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In the footsteps of sociodemographic predictors of European home ownership patterns[1,2]

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Abstract: This paper focuses on the relationship between population and home ownership aiming to identify patterns of similarity and diversity in 29 European countries through sociodemographic predictors.

Making use of the EU-SILC micro-data of 2005 and 2009, a two-level approach is applied. At the macro level, a cluster analysis highlights homogeneous groups in the European context. At the micro level, using logistic modelling, the homogeneous and heterogeneous features in home ownership are explored and their consistency with the clustering results is tested.

The results identified four homogeneous groups that give to Europe a particular configuration: a north-western group formed by clusters with low and medium-low home ownership rates and a south-eastern group composed of clusters with high and medium-high home ownership rates.

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In clusters with low and medium-low home ownership rates to 'be owner' is a matter of the temporal and economic evolution of the household. In clusters with high and medium-high home ownership rates, this tenure status is so widespread that its explanation requires information that is difficult to measure, such as the effect of public policies or family support in the provision of housing. Consequently, in the access to home ownership, these features play an important role, diluting the importance of income, educational attainment and dwelling type.

Due to historical differences in housing markets, cohort effects turned age into a major element of heterogeneity.

Keywords: EU-SILC; home ownership; housing systems in European countries; housing typologies; international comparative housing research.

Introduction

A two-way relationship links population and housing: population structure and growth determine the demand for housing at national and international scales, and housing stocks and markets determine the population distribution at local and regional levels (Myers, 1990; Clark & Dieleman, 1996; Mulder, 2006).

While housing choices are taken within the household, they take shape within the regulation laid down by the corresponding housing system. Defined as "the full range of interrelationships between all of the actors involved (individual and corporate), housing units and institutions involved in the production, consumption and regulation of housing" (Bourne, 1981: 12), the housing systems set householders' preferences and behaviours since they influence housing supply and market dynamics.

In recent decades, home ownership rates have been increasing almost universally due to the availability and accessibility of mortgages, the support of the welfare state and the construction boom (Ronald & Elsinga, 2012). Although does not necessarily denote a superior tenure status (Kemeny, 1981), home ownership became a final aim of most households' housing careers and, consequently, a main trait of housing systems. Additionally, since there may be an overlap of the same housing system in more than one welfare state regime (Kemeny, 2006), the

housing systems' analysis is favoured by assigning a more central role to the tenure status (Kemeny, 2001).

This paper aims to explore the similarities and diversities of home ownership trends through the sociodemographic predictors of the head of the household, making use of the European Union Statistics on Income and Living Conditions (EU-SILC) micro-data of two rounds (2005 and 2009). Bringing together a macro and a micro level analysis, this study follows a divergence approach in order to: (1) understand the general European trend; (2) identify homogeneous European groups and (3) recognize specific country features.

Linking convergence and divergence in housing studies

In the past, research on housing has traditionally focused on single countries or regions and has not intended to generalize (particularistic approaches). International comparative studies especially focused on countries' common feature (universalistic approaches). And those studies that tried to disentangle housing patterns in typologies followed a middle way approach between the first two extremes (divergence approaches) (Kemeny & Lowe, 1998).

Comparative housing studies can be further rated on a scale ranging from 'zero' to 'high'. The 'zero' level includes the descriptive studies covering a single country while studies in the 'low' level have a descriptive or analytical approach on several countries. Studies in the 'middle' level have a relevant comparison component. Finally, the 'high' level contains housing studies that compare common and different features, follow an analytical approach, have an "explicit theory" and apply "high level of empiricism" (Oxley, 2001: 94).

Despite this, the three approaches - particularist, universalistic and middle range - do not necessarily need to be mutually exclusive. In the 'high' level studies performed within the European countries, the convergence approach was more popular for several years (Kemeny & Lowe, 1998). Recently, the organization of housing patterns in explicative typologies has gathered more supporters, highlighting the importance of the divergence approach.

Findings of housing studies making use of the convergence perspective have been a source of further research topics through applying the divergence approach in a quasi-complementary path to the analysis of the residential patterns (Módenes & López-Colás, 2012).

This paper takes existing typologies as its starting point and thus it does not intend to collect results in a renewed typology. The main hypothesis proposes that housing patterns in Europe share simultaneously homogeneous and heterogeneous features. Therefore, international comparative housing research can benefit from a two-level approach combining macro and micro level analysis.

Data and methods

This study was based on the household heads information from the cross-sectional EU-SILC micro-data (2005 and 2009). In 2005, 197,657 households in 26 countries were interviewed. In 2009 the survey was applied to 223,428 households in 29 countries.

EU-SILC is the European reference for comparative studies on income and social exclusion (Iacovou & Skew, 2010), but despite data harmonization, its application to housing research entails a preparatory work. The selection of variables covers the three dimensions that, according to literature, best explain home ownership at individual level: demographic, socio-economic and residential. Some of those variables were recoded (age, citizenship, education attainment), new variables were constructed to meet comparative requirements (income) and from sets of variables, single variables were created (a new tenure status with the owner's payment status, ratio of social rent[3], dwelling quality[4] and social environment[5]).

