allowing the country effect to vary by province of residence in Spain ("interaction" random effect). The "community effect" hypothesis will be supported if the variance of the additional random effect will be sizable, meaning that the same country of origin has a different effect on second generation living arrangements depending on the province specific immigrant community characteristics. To further test if this "community effect" can be explained by the size of the local community, a new variable will be included in the models measuring the relative size of each immigrant community, i.e., the proportion of immigrants from a given sending area represented in the sample in each Spanish province out of the total resident population.[iii] Instead, the community size *per se* is not expected to be associated with the probability to live independently from the parents. In fact, when the size of an immigrant group in a certain province is larger, the norms regarding living arrangements remain more preserved. As a consequence the country effect will be stronger and this would lead to a higher or lower probability of living independently depending on the norms characterizing the specific immigrant group.

DATA AND DESCRIPTIVE ANALYSES

Micro-census data are considered as an opportunity to disaggregate a large sample of immigrants according to their place of residence and country of origin. Micro-census data from the Spanish 2001 Population and Housing Census are employed. Integrated Public Use Microdata Series International (IPUMS-I) (MINNESOTA POPULATION CENTER, 2009) makes publicly available individual-level information on a 5 per cent sample of dwellings drawn from the census. Provincial level information is gathered from the whole census, via the Spanish National Statistical Institute (INE, 2001).

In general, information on the country of birth of young adults and their parents and years since immigration took place, allow identifying second generation immigrants. However, in our

data the country of birth of the parents can be recovered only if the young adult still lives in the parental home. Therefore, second generation immigrants are identifiable only among those who were born in the country of origin, while those born in Spain from immigrant parents are not identifiable, unless they co-reside with their parents. As a consequence, the so called "1.5 generation" of immigrants is considered, i.e. individuals who were born outside Spain from foreign parents and who immigrated before age 12. In the following, for simplicity the term second generation will be used. Following CORTINA TRILLA et al. (2008), who use IPUMS-I data for Spain to study marriage patterns of the foreign-born population, immigrants who report a correspondence between their year of birth and the year of immigration are excluded from the sample, due to inconsistencies.

The final sample includes individual information for 6,761 young adults of immigrant origins, aged 17 to 35,[iv] coming from 70 different countries which are grouped into 35 sending areas, and residing in one of the 50 Spanish provinces (the Autonomous cities of Ceuta and Melilla are excluded). Combining the different areas of origin and provinces of residence, a total number of 35 × 50 = 1,750 communities are, in principle, possible. However, not all immigrant groups are present in all provinces, so our dataset contains 792 different immigrant communities.

Countries of origin represented by more than 45 second generation immigrants are considered as separate nationalities (21 in total). The remaining countries are grouped together geographically to form 14 additional clusters, so that, in total, 35 "sending areas" are considered. For example, Austria and Luxembourg are combined into the category "Western Europe – others". Sending area sample sizes range from 15 ("Western Europe – others") to 1,528 (France), the mean size being 193. The number of immigrants in provinces ranges from 6 (Cuenca) to 1,036 (Madrid), the mean size being 135. Finally, data on the mean age at marriage for women in each sending area are obtained from the World Marriage Patterns 2000 data produced by the United Nations.

In order to implement comparative analyses, a sample of 562,648 Spanish young adults aged 17 to 35 is also obtained from IPUMS-I. The sample sizes at the provincial level for natives range from 1,029 (Soria) to 75,297 (Madrid), the mean size being 11,253.

Simple descriptive statistics (not shown) suggest a considerable degree of heterogeneity in young adults' living arrangements with respect to the two dimensions of the country of origin and province of residence. The proportions of second generation immigrants living outside the parental home vary greatly by origin. At one extreme there are sending areas like Ecuador, Western and Middle Africa, and Portugal with proportions higher than 80 per cent, well above the overall mean (51.9 per cent). At the other extreme of the ranking there are Western and Eastern Asia, United States, and Mexico with percentages below 30 per cent. It should be acknowledged that second generation immigrants who are classified as living independently from their parents, in the case of some selected countries of origin, might co-reside with other relatives in different forms of extended family arrangements; however, in the sample these proportions are low enough to avoid including a separate classification in the living arrangements' category. The heterogeneity in the proportions of second generation immigrants and natives living outside the parental home by their province of residence in Spain is less pronounced but still noteworthy. In the immigrant sample, proportions range from 20 per cent (Soria) to 90 per cent (Huesca), while for natives the variability is lower, from a minimum of 21.4 per cent (Zamora) to a maximum of 49.8 per cent (Baleares Islands).

METHODS

In order to accomplish the objectives of this study, the authors opted for multilevel models. Such a modelling approach enables to take into account the non-independence of units in the same cluster (e.g., provinces) and to include in the same model variables defined at the different levels.

SRHOLEC (2010) clearly discusses the advantages of using multilevel models to analyse hierarchical data. However, research on second generation immigrants utilizes data which are intrinsically characterised by a more complex structure. This paper considers a multilevel structure consisting of second generation immigrants at the first level, hierarchically nested into a cross-classification of second level units defined by place of birth and province of current residence in Spain. This modelling approach allows partitioning the relative importance of the two sources of heterogeneity, while testing the role of macro-level variables measured both at the country of origin and provincial level. Cross-classified multilevel analyses allow estimating the provincial level variability after the heterogeneity of immigrant origins has been controlled for and *vice versa*.

