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

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Abstract

Using cross-classified multilevel modelling approach, we study the probability to live outside the parental home for second generation migrants in Spain, a "latest-late" transition to adulthood country. We simultaneously take into account two sources of heterogeneity: the country of origin and the province of residence in Spain. Using micro-census data we are able to consider all main migrants groups. We find that living arrangements vary extremely according to migrants' origin; albeit a geographical clustering emerges. The cultural heritage, as represented for example by the mean age at marriage in the country of origin, still plays an important role in shaping second generation migrants patterns of co-residence. Even though the effect of the province of residence is less pronounced, it is not negligible. In particular, the cultural climate of the province, as measured by the proportion of co-habiting couples, is found to be influential for both migrants and native young adults' living arrangements.

Introduction

The demographic literature on transition to adulthood only recently started to devote attention to the study of co-residency patterns between young adults of migrant origin and

their parents (Fussell and Furstenberg, 2005; DeValk, 2006; De Valk et al., 2007; Van Hook and Glick, 2007; De Valk and Mencarini, 2009; Rumbaut and Komaie, 2010).

Demographic studies on second generation migrants generally focus on three main life course decisions which are taken during young adulthood, namely marriage (Kalmijn et al., 2005; Cortina Trilla et al., 2008; Huschek et al., 2010; Kalmijn and Van Tubergen, 2010), employment (Adsera and Chiswick, 2007; Algan et al., 2010) and fertility (Roig Vila and Castro Martín, 2007). On the contrary, the topic of living arrangement decisions for second generation migrants has been so far under investigated.

Young adults who grew up in families of migrant origin are different from their parents and also from native-born peers. They are in fact bicultural, 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 young adult-parents co-residence, in terms 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. The exposure to two sets of cultural values may eventually give rise to intergenerational conflicts when second generation migrants start to take life-course decisions in early adulthood (Wakil, 1981; Fuligni et al., 1999; Giguère et al., 2010).

A number of North American studies document ethnic differences in 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 migrant parents vary by origin (Goldscheider and Goldscheider, 1988, 1989; Burr and Mutchler, 1993; Boyd, 2000; 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 adult co-residing with their immigrant parents (Goldscheider and Goldscheider, 1988; Boyd, 2000; de Valk and Billari, 2007; Giuliano 2007; Boyd and Park, 2010). 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. Boyd and Park (2010) find that adult children of immigrants who come from countries identified as emphasizing familism (individualism) are more (less) likely to co-reside with parents in Canada.

For Western European countries less is known on living arrangements of immigrants' children. This is particularly true for Mediterranean countries which only recently started to attract substantial flows of migrants. In these countries immigrants' role 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 we focus. First of all because 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). Secondly, 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 behaviors is important to better understand possible future dynamics of an increasing portion of the population. Finally, past research has emphasized the non homogeneity of the transition to adulthood over the different Spanish geographical areas (Reher, 1991; Holdsworth et al, 2001; Vitali, 2010), while the role of the local context for immigrants is less documented.

In this paper we study second generation migrants' living arrangement decisions in comparison to Spanish natives. Using a cross-classified multilevel analysis we are able to take simultaneously into account the influence of the country of origin and that of the context of the province of residence in Spain. This modelling approach allows us to avoid focusing on a selected number of countries of origin and to exploit the whole heterogeneity of migrant origins. We are interested in assessing if second generation migrants 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 play a role. We further investigate if the province of residence in Spain matters for living arrangement decisions and if it has a different effect for native and migrant young adults.

Heterogeneity with respect to immigrants' 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, 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 to consider 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. We use instead public use micro-census data that allow us to have 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 multivariate models which include as covariates dummy variables for each immigrant group (e.g., Kritz et al., 2000; de Valk and Billari, 2007; Cortina Trilla et al., 2008). With this approach, however, it is

impractical to consider more than a few immigrant groups. 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, we include in our multilevel analyses a variable measured at the country of origin level, namely the mean age at marriage. If there is a strong intergenerational transmission of cultural values from immigrants to their children, we expect co-residence probabilities 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, we should not find any significant association between variables measured at the country of origin and the probability to co-reside with parents.

Heterogeneity with respect to 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 (Holdsworth et al., 2001; Reher, 1991). Vitali (2010) found a strong effect of the geographical area of residence on young Spaniards' living arrangement decisions.

Consistently with this literature, we do not consider Spain as a homogeneous destination for migrants, but the role of geographical differences is assessed. Therefore, we include in our multilevel analyses the provincial level to investigate if the place of residence matters for living arrangements and if it has a different effect for natives and migrant young adults.