At the macro level the clustering procedure grouped the countries (cases) according to fifteen variables standardized by the European population structure.

[3] Due to misreported values, the ratios for Bulgaria and France are from Eurostat.

[4] The original variables of EU-SILC were *leaking roof, damp walls/floors/foundation, or rot in window frames or floor* (HH040); *bath or shower in dwelling* (HH080) and *problems with the dwelling: too dark, not enough light* (HS160).

[5] From the original variables: *noise from neighbours or from the street* (HS170); *pollution, grime or other environmental problems* (HS180) and *crime violence or vandalism in the area* (HS190).

An articulation of a hierarchical method (Ward's) with a non-hierarchical one (K-Means) was applied.

At the micro level, the logistic model is stated in terms of *Y*=1 (be owner). Models at the EU, clusters and countries level were run with eleven variables. Non collinearity among the independent variables was tested to exclude those covariates from the models. Also predictors with log-likelihood values below 0.1% of relative gain were excluded for not being significantly explanatory (Menard, 1995). A stepwise regression verified the relationships between the variables and the Wald method tested the statistical significance of each Exp(β) in the model. The final set of variables was tested for non-iteration.

For the purposes of this study, four main limitations of the data source were identified. There is no available data on the country of birth in Slovenia (PB2010) consequently is not possible to consider citizenship as a variable. The available data from Bulgaria, Malta and Romania are confined to the 2009 round. In that same year, Italian data make no distinction between outright home ownership and home ownership with a mortgage or loan[6]. Also, in 2005, all interviewed Dutch and Danish owners had a mortgage or loan. Consequently, the present analysis merged these two forms of tenure for all countries. Even so, EU-SILC is a harmonized and representative dataset, thus considered the most appropriate data source for the purposes of this study.

European housing patterns at a macro level

Four clusters were defined using the 2009 round, based on the household heads information, in order to disentangle the homogeneous housing patterns that can be found in Europe. The differences between present and previous results (Esping-Andersen, 1990; Fenger, 2007) are due to emphasis assigned to the residential variables.

[6] The variable *Tenure status* in EU-SILC (HH020) does not distinguish the owner's payment status. Another variable in the survey enables to identify the outright owners, *Arrears on mortgage or rent payments. Flag* (HS010F). The label "-2" explicitly refers to "outright owners or rent free during the last 12 months" and combined with HH020 allows to differentiate the two types of property. Variable HS010F has no data on Italian households.

Cluster 1 or medium-low home ownership group

Belgium, Cyprus, Finland, France, Ireland, Norway, United Kingdom

Cluster 1 it is characterized by a medium-low home ownership rate, a medium-large rental market and the existence of widespread social rent (low price and free). Detached dwellings with a medium-high quality and a medium social environment are predominant.

Cluster 2 or high home ownership group

Bulgaria, Latvia, Romania, Slovenia

The second cluster is characterized by high home ownership rates and the consequent small rental market and a very small market at low price or free. There is a balanced distribution between detached dwellings with a medium-low dwelling quality and apartments. The social environment is relatively worse than observed for other three clusters.

Cluster 3 or low home ownership group

Austria, Denmark, Germany, Luxembourg, Netherlands, Sweden

This cluster can be described as having a low home ownership rate, a widespread rental market and the smallest social rental market. Similar to Cluster 2, detached dwellings and apartments are both common. The dwelling quality is medium-high and the social environment has medium adequation. According to the economic indicators this is the group where income is more decisive for housing patterns.

Cluster 4 or medium-high home ownership group

Czech Republic, Estonia, Greece, Hungary, Iceland, Italy, Lithuania, Malta, Poland, Portugal, Slovakia, Spain

The largest cluster (12 countries) has a medium-high rate of home ownership in common with the correspondent medium-small rental market and a small social rental market. This is the group where a dwelling type other than detached is more common (mostly apartments). The quality terms stand for a medium-low quality, both for dwelling quality and social environment. Crossing the results for non-

household formation and age group under 25 years, these are clearly the countries where household formation has more severe restrictions at younger ages.

Table 1 systematizes the characteristics of each cluster according to the median and the standard deviation.