Cross-classified multilevel models have received some interest in studying immigrants' behaviours (e.g., VAN TUBERGEN et al., 2004; LEVELS and DRONKERS, 2008; LEVELS et al. 2008; KALMIJN and VAN TUBERGEN, 2010), but the authors think that they should deserve much more consideration in this field of research because of their ability to simultaneously take into account different contextual influences to which immigrants are exposed.

Empirical analyses are based on a cross-classified multilevel logistic model (see, e.g., VAN DEN NOORTGATE et al., 2003) where the outcome is the probability of living outside the parental home for second generation immigrants. The model, presented in the latent index formulation, takes the form:

$$Y^*_{i(p,s)} = X_{i(p,s)}\beta + Z_p\gamma + W_s\delta + e_{i(p,s)} + u_p + v_s \qquad (1)$$

where Y* indicates the (unobserved) propensity of living outside the parental home, such that Prob(Y = 1) = Prob(Y* > 0). The subscript $i(p,s)$ indicates an immigrant belonging to a generic unit of the cross-classified structure, where i = 1, 2, ... ,n(p,s); p = 1, 2, ..., 50 indicates the province and

s = 1, 2,..., 35 indicates the sending area. Individual, provincial, and sending area-level variables are identified with X, Z, and W, respectively. The individual error term, $e_{i(p,s)}$, is assumed to follow a standard logistic distribution (mean 0 and variance fixed at 3.29), while the province (u_p) and the sending area (v_s) error terms are assumed to be normally distributed with zero mean and variance to be estimated (SNIJDERS and BOSKER, 1999). These variances are of interest in this paper because they measure the importance of the two sources of heterogeneity under analysis.

As individual level covariates the following are considered: gender (reference category: woman), age, activity status (enrolled in education, employed, inactive or unemployed –reference–, and educational level achieved (primary or less, secondary –reference–, university education achieved). Gender heterogeneity in the effects of covariates is allowed by including interactions between the education and activity status dummy variables and the gender indicator. At the provincial level two indicators of the difficulty to enter the labour and housing markets are considered i.e., the youth unemployment rate and the proportion of owner-occupied households in the province of residence. An indicator of new family models is also included, i.e., the proportion of cohabiting couples, and the mean age at marriage in the province of residence calculated on natives. At the sending area level, the mean age at marriage measured in the country of origin is considered. However, differently than for mean age at marriage, information on cohabitation is not readily available for all the countries in the world and therefore the indicator of new family models cannot be calculated for the sending area level.

To contrast immigrant and Spanish young adults' living arrangements, a two-level logistic regression model is also estimated, where natives are nested into provinces:

$$Y_{ip}^{*} = X_{ip}\beta + Z_p\gamma + e_{ip} + u_p \qquad (2)$$

This model is identical to model (1) but here only a random effect for the provincial level is included.

Finally, the "community effect" hypothesis is tested with the following model:

$$Y^*_{i(p,s)} = X_{i(p,s)}\beta + Z_p\gamma + W_s\delta + C_{(p,s)}\theta + e_{i(p,s)} + u_p + v_s + z_{(p,s)} \qquad (3)$$

The inclusion of the "interaction" random effect $z_{(p,s)}$, also assumed to be normally distributed with zero mean and variance to be estimated, allows the country effect to vary by province. In fact, the total contribution of the country of origin to the linear predictor will be equal to $v_s + z_{(p,s)}$ and so the same country of origin will have a different effect for different provinces. This "community effect" can be explained by the relative size of each immigrant community in each province, which is considered as a community-specific characteristic, $C_{(p,s)}$. All models are estimated via maximum likelihood estimation with Laplacian approximation as implemented by *xtmelogit* in Stata11 (STATACORP, 2009).

RESULTS

Fixed effect estimates

Table 1 presents the coefficient estimates of the cross-classified logistic regression model for the immigrants' sample and those of the two-level logistic regression model estimated on the natives' sample. To control for the effect of influential cases, the procedure described in RUITER and DE GRAAF (2010) is adopted.[v] Estimates are not strictly comparable across the two samples given their different scale; however, their sign and significance can be compared.

Table 1 about here

The effect of individual-level covariates is similar for second generation immigrants and natives. As expected, the likelihood of living independently from parents is higher for women, because they tend to marry older partners (see e.g., OPPENHEIMER 1988), and increases with age.

Women who are still enrolled in (higher) education are more likely than those who are inactive or unemployed to co-reside with their parents, while the opposite is found for men. This is because housewives, who constitute the majority of the reference category for the activity status in the case of women, are more likely to be in a stable partnership, and thus living with a partner outside the parental home, than those who are waiting to finish education to exit the parental home. The opposite result for men might be due to the fact that unemployed find it difficult to live the parental home for not being economically independent.

In both samples, employment status decreases the likelihood to live independently for women, while the association is positive for men. As argued by VITALI (2010), this is due to the fact that the majority of women living outside the parental home are in a partnership and conform to the breadwinner family model (i.e., they are out of the labour market and economically dependent from their partners). As for the effect of education, we can notice that both native and immigrant women with higher education are more likely to co-reside with their parents The same holds also for men, although differences in educational achievement have a significantly lower impact on the living arrangements, if compared to women. The result can be explained by the fact that low-educated individuals enter the job market relatively earlier than peers who enrolled in higher education and this accelerates their economic independence.