We consider two indicators of the difficulty to enter the labour and housing markets, namely youth unemployment rate and the proportion of owner-occupied households, both

measured at the province of residence level. The probability to live independently is expected to be low in provinces where youth unemployment rate is high and home-ownership is limited. We also consider, as an indicator of the "modernity" of the cultural climate, the proportion of unmarried cohabiting unions on the total number of co-residing unions in the province. It is expected that in provinces where this proportion is higher, young adults are less likely to conform to the traditional Spanish latest-late pattern of home-leaving.

Data and Methods

We consider micro-census data as an opportunity to disaggregate a large sample of immigrants according to their place of residence and country of origin, i.e. the two sources of heterogeneity which are of interest in this study. Hence, in order to address the research questions, micro-census data from the Spanish 2001 Population and Housing Census are employed. The census is accessed via two different sources: individual-level information on a 5% sample drawn from the census is gathered from the Integrated Public Use Microdata Series International (IPUMS-I), while provincial level information is provided by the Spanish National Statistical Institute (Instituto Nacional de Estadistica, INE). IPUMS-I collects comparable samples of individual-level data from population censuses, which are made available for public use. Information on the nativity status, country of immigration and years since immigration took place allow identifying second generation migrants.

However, second generation migrants are identifiable only among those who were born in the country of origin, while those born in Spain from migrant parents are not identifiable according to census data, unless they co-reside with their parents. We consider as second generation migrants individuals who were born outside Spain from foreign parents and who migrated before age 12. Therefore we consider the so called "1.5 generation". In the following, for simplicity we will continue to use the term second generation. Following

Cortina Trilla et al. (2008), who use IPUMS-I data for Spain to study marriage patterns of the foreign-born population, we exclude from our sample migrants who report a correspondence between their year of birth and the year of immigration, due to inconsistencies.

The final sample includes individual information for 6,761 young adults of immigrant origins, aged 17 to 35, coming from 70 different countries which we group into 35 sending areas, and residing in one of the 50 Spanish provinces (we exclude from the analyses the Autonomous cities of Ceuta and Melilla).

As shown in Table A in the appendix, countries of origin represented by more than 45 second generation migrants are considered as separate nationalities (21 in total). The remaining countries are grouped together geographically to form 14 additional clusters, so that, in total, we consider 35 "sending areas". As shown in Table 1, sending areas sample sizes range from 15 (Western Europe) to 1,528 (France), the mean size being 193. The number of migrants in provinces, reported in Table 2, ranges from 6 (Cuenca) to 1,036 (Madrid), the mean size being 135. Finally, from the World Marriage Patterns 2000 data produced by the United Nations we obtain information on the mean age at marriage for women in each sending area.

In order to implement our comparative analyses, we also obtain from IPUMS-I a sample of 562,648 Spanish young adults aged 17 to 35. The sample sizes at the provincial level for natives range from 1,029 (Soria) to 75,297 (Madrid), the mean size being 11,253 (Table 2).

Simple descriptive analysis presented in Tables 1 and 2 clearly show 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. Table 1 shows that the proportions of second generation migrants 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%, well above the overall mean (51.9%). At the other extreme of

the ranking there are Western and Eastern Asia, United States and Mexico with percentages below 30%.

Table 2 reports the proportions of second generation migrants and natives living outside the parental home by their province of residence in Spain. Here the heterogeneity is less pronounced but still noteworthy. In the second generation migrants sample, proportions range from 20% (Soria) to 90% (Huesca), while for natives the variability is lower, from a minimum of 21.4% (Zamora) to a maximum of 49.8% (Baleares Islands). The higher variability at the provincial level found for migrants could be simply due to non-homogeneous concentration of migrants in certain areas. This will be assessed with the multilevel analyses, which allow to estimate the provincial level variability after the immigrant origins' heterogeneity has been controlled for.

Table 1 about here

Table 2 about here

In particular, in order to consider simultaneously the country of origin and province of residence effects on the living arrangements of second generation migrants, we make use of cross-classified multilevel modelling. The multilevel structure consists of second generation migrants at the first level, clustered into a cross-classification of non-nested 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 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 we 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 migrants are exposed.