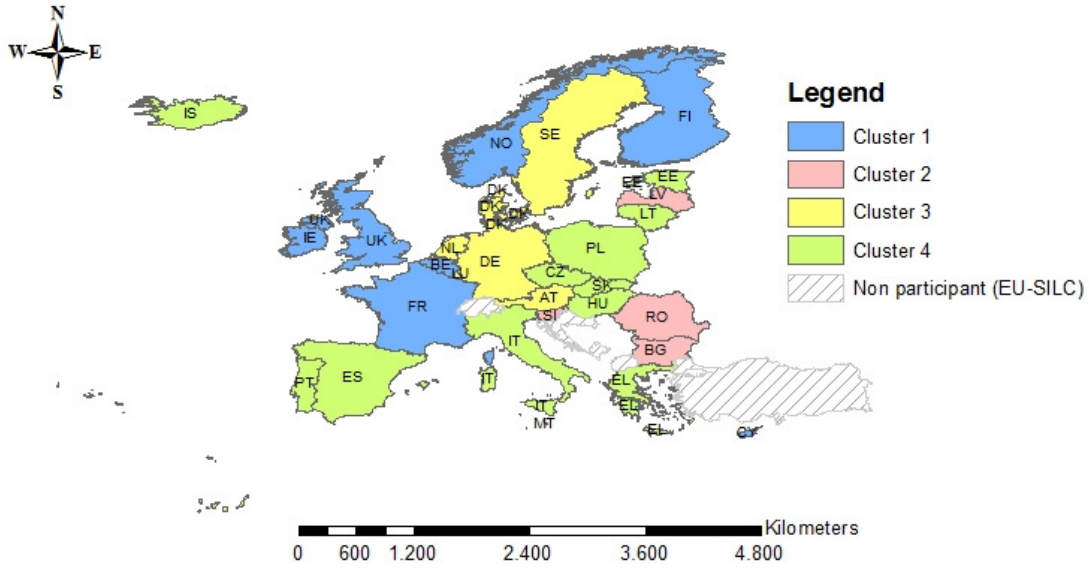
Table 1. Median (Md) and standard deviation (s), cluster analysis variables

	Clusters							
	1		2		3		4	
Variables	*Md*	*S*	*Md*	*s*	*Md*	*s*	*Md*	*s*
Owner	0.69	0.04	0.84	0.05	0.58	0.05	0.78	0.03
Rent market	0.12	0.02	0.04	0.02	0.37	0.04	0.07	0.02
Rent low market	0.14	0.02	0.02	0.03	0.03	0.03	0.03	0.04
Free	0.01	0.03	0.07	0.04	0.02	0.03	0.06	0.03
Detached dwelling	0.72	0.06	0.55	0.04	0.56	0.04	0.44	0.06
Non-household formation	0.59	0.08	0.61	0.04	0.59	0.05	0.63	0.08
<25 years	0.03	0.07	0.04	0.05	0.03	0.03	0.01	0.08
45-54 years	0.19	0.07	0.19	0.06	0.20	0.08	0.19	0.08
65 years and over	0.25	0.06	0.30	0.01	0.26	0.04	0.28	0.05
Lower income	0.28	0.05	0.22	0.02	0.33	0.07	0.25	0.06
Upper income	0.23	0.11	0.30	0.15	0.21	0.11	0.26	0.09
Adequate dwelling quality	0.81	0.06	0.55	0.07	0.81	0.06	0.78	0.05
Adequate social environment	0.67	0.04	0.57	0.06	0.66	0.04	0.65	0.03
Poverty index	0.53	0.06	0.44	0.08	0.58	0.07	0.49	0.05
Social rent	0.08	0.08	0.07	0.10	0.03	0.04	0.05	0.11

Source: EU-SILC, 2009.

Regarding housing patterns, and taking into account the similarities between clusters with low and medium low home ownership (3 and 1) and between clusters with high and medium high home ownership (2 and 4), there seems to be a different behaviour in northern and western countries from the one observed in southern and eastern countries (Figure 1).

Figure 1. Housing patterns in European countries according to clustering results, 2009



Source: EU-SILC, 2009.

Disentangling homogeneity and heterogeneity in home ownership at micro level

At micro level, on the one hand, home ownership in Europe can be explained by a number of common factors, on the other hand it also makes also the case for heterogeneity. Since in the stepwise regression the -2LL values are decreasing, the strongest predictors can be identified, along with which of them improve the accuracy of the model (Table 2).

In countries where home ownership is widespread the ownership is explained by various predictors, especially demographic and socio-economic and any of them totally decisive. Complementarily, in countries where home ownership is not so widespread, the owner occupation is better explained by the set of predictors used in this analysis and, moreover, the residential variables, namely dwelling type, is decisive[7]. Taking as example the country with the highest and the one with the lowest home ownership rates, in 2009, home ownership in Romania can mainly be explained by age group (15.47%) and in Germany by dwelling type (30.69%).

[7] Appendix 1 presents the home ownership rates at the EU, clusters and country level.

In fact, dwelling type is the main predictor of home ownership in Europe (in 13 out of the 29 European countries). The age group and the income complete the set of the most explanatory predictors.