Also the effect of provincial-level covariates among the two samples shows similarities. The proportion of cohabiting couples shows a positive association with the probability of living outside

the parental home both for immigrants and natives. This indicates that where non-traditional family models are more common and socially accepted young adults are encouraged to leave the nest without waiting the "right moment" for marriage. As expected, the proportion of owner-occupied households in the province of residence is positively associated with the probability of living independently but the association is significant only in the sample of youth of immigrant origin. Youth unemployment rate in the province of residence is positively associated with home-leaving for natives but only at the 10% level, while the association is not statistically significant for immigrants. The poor significance found for unemployment rates and housing conditions should not, however, be interpreted as a lack of importance of the economic context. Also, the positive (though poorly significant) estimate for provincial unemployment rate is inconsistent with our expectations. These results could be due to the fact that the level of measurement used, i.e., the provincial level, might not be the most appropriate to capture the impact of structural variables which show some degree of heterogeneity also across different municipalities of the same province (HOLDSWORTH et al., 2002; VITALI, 2010). The introduction of a finer level of analysis, however, would have been problematic because micro-census data are available at the municipal level only for municipalities with more than 20,000 inhabitants.

Moreover some individuals experienced different moves and were therefore exposed to different residential contexts. Literature on countries with a long-lasting immigration history shows that immigrant populations tend to move within their destination country more often than natives. This also applies to Spain (REHER and SILVESTRE, 2009). In general the interpretation of provincial-level variables needs to recognise the contribution of internal migration in the sense that push and pull factors characterizing the municipality of previous residence and the municipality of current residence might compensate, leading to results which are difficult to interpret. A high unemployment rate in the municipality of residence might push young adults to move within the

same province for employment related reasons. Similarly, where the housing market is unfavourable, young people might be pushed to move to areas where they can buy or rent a house at better conditions (ROCA CLADERA, 1998).

One could control for previous moves as the census provides information on the place of previous residence and place of residence ten years before the census date. In 2001, roughly 10% of immigrants in the sample used in this paper (694 out of 6761) had ever resided in a different province (or abroad). The small number prevented the authors to further develop the analysis by considering the group of immigrants who experienced multiple moves separately. However, when the models are run excluding those who have ever resided in a different province, results do not change significantly (results available upon request).

Finally, in the model for immigrants, the mean age at marriage in the province of residence and country of origin is negatively and significantly associated with the probability of co-residing with parents. Second generation immigrants coming from countries where the age at marriage is lower are less likely to co-reside with their parents. This corroborates the idea that the cultural heritage of second generation immigrants still plays a role in their transition to adulthood. However, letting the marital age in the country of origin "compete" in the model with the same indicator measured at the province of residence in Spain, the provincial level gets the cultural trait more strongly pronounced in the immigrant's behaviour. Thus, while maintaining a connection with behaviours typical of their countries of origin, youth of immigrant origin who live in a province where natives marry later, will more likely co-reside with their parents.

Random effect estimates

Table 2 presents the variance component estimates for different types of multilevel models. For the immigrant sample three types of models are considered: two-level hierarchical models with

individuals nested in provinces (IP), individuals nested in sending areas (IS), and cross-classified model (IPS). Of course, for the Spanish sample only two-level models (IP) are considered. The magnitude of the province and sending area random effects is assessed using the Intra-class Correlation Coefficient (ICC). The ICC for a given dimension of the multilevel structure is calculated as the proportion of the estimated variance at that level to the total variance (obtained as the sum of the variances of province, sending and individual effects, the latter being fixed at 3.29; SNIJDERS and BOSKER, 1999 pag. 224[vi]).

Table 2 about here

The null model includes only age and gender as covariates. Comparing the three types of models estimated on the immigrant sample, it emerges that ignoring the cross-classified structure of the data would lead to overestimating the provincial variability. In fact, the ICC at the provincial level decreases from 4.11 per cent (IP) to 2 per cent when the sending area effect is introduced together with the provincial one (IPS). The relative weight of the residual variability at the provincial level is slightly higher for the Spanish sample (ICC = 2.7 per cent) than it is for the immigrants' sample (2 per cent).

From the variance decomposition of the cross-classified model it is evident that the country of origin contributes more to explain variability in home-leaving (21 per cent of the total variance) among immigrants than the province of residence does (2 per cent). Although the provincial variance is small compared to the country of origin effect, both effects are significant at the 1 per cent level, according to Likelihood Ratio Tests. The high intra-class correlation coefficient at the sending area level suggests the existence of a strong heterogeneity across immigrant groups. This

reinforces the importance of not considering immigrants as a unique category and increases the interest for a comprehensive analysis of all immigrant groups.

Residual variance at both provincial and sending area levels remains significant also after controlling for the other individual covariates (Model IPS+X). This is also the case for the provincial effect in the Spanish sample (Model IP+X). This residual variability is attempted to be "explained" by introducing macro-level variables. This is the exercise which is conducted in the remaining rows of Table 2.