Empirical analyses are based on a cross-classified multilevel logistic model (see e.g. Rasbash and Goldstein, 1994; Van den Noortgate et al., 2003;) where the outcome is the probability of living outside the parental home for second generation migrants. The model, presented in the latent index formulation, takes the form:

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

where Y^* indicates the (unobserved) propensity to leave the parental home, such that $Prob(Y = 1) = Prob(Y^* > 0)$. The subscript (p,s) indicates a generic unit of the cross-classified structure, where $p = 1, 2, ..., 50$ 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, 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 we want to assess.

As individual level covariates we consider the following: gender (ref. woman), age, educational enrolment (ref. not in school), educational level achieved –primary or less, secondary (ref.), university education achieved– and employment status (ref. not employed). We allow for gender heterogeneity in the effects of covariates by interacting all individual level variables with the gender indicator. As already mentioned, at the provincial level we consider two indicators of the difficulty to enter the labour and housing markets, i.e. the youth unemployment rate and the proportion of owner-occupied households in the province of

residence, and an indicator of "modernity" of the cultural climate, i.e. the proportion of cohabiting couples. At the sending area level we consider the mean age at marriage measured in the country of origin.

To contrast migrant and Spanish young adults' living arrangements, we also estimate a two-level logistic model where natives are nested into provinces:

$$Y^* = X_{ip}\beta + Z_p\gamma + e_{ip} + u_p \quad (2).$$

This model is similar to model (1) but here we only have a random effect for the provincial level. The individual and provincial-level covariates that we consider for natives are the same as those illustrated for migrants.

Descriptive statistics for all covariates are presented in table 3, separately for the two samples considered.

Table 3 about here

Results

Fixed effect estimates

Table 4 presents the coefficient estimates of the cross-classified logistic model for the migrants' sample and those of the two-level logistic model estimated on the natives' sample. Estimates are not strictly comparable across the two samples given their different scale; however, their sign and significance can be compared.

The effect of individual-level covariates is similar for second generation migrants and natives. As expected, the likelihood of living independently from parents is higher for women, because they tend to marry older partners, and increases with age. Women who are still

enrolled in (higher) education are more likely to co-reside with their parents, while the opposite is found for men. In both samples, employment status decreases the likelihood to live independently for women, while the effect is positive for men. The educational level achieved does not influence the living arrangement decision for young adults of migrant origins, the only remarkable exception is for women with higher education, who are more likely to co-reside with their parents. For native women a similar effect is found: the higher the educational level achieved, the lower the likelihood of living independently. The same holds also for native men, although differences in educational achievement have a significantly lower impact on the choice of 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.

The effect of provincial-level covariates among the two samples shows some differences. Youth unemployment rate in the province of residence is positively but poorly significantly associated with home-leaving for natives, while the association is not statistically significant for migrants. The proportion of owner-occupied households in the province of residence is not significant in both samples. The proportion of cohabiting couples, instead, shows a positive association with the probability of living outside the parental home both for migrants 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. From these results it seems that the local culture matters more than the contextual economic constraints in influencing young adults' living arrangements. The poor significance found for unemployment rates and housing conditions, however, should not be interpreted as a lack of importance of the economic context. In fact, the level of measurement that we used, i.e. the provincial level, could not be appropriate to capture the impact of these two 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.

Finally, in the model for migrants we find that the mean age at marriage in the country of origin is negatively and significantly associated with the probability to co-reside with parents: second generation migrants 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 migrants still plays a role on their transition to adulthood.

Table 4 about here

Random effect estimates

Table 5 presents the variance component estimates for different types of multilevel models. For the migrant sample we consider three types of model: two-level hierarchical models with individuals nested in provinces (IP) or individuals nested in sending areas (IS) and cross-classified model (IPS). Of course, for the Spanish sample we only consider two-level models (IP). 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 ratio of the estimated variance at that level out of the total variance.

We start by introducing only age and gender as covariates. Comparing the three types of models estimated on the migrant sample, we can see 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% (IP) to 2% when we introduce the sending area effect 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%) than it is for the migrant sample (ICC=2%). This confirms that the higher variability across provinces that resulted from the descriptive statistics in Table 2 is due to the non-homogeneous geographical displacement of immigrants.

From the cross-classified model it is evident that the country of origin contributes more to explain variability in home-leaving (21% of the total variance) among migrants than the province of residence does (2% of the total variance). Although the provincial variance is small compared to the country of origin effect, both effects are significant at the 1% level, based on the Likelihood Ratio Tests[1]. The high intra-class correlation coefficient at the sending area level suggests the existence of a strong heterogeneity across migrant groups. This reinforces the importance of not considering migrants as a unique category and increases the interest for a comprehensive analysis of all migrants 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). We attempt to "explain" this residual variability by introducing macro-level variables. This is the exercise we conduct in the remaining rows of Table 5.