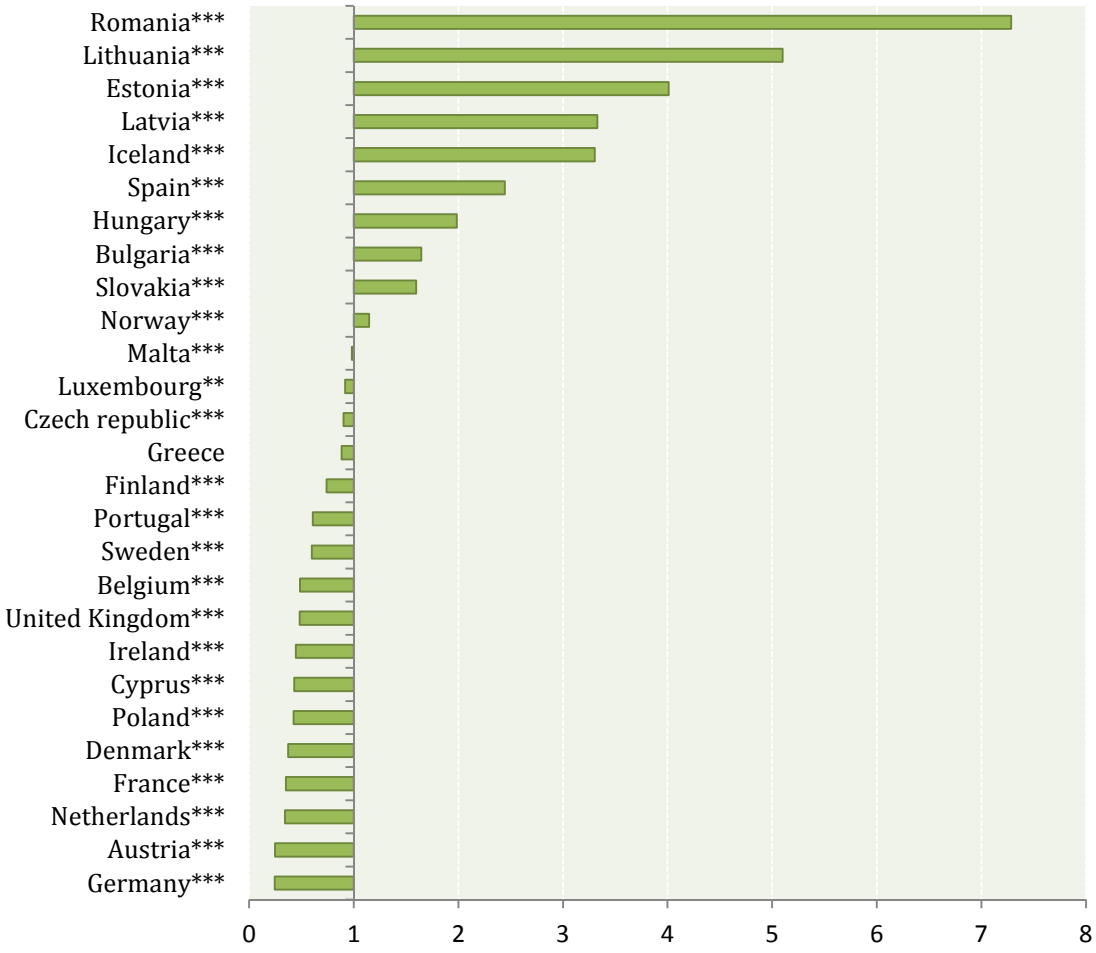
Table 2. Characteristics of the regression models of home ownership by sociodemographic and residential characteristics using likelihood values (-2LL), European Union, clusters and European countries, 2005/2009

	Predictor 1	Predictor 2	Predictor 3	Predictor 4	Predictor 5	Predictor 6
EU	**Dw. type**	**Income**	**Age**	**Citizenship**	**Dw. quality**	**Year**
Cluster 1	**Dw. type**	**Income**	**Age**	**Cluster1**	**Education**	**Dw. quality**
Belgium	Dw. type	Income	Age	Dw. quality	Education	Citizenship
France	Dw. type	Age	Income	Education	Dw. quality	Citizenship
Ireland	Dw. type	Age	Income	Citizenship	Education	Dw. quality
Finland	Dw. type	Income	Age	Dw. quality	Education	S. Environ.
United Kingdom	Dw. type	Income	Age	Education	Citizenship	Dw. quality
Cyprus	Income	Dw. type	Age	Citizenship	Dw. quality	Education
Norway	Income	Age	Citizenship	Dw. quality	Year	Dw. type
Cluster 2	**Age**	**Income**	**Dw. type**	**Dw. quality**	**Year**	**Education**
Bulgaria	Age	Dw. type	Income	Education	-	-
Latvia	Dw. type	Dw. quality	Year	Income	Age	Education
Romania	Age	Dw. type	Dw. quality	Citizenship	-	-
Slovenia1	Age	Income	Dw. type	Dw. quality	Year	-
Cluster 3	**Dw. type**	**Income**	**Dw. quality**	**Age**	**Education**	**Citizenship**
Denmark	Dw. type	Income	Age	Education	Dw. quality	-
Germany	Dw. type	Income	Age	Dw. quality	Education	-
Luxembourg	Dw. type	Citizenship	Income	Age	Dw. quality	-
Netherlands	Income	Dw. type	Education	Dw. quality	Age	S. Environ.
Austria	Dw. type	Income	Age	Education	Citizenship	Dw. quality
Sweden	Dw. type	Income	Age	S. Environ.	Dw. quality	Year
Cluster 4	**Dw. type**	**Age**	**Income**	**Dw. quality**	**Citizenship**	**Year**
Greece	Age	Citizenship	Dw. type	Income	Dw. quality	-
Spain	Citizenship	Age	Income	Dw. type	Dw. quality	-
Italy	Citizenship	Age	Income	Dw. type	Dw. quality	Education
Portugal	Dw. quality	Dw. type	Income	Age	Citizenship	S. Environ.
Czech Republic	Dw. type	Income	Age	Dw. quality	Education	Citizenship
Estonia	Age	Income	Dw. quality	Citizenship	-	-
Hungary	Age	Dw. type	Income	Dw. quality	Education	Year
Lithuania	Age	Income	Dw. type	Year	Dw. quality	-
Malta	Income	Dw. type	Dw. quality	Education	Citizenship	Age
Poland	Dw. type	Year	Dw. quality	Age	Income	Education
Slovakia	Age	Income	Year	Dw. type	Education	Dw. quality
Iceland	Income	Age	Citizenship	Dw. type	Education	-