Introducing all provincial-level variables contributes to explain 60 and 30 per cent of the residual provincial-level variance for the immigrants and natives' samples, respectively. In both samples most of this explanatory power is attributable to the proportion of cohabiting couples in the province of residence, followed by the mean age at marriage, which respectively explains, if included separately, 22 and 14 per cent of the provincial effect's variance. The mean age at marriage in the sending area alone explains 17 per cent of the residual variability across sending areas, thus confirming that norms and behaviours which are typical of the country of origin still play a role for second generation immigrants, when the co-residence with parents is concerned.

Table 3 reports the results from the full multilevel model for immigrants, where the interaction between immigrants' country of origin and province of residence effects is included as an additional random effect in the model. The fixed effects estimates from this model are, as expected, very similar to those of the model without the interaction random effect. In the model that excludes the variable measuring the size of the immigrant community in the province, the estimated variance for the "interaction" random effect is rather small and not statistically significant. A similar result is obtained introducing the size variable, which is also not statistically significant. These results do not support the "community effect" hypothesis. For second generation immigrants in Spain, the cultural background of the country of origin plays a key role in shaping their living

arrangements independently of the specific characteristics of the local immigrants' communities (and in particular their size). This may be due to the fact that immigration in Spain in 2001 was still a recent phenomenon and this is especially true for some countries of origin. Some local communities were simply too small and/or did not have sufficient time to develop specific cultural traits in the different provinces where they installed.

Table 3 about here

Mapping provincial and sending area effects

To better highlight interesting aspects of the sources of heterogeneity under study, Empirical Bayes predictions (RABE-HESKETH and SKRONDAL, 2005) of provincial and sending area errors are calculated. For the immigrants' sample a prediction of the error terms for each province (u_p) and for each sending area (v_s) is obtained. Similarly, for the Spanish sample predictions of each provincial error are obtained. Groups with positive (negative) predictions tend to have proportions of young adults co-residing with parents below (above) the mean. The higher the predicted error, the stronger is the deviation from the mean. Provinces and sending areas are classified in four groups, according to the quartiles of the predicted error term distribution. For example, areas with predicted error below the first quartile fall in the first group, which is labelled as "low". These areas are those where young adults show the lowest rates of independent living. At the other extreme, areas above the third quartile are labelled as "high", because they are characterised by the highest proportions of young adults living outside the parental home.

Fig. 1 and 2 display provincial error predictions for the immigrants' and natives' samples, respectively. In both cases the model with individual-level covariates (i.e., Model IPS+X) is used only to show the "gross" provincial heterogeneity. Comparing the two figures it emerges that,

overall, the provincial effects are similar in the two samples (the Spearman correlation coefficient between the provincial error predictions for the two samples is 0.59). For example, the highest propensities to live outside the parental home are found, both for immigrants and natives, in the provinces of Granada, Jaén, Córdoba, Girona, Barcelona and the Balearic Islands. In the same way, the highest prevalence of young adults-parents co-residence is found, both for immigrants and natives, in the provinces of León, Zamora, Salamanca, Palencia and Ávila. However, there are also provinces that show different patterns for the two samples. An example is represented by the province of Huesca, which falls in the "high" category for immigrants and in the "low" category for natives, while the opposite is found in the province of Tarragona.

Consistently with the discussion in the previous section, this geographical pattern can be explained by the spatial distribution of our macro-level indicators, especially the proportion of cohabiting couples. The provinces in the "high" group show, on average, the highest proportions of cohabiting couples (6.9% and 6.5%, in the natives and immigrants samples, respectively), while the lowest proportions are found for the provinces in the "low" group (4.1% and 4.0%, in the natives and immigrants samples, respectively). As an example, the proportion of cohabiting couples is about 9% in Barcelona and Girona, while it is below 3% in Zamora, Salamanca and Avila.

Fig. 1 about here

Fig. 2 about here

From Table 2 it emerges that the provincial effect remains more important for natives than for immigrants also after controlling for individual covariates (the ICC at provincial level is equal to 2.33 and 1.90 per cent, respectively). This difference can be quantified by computing predicted probabilities of living independently for a typical individual residing in two "extreme" provinces.

For example, a 30 year old employed woman, residing in the province of Barcelona (the province with the highest error) and who achieved secondary education, has a predicted probability of living independently equal to 70 per cent if she is native and 82 per cent if she has immigrant origin. If the same woman resides in the province of Léon (the province with the lowest error), the predicted probabilities fall to 47 and 70 per cent, respectively. These results show that, despite the relative low provincial variance, the heterogeneity in the living arrangements across the Spanish provinces is not negligible, especially for native young adults.

Fig. 3 displays the predictions of sending area errors obtained from the cross-classified model, estimated on the immigrants' sample using individual-level variables only (i.e., Model IPS+X). This figure clearly suggests that sending areas can be geographically clustered. For example, immigrants who were born in the countries of the Maghreb area show similar behaviours in terms of living arrangements: high probabilities of living independently due to low mean age at marriage and early transition to adulthood with respect to other origins.