Introducing all provincial level variables contributes to explain 31% and 30% of the residual provincial-level variance for the migrants 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, which explains, if included alone, more than 20% of the provincial effect's variance. Finally, the mean age at marriage in the sending area alone explains 17% of the residual variability across sending areas, thus confirming that norms and

[1] Following Snijders and Bosker (1999), p-values associated to the Likelihood Ratio Tests on the variance components are halved to take into account that the tests are implemented on the boundary of the parameter space.

behaviours which are typical of the country of origin still play a role for second generation migrants, when the co-residence with parents is concerned.

Table 5 about here

Mapping provincial and sending area effects

To better highlight interesting aspects of the sources of heterogeneity under study, we calculate Empirical Bayes predictions (Rabe-Hesketh and Skrondal, 2005) of provincial and sending area errors. For the migrant sample we obtain a prediction of the error terms for each province (u_p) and for each sending area (v_s). Similarly, for the Spanish sample we obtain predictions of each provincial error. Groups with positive (negative) predictions tend to have below (above) the mean proportions of young adult co-residing with parents. The higher the predicted error, the stronger is the deviation from the mean. We classify provinces and sending areas in 4 groups, according to the quartiles of the predicted error term distributions. For example, areas with predicted errors below the first quartile fall in the first group, which we label as "low". These areas, identified by the light yellow colour in Figures 1-3, 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.

Figures 1 and 2 display provincial error predictions for the migrant and native samples, respectively. In both cases we used the model with individual-level covariates (i.e., Model IPS+X) only to show the "gross" provincial heterogeneity. Comparing the two figures we can note that, overall, the provincial effects are similar in the two samples. For example, the highest propensities to live outside the parental home are found, both for migrants and natives, in the Autonomous communities of Andalucía (provinces of Granada, Jaén and

Córdoba), Cataluña (provinces of Girona and Barcelona) and of the Balearic Islands. In the same way, the highest prevalence of young adults-parents co-residence is found, both for migrants and natives, in the Autonomous Community of Castilla y León (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 migrants and in the "low" category for natives, while the opposite is found for the province of Tarragona.

From table 5 we can notice that the provincial effect remains more important for natives than for migrants also after controlling for individual covariates (the ICC at provincial level is equal to 2.33% and 1.90%, respectively). We can quantify this difference computing predicted probabilities of living independently for a typical individual residing in two "extreme" provinces. For example, a 30 years 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% if she is native and 82% if she has migrant origin. If the same woman resides in the Northern province of Léon (the province with the lowest error), the predicted probabilities fall to 47% and 70%, 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.

Figure 3 displays the predictions of sending area errors obtained from the cross-classified model, estimated on the migrants sample using individual-level variables only (i.e., Model IPS+X). This figure clearly suggests that, despite the high heterogeneity in second generation migrants' living arrangements shown by the ICC calculations reported in Table 5, sending areas can be geographically clustered. For example, migrants 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.

To give insights on the magnitude of the living arrangements heterogeneity we calculated for each migrant origin the predicted probability of living outside the parental home for a typical individual (woman aged 25, employed and with secondary education achieved). These probabilities vary from 92% if her country of origin is Ecuador (highest country error) to 32% if it is Australia (lowest country error), showing a strong degree of heterogeneity. Moreover, we found that second generation migrants from Venezuela, Australia, Switzerland, Mexico, Uruguay and Peru show the most similar predicted probabilities with respect to Spanish peers[2].

Figure 1 about here

Figure 2 about here

Figure 3 about here

Concluding Remarks

The literature on the transition to adulthood for second generation migrants in Southern European countries which recently experienced a tremendous change in migration dynamics is not well developed yet. This paper contributes to this field by studying young adults-parents co-residence among second generation migrants in Spain in comparison to natives' behaviours.

Considering the need, recently stressed by many authors, of studies that fully describe the heterogeneity characterising migrants' behaviours, we include in our analyses all migrant

[2] This conclusion is confirmed by the results of a cross-classified model (not showed here but available upon request) where we included Spain as an additional "sending area" together with the 35 migrant origins described in Table A in the appendix. Since the original Spanish sample is much bigger than all migrant groups samples, we used a random sub-sample of native young adults.

groups present in Spain at the time of the 2001 census and represented in the 5% sample extracted from the IPUMS-I database.