Source: EU-SILC, 2005 and 2009.

In order to understand the relationship between sociodemographic variables and home ownership, the Wald method was applied. The results show that the risk of ownership in Europe is not evenly distributed in the 29 countries; the difference is significant at p=0.01 for all countries except Luxembourg and Greece. Using the country with the largest sample as baseline, Italy, the relative risk of experience ownership follows, broadly, the results of the macro level analysis[8] (Figure 2).

Figure 2. Influence of country in the relative risk of experience home ownership (odd ratios)



Significance level: *p<0.10; **p<0.05; ***<0.01.

Reference category: Italy

Source: EU-SILC, 2005 and 2009.

[8] Slovenia was excluded since, as previously mentioned, data do not provide the citizenship of the household head.

The general European trend shows a higher risk of ownership in 2009 than in 2005 (Table 3). Further, there is a straightforward relationship between high income and home ownership; living in a dwelling with adequate quality and social environment raises the propensity of home ownership. There are also perceptible restrictions to home ownership access at younger ages (under 34 years old) and to foreigners.

At the clustering level, according to the Nagelkerke R Square values (which in logistic regression are pseudo R-squares), the low and medium-low home ownership groups (3 and 1) have a better model fit than those with high and medium-high home ownership (2 and 4).

With regard to sociodemographic variables, there is a wider native-foreign gap in the medium-high home ownership group (4) than in the other homogeneous groups. Additionally, age have a prominent place as explanatory variable, especially in clusters with medium-low home ownership (1) and high home ownership (2) where the older cohorts (65 or over) are roughly 4 times as likely as the 35-to 44-year-old group to be owners.

In clusters with low and medium-low home ownership (3 and 1) 'being owner' is more related to income and educational attainment than in clusters with high and medium-high home ownership (2 and 4) indicating that ownership is more widespread in households of all social strata in these latter two groups.

As to residential predictors, despite home ownership being highly associated with detached dwellings, in the medium-high home ownership group (4) that relation is not so strong (Table 3).

Table 3. Odds ratios of home ownership by sociodemographic and residential characteristics (logistic regression models), European Union and southern European countries, 2005/2009

	Odds (Exp(β))				
Predictor and labels	EU	Cluster 1	Cluster 2	Cluster 3	Cluster 4
Year survey					
2009	1	-	1	-	1
2005	0.858***	-	0.626***	-	0.855***
Age					
35-44	1	1	1	1	1
<25	0.25***	0.167***	0.473***	0.353***	0.304***
25-34	0.602***	0.553***	0.519***	0.562***	0.657***
45-54	1.241***	1.489***	2.323***	1.259***	1.289***
55-64	1.752***	2.704***	3.447***	1.811***	1.734***
65-74	2.05***	4.26***	4.435***	2.044***	2.078***
>75	2.115***	4.155***	3.326***	1.499***	2.023***
Citizenship					
Native	1	1	-	1	1
Foreign	0.378***	0.466***	-	0.623***	0.15***
Income					
Lower	1	1	1	1	1
Lower-middle	1.806***	1.657***	1.694***	2.13***	1.42***
Upper-middle	3.176***	3.218***	2.077***	3.795***	1.954***
Upper	5.839***	6.319***	3.129***	6.513***	2.781***
Educational attainment					
Lower than secondary	-	1	1	1	1
Secondary	-	1.819***	1.179***	1.789***	1.145***
Higher than secondary	-	2.542***	1.343***	1.897***	1.209***
Dwelling type					
Detached	1	1	1	1	1
Semi-detached	0.345***	0.328***	0.267***	0.345***	0.377***
Apt. building < 10 dwellings	0.092***	0.077***	0.23***	0.051***	0.192***
Apt. building 10 > dwellings	0.123***	0.07***	0.402***	0.042***	0.187***
Dwelling Quality					
Adequate	1	1	1	1	1
At least one problem	0.687***	0.576***	0.616***	0.543***	0.648***
Social Environment					
Adequate	-	1	-	-	-
At least one problem	-	0.949***	-	-	-
Constant	3.347***	2.863***	3.504***	1.288***	5.271***
Nagelkerke R Square	0.194	0.442	0.196	0.516	0.249
N	391375	98169	39535	85913	177249

Significance level: *p<0.10; **p<0.05; ***<0.01.