Fig. 3 about here

To gain insight into the magnitude of the heterogeneity in living arrangements, the predicted probability of living outside the parental home has been calculated for each immigrant origin and for a typical individual (woman aged 25, employed, and with secondary education achieved). These probabilities vary from 92 per cent if her country of origin is Ecuador (highest country error) to 32 per cent if it is Australia (lowest country error), showing a strong degree of heterogeneity. Moreover, second generation immigrants from Venezuela, Australia, Switzerland, Mexico, Uruguay, and Peru show the most similar predicted probabilities with respect to Spanish peers. This conclusion is confirmed by the results of a cross-classified model (not shown) where Spain is

included as an additional “sending area” together with the 35 immigrant origins. Since the original Spanish sample is much bigger than all immigrant groups samples, a random sub-sample of native young adults was used.

CONCLUDING REMARKS

The literature on the transition to adulthood for second generation immigrants in Southern European countries is not well developed yet. This paper contributes to this field by studying young adults-parents co-residence among second generation immigrants in Spain in comparison to natives' behaviours.

Considering the need, recently stressed by many authors, for studies that fully describe the heterogeneity characterising immigrants' behaviours, all immigrant groups present in Spain at the time of the 2001 census and represented in the 5 per cent extract from the IPUMS-I database are included in the sample used in this paper.

The heterogeneity of the country of origin is studied together with the effects due to the place of residence, namely the province, which in past studies has been found to be important for the transition to adulthood of young Spaniards. This is made possible by using cross-classified multilevel models which allow to disentangle the two sources of variability, and to introduce variables measured both at the country of origin and province of residence levels.

Second generation immigrants are shown to be extremely heterogeneous with respect to their country of origin, even though a geographical clustering is evident. This paper shows that for second generation immigrants in Spain, the country of origin contributes much more to explaining the existing variability in independent living than the province of residence. However, even if the heterogeneity due to provincial effect is lower, it is not negligible. Moreover, the effect due to the province of residence is slightly higher for Spanish natives than for immigrants. An interesting result is the strong negative association found between the mean age at marriage measured in the country of origin and the probability to reside outside the parental home for second generation immigrants. This paper reinforces the idea that second generations navigate between the two cultures they are exposed to. This paper shows that characteristics and norms of the environment in

the country of residence are important for determining home leaving. However, norms associated with the sending country are also important. GIULIANO (2007) finds similar results for second generation immigrants from Europe in the US. She explains the strong intergenerational transmission of cultural values from immigrants to their children using the cultural interpretation based on the strength of family ties originally proposed by REHER (1998). According to this theoretical framework, differences in family structures, marital patterns and living arrangements across European societies have historical roots and are embedded into the cultural heritage. For this reason, individual and contextual economic factors of the destination country are not enough to explain differences in living arrangement decisions across immigrant groups. In the case of Spain the importance of the country of origin might be further emphasized by the fact that Spain is a country of recent immigration, and therefore the integration of immigrants is expected to be slower than in countries which have been receiving immigrant populations for a long time.

The authors acknowledge that there are other local structural factors not accounted for in this paper, which might be important in influencing the living arrangement decision. Also, immigrants may be faced with different labour and housing market conditions with respect to natives, while some immigrant groups might be different from others. For example, some immigrant groups might specialize in certain activity sectors and the overall unemployment rate might not capture the conditions of the labour market they belong to. For what concerns the housing market, the sample here used shows that the percentage of owner occupied households differ between natives and youth of immigrant origin and varies considerably across immigrant groups. Only the 13% of young Spaniards who live independently are in rented accommodations, the great majority (77%) living in a dwelling owned by a member of the household. A similar picture emerges for other Western European countries, Canada, Australia and Central America. At the other extreme, the proportion living independently in rented

accommodations is above 50% for young people from Eastern Europe (55%), South-Central Asia (56%), Chile (58%), Western Africa (60%), South America (60%), and Ecuador (66%). Yet, with census data it is not possible to understand to what extent this heterogeneity in tenure types is due to cultural preferences or to structural constraints. Future research should be devoted to a deeper understanding of differential impacts of structural factors for natives and immigrants.

Results do not provide evidence in support of the "community effect" hypothesis, probably because immigrant communities were yet not established in 2001. Spain, in fact, is a country of recent immigration which has been experiencing unprecedented changes in immigration flows during the last decade. Past studies for other countries found that third generation immigrants tend to be less influenced by the culture of their country of origin. Future work using the next Spanish census could give an updated view of the phenomenon under study.

Despite the advantages outlined in the paper, using census data also implies some limitations. Census data only gives a snapshot of the living arrangements in a given point in time and does not offer any insight on the demographic history of household members. Moreover, current information on other household members is available only if they reside together with the young adult. As a consequence, the authors are not able, for example, to identify young adults that re-entered the parental home after having left it for a period. Also, a change in young adults' living arrangements (from dependent to independent living) may be the result of their parents' decision (i.e. the first generation) rather than their own. In particular, parents may come back to their original country while their children may stay in Spain.

From a methodological point of view, the paper shows that ignoring the cross-classified structure of the data leads to overestimating the provincial variability. The adoption of cross-classified multilevel models has great potential in the study of demographic behaviours of immigrants: if a comprehensive perspective of migration movements is adopted and simultaneous

sources of heterogeneity at sending and receiving contexts (i.e., countries, regions, provinces) are to be considered, cross-classified multilevel modelling proves to be a useful tool of analysis.