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

We show that second generation migrants are extremely heterogeneous with respect to their country of origin, albeit a geographical clustering is evident. It is shown that for second generation migrants in Spain, the country of origin contributes 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 migrants.

An interesting result of this paper is the strong negative association found between the mean age at marriage measured in the country if origin and the probability to reside outside the parental home for second generation migrants. This corroborates the idea that the cultural heritage of second generation migrants still plays a role in influencing their demographic behaviours.

The findings showed in this paper, however, are based on the 2001 Spanish census and for this reason they should not be generalized to draw ultimate conclusions about co-residence patterns between young people of migrant origin and their parents. Spain, in fact, is a country of recent immigration which has been experiencing unprecedented changes in migration flows during the last decade. Moreover, past studies for other countries found that third generation

migrants tend to be less influenced by the culture of their country of origin. Future work using the next Spanish census could give a more precise view of the phenomenon under study.

From a methodological point of view, we showed that ignoring the cross-classified structure of the data leads to overestimating the provincial variability, as resulted from descriptive statistics. We feel that the adoption of cross-classified multilevel models has great potentials in the study of demographic behaviours of migrants: if a comprehensive perspective of migration movements is adopted and simultaneous sources of heterogeneity at sending and receiving dimensions (i.e. countries, regions, provinces) are to be considered, cross-classified multilevel modelling proves to be a useful tool of analysis.

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Table 1. Proportion of second generation migrants outside the parental home (descending order) by sending areas and mean age at marriage in the original country

Sending Country	%	N	Sending Country	%	N
Ecuador	85.6	97	South-Eastern Asia	48.1	27
Western Africa	84.9	53	Uruguay	48.1	79
Portugal	84.4	128	South-Central Asia	44.4	36
Middle Africa	83.7	49	Southern Europe	44.4	63
Northern Africa	76.0	25	United Kingdom	44.2	326
Western Europe	73.3	15	Northern Europe	43.4	189
Eastern Europe	63.9	108	Switzerland	42.5	671
Morocco	62.3	443	South America	41.7	24
Colombia	61.7	128	Venezuela	38.0	474
France	59.4	1,528	Chile	36.5	52
Belgium	57.1	205	Australia	35.9	39
Brazil	54.4	68	Argentina	33.3	288
Americas	54.3	46	Peru	30.9	68
Canada	53.3	45	Western Asia	27.3	22
Germany	51.9	1,141	United States	27.1	70
China	51.6	62	Mexico	24.6	65
Central America	51.1	47	Eastern Asia	23.5	17
Dominican Republic	50.8	63	**Total**	51.9	6,761

Note: Proportions refer to second generation migrants residing in Spain, tabulated according their country of origin

Table 2. Distribution of Spanish provinces according to the proportion of migrant and native young adults outside the parental home

Province	Migrants		Natives		Province	Migrants		Natives	
	%	N	%	N		%	N	%	N
Huesca	90.0	10	35.0	2,411	Cáceres	50.0	28	42.4	5,226
Albacete	72.4	29	39.6	5,069	Cuenca	50.0	6	38.9	2,332
Toledo	70.7	58	40.5	7,173	Segovia	50.0	8	32.1	1,846
Zaragoza	65.7	102	39.1	11,234	Teruel	50.0	10	37.1	1,505
Castellón/Castelló	64.6	65	45.1	6,592	Málaga	49.9	409	42.4	18,245
Jaén	63.3	30	44.2	9,039	Guipúzcoa	48.8	43	38.0	9,425
Huelva	63.3	49	42.6	7,095	Tarragona	48.3	60	44.5	8,061
Lleida	63.0	27	40.3	4,549	León	47.7	111	32.0	5,980
Barcelona	61.1	699	44.9	65,627	Sevilla	46.9	179	41.2	27,208
Rioja (La)	60.6	33	38.8	3,474	Badajoz	46.5	43	41.5	9,083
Murcia	59.9	252	41.2	17,356	Asturias	46.4	224	35.0	13,584
Valencia/València	59.4	404	41.6	31,187	Palmas (Las)	46.4	138	43.9	14,184
Girona	59.3	86	47.1	7,269	S. Cruz de T.	44.7	275	41.1	11,672
Alicante/Alacant	58.5	289	44.7	19,750	Cantabria	44.2	52	34.7	7,405
Cádiz	58.2	110	39.8	17,705	Valladolid	43.2	74	32.8	7,225
Navarra	55.7	70	36.9	7,231	Coruña (A)	42.2	372	35.4	14,641
Ciudad Real	55.0	20	39.3	6,355	Ourense	40.9	193	34.9	3,516
Córdoba	54.3	70	44.3	10,932	Guadalajara	40.9	22	46.3	2,254
Almería	54.0	87	46.2	7,594	Palencia	40.0	20	31.5	2,210
Balears (Illes)	53.2	139	49.8	11,489	Zamora	40.0	40	31.4	2,306
Granada	53.0	149	41.8	11,639	Ávila	39.1	23	33.2	1,890
Madrid	52.6	1,036	40.2	75,297	Pontevedra	38.9	329	35.7	13,063
Álava	52.0	25	38.2	4,084	Lugo	37.5	72	33.9	4,227
Burgos	51.9	27	31.5	4,489	Salamanca	33.8	77	32.2	4,360
Vizcaya	50.6	77	33.7	15,531	Soria	20.0	10	32.0	1,029
					Total	51.9	6,761	40.7	562,648