Source: EU-SILC, 2005 and 2009.

Concerning elements of heterogeneity, at the country level, Hungarians were more likely to be owners in 2005 than in 2009 (Table 7).

Since the expansion of ownership did not happen simultaneously across Europe, opposite features deviate from the general trend between ownership and life course dynamics. The most egregious cases are Romania and Lithuania where the housing policies of the 1990s had the effect that the population, 65 or over, were far more likely to be owners than those in the same age group from other countries and also those of the other age groups within the aforementioned two countries (Table 5 and Table 7).

In Greece the odds ratio suggests a narrowing of the housing market over time, since the older cohorts (55 years or over) are roughly 3 times as likely as the 35-to 44-year-old group to be owners. In Cyprus and to some extent in Malta the results show the middle-aged groups have greater propensity for home ownership. The older cohorts still retain the behaviour of a restrictive housing market while the younger cohorts display a similar behaviour to the other European countries (Table 4 and Table 7).

Also in The Netherlands all age groups are less likely to be owners than the 35-to 44-year-old group (Table 6).

Belgium and France are the countries with the smallest native-foreign gap with regard to ownership (Table 4). The odds for Estonia (1.785***) suggest a better access to home ownership by foreigners than by natives must be carefully interpreted (Table 7). In descriptive terms, 4992 natives were interviewed, 4222 owners and 770 non owners and there are 738 foreigners in the sample, 665 owners and 73 non owners. Therefore, 84.58% of natives and 90.11% of foreigners are owners.

With respect to dwelling type, in Malta and due to housing stock characteristics, semi-detached dwellings are more likely than in other countries (Table 7).

With trends following the same direction but with significant variations, differences arise in access to ownership according to dwelling type. In Austria, Denmark, Finland, Germany, Ireland, Netherlands, Poland and Sweden owners

living in detached and semi-detached dwellings are more frequent than in other countries (Table 4, Table 6 and Table 7).

The logistic regressions results confirm that demographic features play an important role in home ownership. Their interaction with residential and economic variables in individual models allows for a better understanding of those similarities and dissimilarities that are present under the apparent European homogeneity.

Table 4. Odds ratios of home ownership by sociodemographic and residential characteristics (logistic regression models), countries in cluster 1, 2005/2009

	Odds (Exp(β))						
Predictor and labels	Belgium	Cyprus	Finland	France	Ireland	Norway	United Kingdom
Year survey							
2009	-	-	1	-	-	1	-
2005	-	-	0.909***	-	-	0.611***	-
Age							
35-44	1	1	1	1	1	1	1
<25	0.138***	0.225***	0.345***	0.121***	0.066***	0.263***	0.168***
25-34	0.654***	0.683***	0.524***	0.493***	0.289***	0.524***	0.66***
45-54	1.317***	1.047**	1.419***	1.497***	1.702***	2.065***	1.528***
55-64	2.148***	1.191***	2.866***	2.839***	3.73***	3.485***	2.692***
65-74	3.896***	0.725**	5.792***	5.173***	6.366***	5.39***	3.78***
>75	3.375***	0.354***	5.506***	5.393***	7.401***	3.207***	3.567***
Citizenship							
Native	1	1	1	1	1	1	1
Foreign	0.636***	0.226***	0.173***	0.655***	0.142***	0.24***	0.327***
Income							
Lower	1	1	1	1	1	1	1
Lower-middle	2.074***	1.554***	2.412***	1.955***	1.33***	5.04***	1.202***
Upper-middle	3.873***	2.899***	5.294***	2.958***	3.135***	14.624***	2.948***
Upper	6.999***	5.33***	9.631***	6.183***	8.512***	24.045***	5.401***
Educational attainment							
Lower than secondary	1	1	1	1	1	1	1
Secondary	1.525***	1.415***	1.32**	1.682***	2.286***		2.405***
Higher than secondary	1.604***	0.997**	2.025***	2.51***	2.473***		3.404***
Dwelling type							
Detached	1	1	1	1	1	1	1
Semi-detached	0.418***	0.425***	0.117***	0.33***	0.268***	0.875	0.278***
Apt. building < 10 dwellings	0.055***	0.235***	0.052***	0.064***	0.028***	0.607***	0.077***
Apt. building 10 > dwellings	0.074***	0.274***	0.067***	0.062***	0.016***	1.495***	0.043***
Dwelling Quality							
Adequate	1	1	1	1	1	1	1
At least one problem	0.59***	0.727***	0.555***	0.504***	0.612***	0.501***	0.607***
Social Environment							
Adequate	-	-	1	-	1	1	-
At least one problem	-	-	0.724***	-	0.692***	0.828***	-
Constant	1.769***	2.908***	3.863***	1.286***	2.354***	1.627***	1.766***
Nagelkerke R Square	0.451	0.269	0.546	0.522	0.443	0.42	0.403
N	10459	6610	20903	20170	10992	11097	18138

Significance level: *p<0.10; **p<0.05; ***<0.01.