ACKNOWLEDGMENTS

We thank Francesco Billari, Ross Macmillan, Rebecca Graziani and Lara Tavares for stimulating discussions on the paper. We also thank participants at the European Population Conference 2010, at the 45th Scientific Meeting of the Italian Statistical Society, at the IUSSP XXVI International Population Conference and at the seminar at the Department of Statistics University of Florence for many helpful comments. The research leading to this article has received support from the project Consequences of Demographic Change (CODEC), funded by the European Research Council under the European Union's Seventh Framework Programme (FP7/2007–2013) ERC Grant agreement No. 201194.

Table 1. *Fixed effects estimates from cross-classified (immigrants' sample) and 2-level (natives' sample) logistic models: regression coefficients, standard errors in parenthesis*

	Immigrants' sample			Natives' sample		
Individual-level variables:						
Male	-1.54	(0.15)	***	-1.65	(0.02)	***
Age	0.22	(0.01)	***	0.27	(0.00)	***
Still in education	-0.96	(0.12)	***	-1.18	(0.06)	***
Male * Still in education	1.40	(0.18)	***	1.34	(0.02)	***
Employed	-0.26	(0.11)	**	-0.50	(0.01)	***
Male * Employed	1.01	(0.16)	***	1.20	(0.02)	***
Educational level achieved:						
Primary or less	-0.04	(0.14)		0.30	(0.02)	***
Male * Primary or less	0.06	(0.18)		-0.10	(0.02)	***
Higher education	-0.90	(0.10)	***	-0.63	(0.01)	***
Male * Higher education	0.28	(0.15)	*	0.11	(0.02)	***
Provincial-level variables:						
Youth Unemployment Rate	0.00	(0.01)		0.01	(0.01)	*
Owner-occupied Households	0.03	(0.01)	**	0.00	(0.01)	
Cohabiting couples	0.09	(0.03)	***	0.07	(0.02)	***
Mean age at marriage	-0.26	(0.07)	***			
Sending area-level variable:						
Mean age at marriage	-0.16	(0.06)	**			
Log Likelihood	-3611.6548			-269190.45		
N	6,761			562,648		

Notes. P-value: *** <0.01; ** <0.05; * <0.10.

Table 2. *Random effects estimates from the multilevel logistic models*

	Province random effect						Sending area random effect					
	Immigrants' sample											
Model	Var.		Δ% Var.	ICC (%)	LRT		Var.		Δ% Var.	ICC (%)	LRT	
IP + Age + Gender	0.14	(0.04)		4.11	111.36	***						
IS + Age + Gender							0.945	(0.26)		22.35	502.84	***
IPS + Age + Gender	0.09	(0.03)		2.00	44.70	***	0.91	(0.25)		21.21	436.19	***
IPS + X (*baseline*)	0.08	(0.03)		1.90	39.94	***	0.84	(0.23)		20.03	373.33	***
IPS + X + Youth UR	0.08	(0.03)	-3.38	1.84	35.14	***	0.84	(0.23)	-0.25	20.00	371.68	***
IPS + X + Owner-occupied HH	0.08	(0.03)	0.10	1.90	39.95	***	0.84	(0.23)	0.04	20.04	373.30	***
IPS + X + Cohabiting Couples	0.06	(0.03)	-22.20	1.49	22.24	***	0.84	(0.23)	-0.16	20.09	371.44	***
IPS + X + Age at Marriage (Prov)	0.07	(0.03)	-13.91	1.64	39.03	***	0.85	(0.23)	0.47	20.16	376.29	***
IPS + X + Z	0.03	(0.02)	-60.07	0.77	8.97	***	0.84	(0.23)	-0.96	20.11	370.61	***
IPS + X + Age at marriage (Send)	0.08	(0.03)	-0.66	1.96	39.55	***	0.70	(0.19)	-17.32	17.16	344.93	***
IPS + X + Z + W	0.03	(0.02)	-60.07	0.80	8.90	***	0.69	(0.19)	-18.25	17.20	342.36	***
	Natives' sample											
	Var.		Δ% Var.	ICC (%)	LRT							
IP + Age + Gender	0.09	(0.02)		2.70	5270.10	***						
IP + X (*baseline*)	0.08	(0.02)		2.33	4425.34	***						
IP + X + Youth UR	0.08	(0.02)	-0.80	2.31	4350.28	***						
IP + X + Owner-occupied HH	0.07	(0.02)	-9.03	2.12	4103.76	***						
IP + X + Cohabiting Couples	0.06	(0.01)	-25.16	1.75	3208.10	***						
IP + X + Z	0.06	(0.01)	-29.62	1.65	3142.82	***						

Notes. I: Individual; P: Province; S: Sending Area; X, Z, W: Individual-, Provincial- and Sending Area level variables, respectively. IP: 2-level model with individuals nested within provinces; IS: 2-level model with individuals nested within sending areas; IPS: cross-classified multilevel model. Δ% Var.: percent variation of the random effect variance with respect to the baseline model; ICC: Intraclass Correlation Coefficient; LRT: Likelihood Ratio Testp-value: ***<0.01;** <0.05;*<0.10.