Table 3. Descriptive statistics on the covariates

	Mean	Std. Dev.	Min	Max
Individual-level variables - Natives' sample				
Male	0.51	0.50	0	1
Age	26.30	5.32	17	35
Still in education	0.28	0.45	0	1
Male * Still in education	0.26	0.44	0	1
Employed	0.53	0.50	0	1
Male * Employed	0.62	0.48	0	1
Primary or less	0.14	0.34	0	1
Male * Primary or less	0.16	0.36	0	1
Higher education	0.19	0.39	0	1
Male * Higher education	0.16	0.36	0	1
Individual-level variables - Migrants' sample				
Male	0.50	0.50	0	1
Age	26.81	5.53	17	35
Still in education	0.28	0.45	0	1
Male * Still in education	0.27	0.44	0	1
Employed	0.52	0.50	0	1
Male * Employed	0.59	0.49	0	1
Primary or less	0.14	0.35	0	1
Male * Primary or less	0.17	0.38	0	1
Higher education	0.18	0.39	0	1
Male * Higher education	0.14	0.35	0	1
Provincial-level variables				
Youth unemployment rate	16.63	5.66	8.10	33.99
% Owner-occupied households	83.32	4.43	69.54	89.46
% Non-marital cohabiting unions	4.80	2.28	1.92	11.65
Sending area-level variables				
Mean age at marriage	23.95	2.36	20.41	29

Table 4: Fixed effects estimates from the multilevel logistic model: regression coefficients and standard errors in parenthesis

	Migrants' sample			Natives' sample		
Male	-1.537	(0.145)	***	-1.651	(0.018)	***
Age	0.215	(0.007)	***	0.267	(0.001)	***
Still in education	-0.967	(0.121)	***	-1.183	(0.015)	***
Male * Still in education	1.406	(0.183)	***	1.341	(0.024)	***
Employed	-0.254	(0.106)	**	-0.502	(0.012)	***
Male * Employed	1.003	(0.160)	***	1.204	(0.019)	***
Educational level achieved:						
Prymary or less	-0.027	(0.143)		0.303	(0.016)	***
Male * Primary or less	0.056	(0.180)		-0.104	(0.021)	***
Higher education	-0.908	(0.102)	***	-0.630	(0.011)	***
Male * Higher education	0.285	(0.151)	*	0.110	(0.017)	***
Provincial-level variables:						
Youth UR	0.002	(0.010)		0.012	(0.007)	*
Owner-occupied HH	0.016	(0.014)		0.004	(0.010)	
Cohabiting couples	0.064	(0.029)	**	0.072	(0.019)	***
N	6,761			562,648		

Note: p-value: ***<0.01;** <0.05;*<0.10

Table 5. Random effect estimates from the multilevel logistic model

Model	**Migrant sample: Province**				**Migrant sample: Sending area**					**Native sample**			
	Var.	Δ% Var.	ICC (%)	LRT	Var.	Δ% Var.	ICC (%)	LRT		Var.	Δ% Var.	ICC (%)	LRT
IP + Age + Gender	0.141		4.11	***	-		-		IP + Age + Gender	0.091		2.70	***
IS + Age + Gender	-		-		0.947		22.35	***				-	
IPS + Age + Gender	0.086		2.00	***	0.909		21.21	***				-	
IPS + X (*baseline*)	0.080		1.90	***	0.844		20.03	***	IP + X (*baseline*)	0.078		2.33	***
IPS + X + Youth UR	0.077	-3.38	1.84	***	0.842	-0.25	20.00	***	IP + X + Youth UR	0.078	-0.80	2.31	***
IPS + X + Owner-occupied HH	0.080	0.10	1.90	***	0.844	0.04	20.04	***	IP + X + Owner-occupied HH	0.071	-9.03	2.12	***
IPS + X + Cohabiting Couples	0.062	-22.20	1.49	***	0.843	-0.16	20.09	***	IP + X + Cohabiting Couples	0.059	-25.16	1.75	***
IPS + X + Z	0.055	-31.43	1.31	***	0.838	-0.75	20.03	***	IP + X + Z	0.055	-29.62	1.65	***
IPS + X + Age at marriage	0.080	-0.66	1.96	***	0.698	-17.32	17.16	***			-		
IPS + X + Z + W	0.055	-31.53	1.36	***	0.695	-17.68	17.20	***			-		