Source: EU-SILC, 2005 and 2009.

Table 5. Odds ratios of home ownership by sociodemographic and residential characteristics (logistic regression models), countries in cluster 2, 2005/2009

	Odds (Exp(β))			
Predictor and labels	Bulgaria	Latvia	Romania	Slovenia
Year survey				
2009	-	1	-	1
2005	-	0.518***	-	0.957***
Age				
35-44	1	1	1	1
<25	0.201***	0.479***	0.093***	1.172
25-34	0.382***	0.572***	0.501***	0.638***
45-54	2.885***	1.064	3.185***	2.505***
55-64	4.836***	1.184*	4.474***	5.169***
65-74	4.095***	1.929***	17.975***	5.752***
>75	3.637***	1.717***	8.826***	3.03***
Citizenship				
Native	-	1	1	-
Foreign	-		0.082*	-
Income				
Lower	1	1	-	1
Lower-middle	1.847***	1.575***	-	1.897***
Upper-middle	2.307***	1.835***	-	2.97***
Upper	3.633***	2.981***	-	5.214***
Educational attainment				
Lower than secondary	1	1	-	-
Secondary	1.388***	1.426***	-	-
Higher than secondary	1.319**	1.909***	-	-
Dwelling type				
Detached	1	1	1	1
Semi-detached	0.253***	0.388***	0.099***	0.82
Apt. building < 10 dwellings	0.583*	0.114***	0.137***	0.372***
Apt. building 10 > dwellings	0.481***	0.238***	0.567***	0.472***
Dwelling Quality				
Adequate	-	1	1	1
At least one problem	-	0.443***	0.418***	0.763***
Social Environment				
Adequate	-	-	-	-
At least one problem	-	-	-	-
Constant	1.964***	13.177***	33.944***	1.858***
Nagelkerke R Square	0.164	0.197	0.228	0.183
N	5488	9149	7718	17490

Significance level: *p<0.10; **p<0.05; ***<0.01.

Source: EU-SILC, 2005 and 2009.

Table 6. Odds ratios of home ownership by sociodemographic and residential characteristics (logistic regression models), countries in cluster 3, 2005/2009

	Odds (Exp(β))					
Predictor and labels	Austria	Denmark	Germany	Luxembourg	Netherlands	Sweden
Year survey						
2009	-	-	-	-	1	1
2005	-	-	-	-	0.821***	0.785***
Age						
35-44	1	1	1	1	1	1
<25	0.149***	0.735	0.159***	0.538	0.326***	0.446***
25-34	0.566***	0.903	0.407***	0.816	0.802***	0.803*
45-54	1.301***	1.003	1.429***	1.132*	0.736***	1.015***
55-64	1.482***	1.706***	2.231***	1.348***	0.855***	1.437***
65-74	1.612***	1.882***	2.432***	1.838***	0.714***	1.813***
>75	0.977	1.603***	1.742***	1.968***	0.625***	1.699***
Citizenship						
Native	1	-	-	1	-	1
Foreign	0.365***	-	-	0.289***	-	
Income						
Lower	1	1	1	1	1	1
Lower-middle	1.692***	2.404***	2.054***	2.936***	2.925***	1.742***
Upper-middle	2.276***	4.048***	3.652***	2.718***	7.727***	2.738***
Upper	3.515***	7.828***	6.512***	3.44***	12.609***	4.52***
Educational attainment						
Lower than secondary	1	1	1	-	1	1
Secondary	1.708***	1.737***	1.541***	-	1.662***	1.239**
Higher than secondary	2.441***	1.99***	1.516***	-	2.438***	1.458***
Dwelling type						
Detached	1	1	1	1	1	1
Semi-detached	0.285***	0.085***	0.496***	0.804**	0.105***	0.39***
Apt. building < 10 dwellings	0.063***	0.035***	0.054***	0.086***	0.027***	0.039***
Apt. building 10 > dwellings	0.047***	0.031***	0.037***	0.15***	0.028***	0.071***
Dwelling Quality						
Adequate	1	1	1	1	1	1
At least one problem	0.647***	0.703***	0.533***	0.656***	0.506***	0.651***
Social Environment						
Adequate	-	-	-	-	1	1
At least one problem	-	-	-	-	0.775***	0.651***
Constant	1.907***	2.912***	1.35***	4.756***	5.722***	5.302***
Nagelkerke R Square	0.498	0.6	0.546	0.496	0.45	0.53
N	10806	11040	25148	7771	17971	13202

Significance level: *p<0.10; **p<0.05; ***<0.01.

Source: EU-SILC, 2005 and 2009.