Table 3. *Fixed and random effects estimates from the cross-classified multilevel logistic model with community effect: regression coefficients, standard errors in parenthesis*

	Immigrants' sample			Natives' sample		
Individual-level variables:						
Male	-1.55	(0.15)	***	-1.55	(0.15)	***
Age	0.22	(0.01)	***	0.22	(0.01)	***
Still in education	-0.97	(0.12)	***	-0.97	(0.12)	***
Male * Still in education	1.41	(0.19)	***	1.41	(0.19)	***
Employed	-0.25	(0.11)	**	-0.25	(0.11)	**
Male * Employed	1.01	(0.16)	***	1.01	(0.16)	***
Educational level achieved:						
Primary or less	-0.04	(0.14)		-0.03	(0.14)	
Male * Primary or less	0.04	(0.18)		0.04	(0.18)	
Higher education	-0.91	(0.10)	***	-0.91	(0.10)	***
Male * Higher education	0.28	(0.15)	*	0.28	(0.15)	*
Provincial-level variables:						
Youth Unemployment Rate	0.00	(0.01)		0.00	(0.01)	
Owner-occupied Households	0.03	(0.01)	**	0.03	(0.01)	**
Cohabiting couples	0.09	(0.03)	***	0.09	(0.03)	***
Mean age at marriage	-0.27	(0.07)	***	-0.27	(0.07)	***
Sending area-level variable:						
Mean age at marriage	-0.17	(0.07)	**	-0.17	(0.07)	**
Community-level variable:						
Size of immigrant community				-0.01	(0.01)	
Random effects	Var.		ICC (%)	Var.		ICC (%)
Province	0.03	(0.02)	0.62	0.08	(0.04)	2.02
Sending area	0.71	(0.20)	17.20	0.72	(0.20)	17.48
Community	0.09	(0.04)	2.09	0.03	(0.02)	0.66
Log Likelihood	-3608.1938			-3607.8675		
N	6,761			6,761		

Notes. P-value: *** <0.01; ** <0.05; * <0.10.

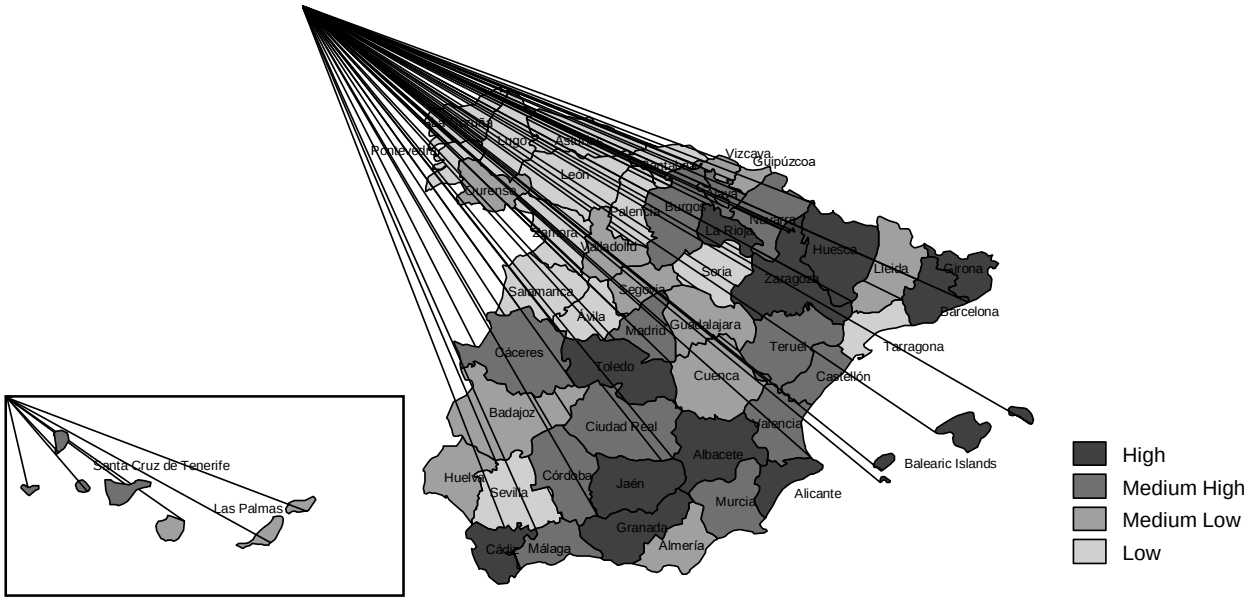

Fig. 1. *Empirical Bayes predictions of province effects, immigrants' sample*

Notes. Predictions are obtained from the cross-classified model estimated on the immigrants sample, using individual-level variables only (i.e., Model IPS+X).