Note: p-value: ***<0.01;** <0.05;*<0.10

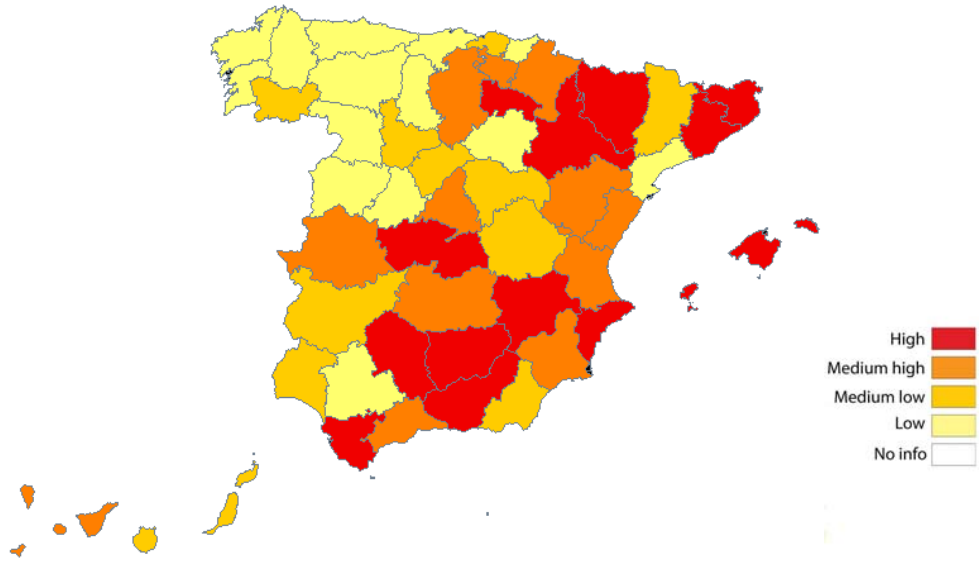
I: Individual; P: Province; S: Sending Area; X, Z, W: Individual- Provincial- and Sending Area level variables, respectively.

IP: 2-level model with individuals nested within provinces; IS: 2-level model with individuals nested within sending areas; IPS: cross-classified multilevel model.

The columns "Migrants: Province" and "Migrants: Sending area" refer, respectively, to the provincial and sending area random effects of the cross-classified multilevel models applied to the migrant sample. The column, "Spain", refers to the provincial random effects of two-level models applied to the Spanish sample.

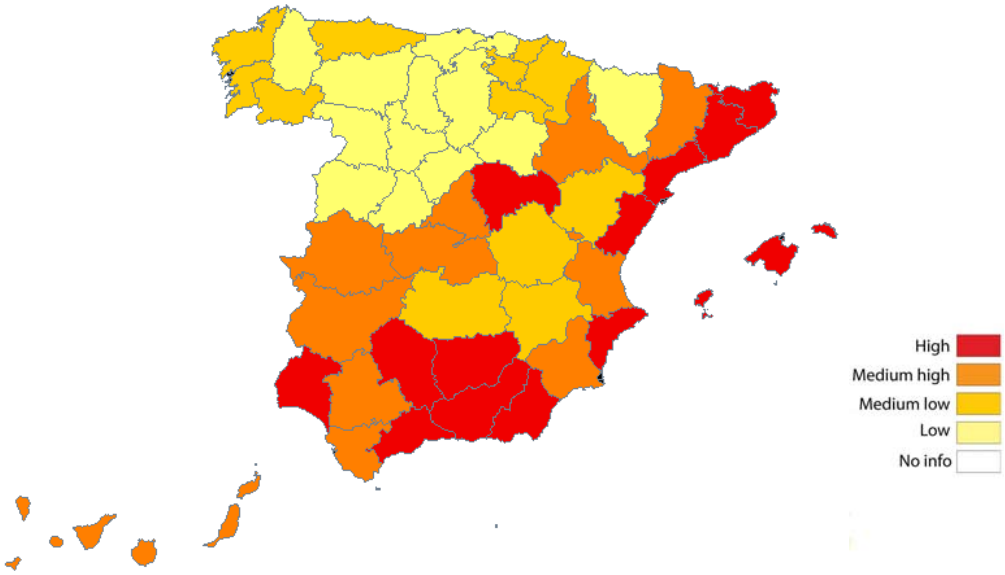
Δ% Var.: percent variation of the random effect variance with respect to the baseline model; ICC: Intraclass Correlation Coefficient; LRT: Likelihood Ratio Test.