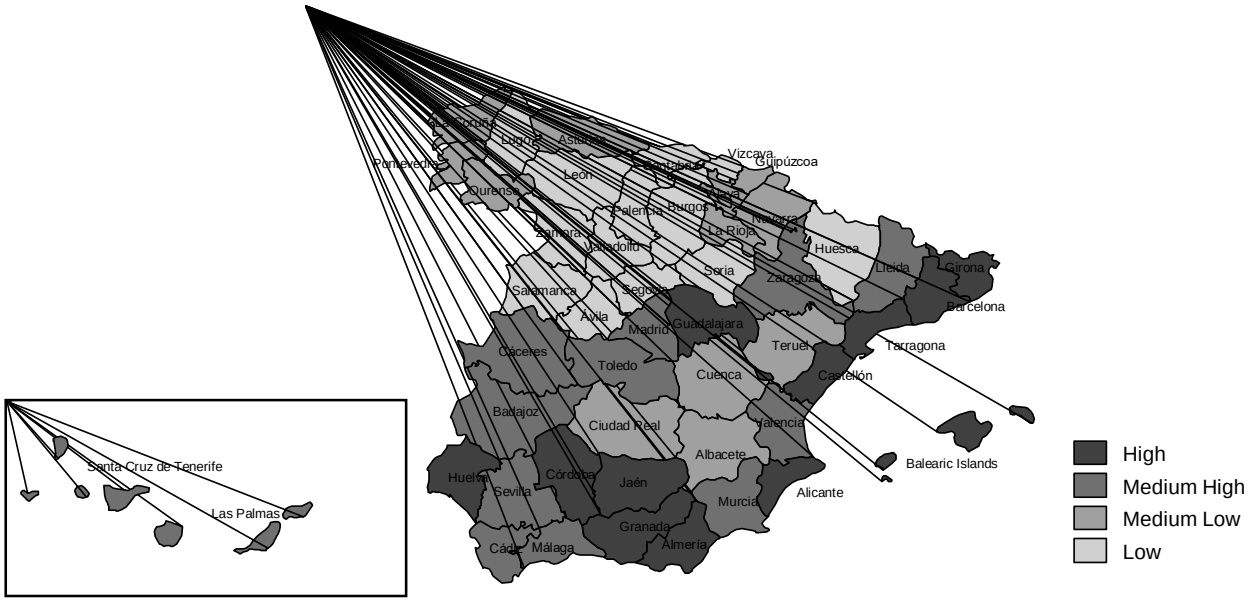

Fig. 2. *Empirical Bayes predictions of province effects, natives' sample*

Notes. Predictions are obtained from the 2-level model estimated on the natives' sample, using individual-level variables only (i.e., Model IP+X).

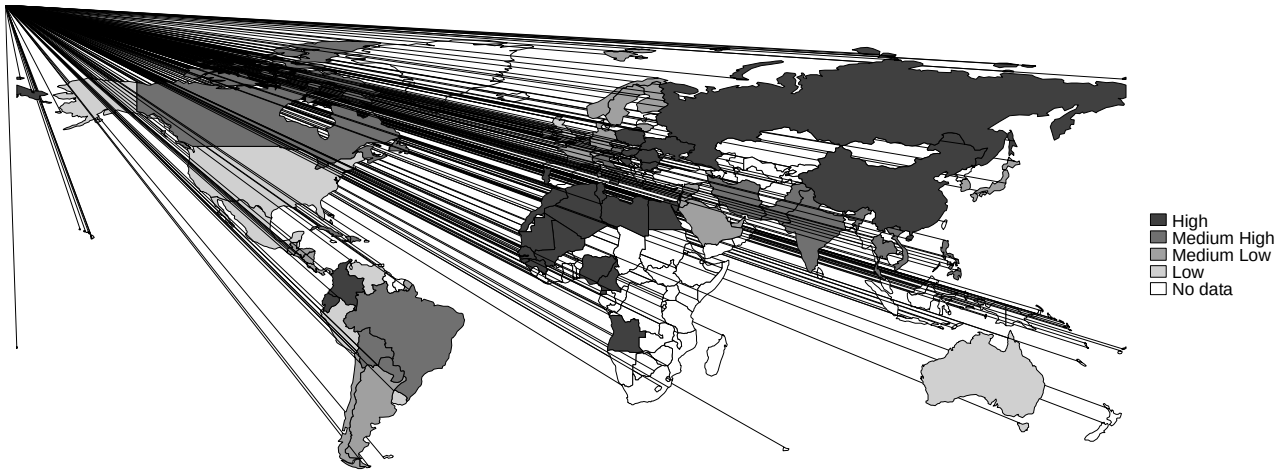

Fig. 3. *Empirical Bayes predictions of sending area effects*

Notes. Predictions are obtained from the cross-classified model estimated on the immigrants sample, using individual-level variables only (i.e., Model IPS+X).

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1. Authors' elaborations based on Eurostat data from http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics.
2. These circumstances, valid for the period considered in this paper, have changed as a consequence of the crisis.
3. Since this variable accounts for the size of each immigrant group in a given province, it is computed basing on the sample of immigrants of any age, and not just on the subsample of young adults which will be used in the analyses.
4. The minimal age included in the sample is 17 because it is the age marking the end of secondary level of education in Spain.
5. Each cross-classified model was re-estimated 85 times, each time excluding one province or a sending area while each two-level logistic model was re-estimated 50 times, each time excluding one province. Then, the DFBETAS are calculated for all province-level or sending area indicators and influential cases are indentified: 7 provinces overcame the absolute threshold of $2/\sqrt{50}$ and 9 sending areas overcame the threshold of $2\sqrt{35}$. Finally, the models were re-estimated after removing the set of influential cases. Since no significant change in results was found, the authors present the model estimated on the whole sample.
6. This method corresponds to the "latent variable" approach of GOLDSTEIN et al., 2002.