Figure 1. Empirical Bayes predictions of province effects, migrants' sample



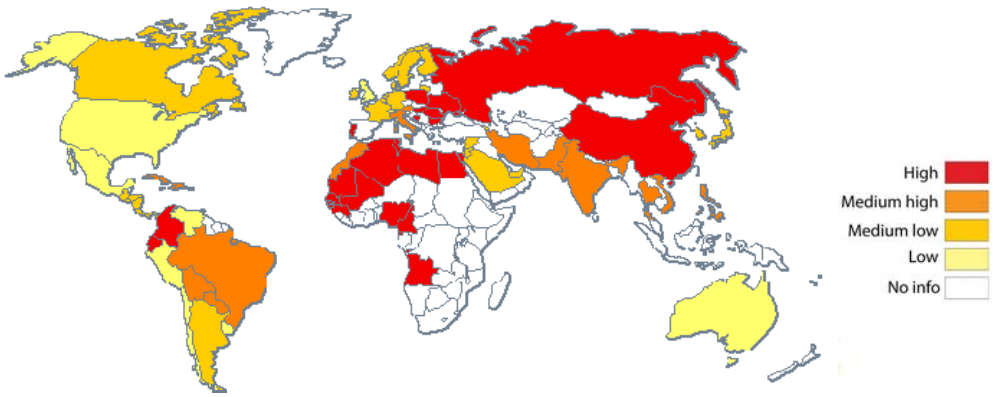
Note: Predictions are obtained from the cross-classified model estimated on the migrants sample, using individual-level variables only (i.e., Model IPS+X).

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



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

Figure 3. Empirical Bayes predictions of sending area effects



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

APPENDIX

Table A. List of sending countries and grouping of countries into sending areas

Sending areas	Subtotal	Total	Sending areas	Subtotal	Total
Argentina		288	India	18	
Australia		39	Iran	7	
Belgium		205	Pakistan	11	
Brazil		68	South-Central Asia		36
Canada		45	Philippines	20	
Chile		52	Thailand	2	
China		62	Vietnam	5	
Colombia		128	South-Eastern Asia		27
Dominican Republic		63	Armenia	2	
Ecuador		97	Israel	2	
France		1,528	Jordan	3	
Germany		1,141	Lebanon	4	
Mexico		65	Saudi Arabia	2	
Morocco		443	Syria	6	
Peru		68	United Arab Emirates	3	
Portugal		128	Western Asia		22
Switzerland		671	Denmark	14	
United Kingdom		326	Finland	2	
United States		70	Ireland	5	
Uruguay		79	Lithuania	5	
Venezuela		474	Norway	4	
Angola	6		Sweden	26	
Cameroon	4		Northern Europe, n.s.	133	
Equatorial Guinea	39		Northern Europe (others)		189
Middle Africa		49	Andorra	25	
Algeria	19		Italy	38	
Egypt	2		Southern Europe (others)		63
Libya	2		Austria	4	
Tunisia	2		Luxembourg	11	
Northern Africa (others)		25	Western Europe (others)		15
Cape Verde	5		Cuba	44	
Gambia	10		Haiti	2	
Guinea	14		Americas		46
Guinea-Bissau	2		Costa Rica	4	
Mali	5		El Salvador	6	
Mauritania	4		Guatemala	6	
Nigeria	5		Honduras	10	
Senegal	8		Nicaragua	3	
Western Africa		53	Panama		18
Japan	4		Central America (others)		47
Korea, RO (South)	13		Bolivia		19
Eastern Asia (others)		17	Paraguay		5
			South America (others)		24
			Total		6,761

Note: First are listed the 21 countries of origin that form a separate group. Then we list migrant groups with small sizes that we aggregate geographically. n.s. = not specified.