Table 7. Odds ratios of home ownership by sociodemographic and residential characteristics (logistic regression models), countries in cluster 4, 2005/2009

	Odds (Exp(β))					
Predictor and labels	Czech Republic	Estonia	Greece	Hungary	Iceland	Italy
Year survey						
2009	-	-	-	1	1	-
2005	-	-	-	1.245***		-
Age						
35-44	1	1	1	1	1	1
<25	0.302***	0.139***	0.096***	0.298***	0.356***	0.501***
25-34	0.676***	0.407***	0.43***	0.455***	0.594***	0.682***
45-54	1.308***	1.718**	1.773***	1.715***	1.485***	1.27***
55-64	1.932***	1.731***	2.591***	1.725***	2.145***	2.088***
65-74	1.777***	1.851**	3.253***	2.069***	2.758***	2.757***
>75	1.303***	1.6*	2.988***	1.314***	3.758***	2.988***
Citizenship						
Native	1	1	1	1	1	1
Foreign	0.192***	1.785***	0.083***	0.303***	0.241***	0.158***
Income						
Lower	1	1	1	1	1	1
Lower-middle	1.438***	1.828***	1.188*	1.288***	2.935***	1.521***
Upper-middle	2.101***	2.616***	1.558***	1.939***	5.486***	2.312***
Upper	2.729***	5.382***	2.451***	2.466***	9.115***	3.38***
Educational attainment						
Lower than secondary	1	-	-	1	1	1
Secondary	1.678***	-	-	1.345***	1.123	1.361***
Higher than secondary	1.874***	-	-	1.343***	1.555***	1.411***
Dwelling type						
Detached	1	-	1	1	1	1
Semi-detached	0.614***	-	0.428***	0.275***	0.912	0.578***
Apt. building < 10 dwellings	0.107***	-	0.243***	0.197***	0.652***	0.362***
Apt. building 10 > dwellings	0.182***	-	0.249***	0.267***	0.671***	0.373***
Dwelling Quality						
Adequate	1	1	1	1	1	1
At least one problem	0.498***	0.681***	0.767***	0.577***		0.693***
Social Environment						
Adequate	-	-	-	1	1	1
At least one problem	-	-	-	0.773***		
Constant	3.398***	2.761***	3.734***	7.816***	2.287***	2.118***
Nagelkerke R Square	0.251	0.143	0.334	0.181	0.225	0.191
N	14151	5707	12447	16685	5599	39711

Significance level: *p<0.10; **p<0.05; ***<0.01.

Source: EU-SILC, 2005 and 2009.

Table 7.1. Odds ratios of home ownership by sociodemographic and residential characteristics (logistic regression models), countries in cluster 4, 2005/2009 (cont.)

	Odds (Exp(β))					
Predictor and labels	Lithuania	Malta	Poland	Portugal	Slovakia	Spain
Year survey						
2009	1	-	1	-	1	-
2005	0.679***	-	0.612***	-	0.418***	-
Age						
35-44	1	1	1	1	1	1
<25	0.326***	0.305***	0.377***	0.196***	0.125***	0.269***
25-34	0.576***	0.656**	0.743***	0.513***	0.517***	0.661***
45-54	3.467***	0.763***	1.095**	1.129	1.65***	1.247***
55-64	4.94***	0.504***	1.135***	1.319**	3.015***	1.932***
65-74	11.516***	0.512***	1.276***	1.265***	3.02***	2.487***
>75	4.856***	0.417***	1.375***	1.162**	1.598***	2.1***
Citizenship						
Native	-	1	-	1	-	1
Foreign	-	0.198***	-	0.279***	-	0.137***
Income						
Lower	1	1	1	1	1	1
Lower-middle	1.759***	1.324***	1.149***	1.087	2.234***	1.576***
Upper-middle	2.578***	1.827***	1.225***	1.555***	2.717***	2.258***
Upper	4.54***	2.602***	1.525***	3.135***	3.038***	3.424***
Educational attainment						
Lower than secondary	-	1	1	-	1	-
Secondary	-	1.505***	0.982	-	2.526***	-
Higher than secondary	-	1.996***	1.371***	-	3.079***	-
Dwelling type						
Detached	1	1	1	1	1	1
Semi-detached	0.346***	1.07	0.598***	0.502***	0.826	0.971
Apt. building < 10 dwellings	0.525***	0.501***	0.059***	0.35***	0.464***	0.472***
Apt. building 10 > dwellings	0.584***	0.297***	0.031***	0.702***	0.424***	0.822***
Dwelling Quality						
Adequate	1	1	1	1	1	1
At least one problem	0.705***	0.517***	0.658***	0.381***	0.804***	0.573***
Social Environment						
Adequate	-	-	-	1	-	-
At least one problem	-	-	-	0.725***	-	-
Constant	6.23***	4.939***	14.854***	4.567***	2.212***	3.558***
Nagelkerke R Square	0.215	0.155	0.49	0.174	0.192	0.172
N	9500	3524	28329	9520	10339	25748

Significance level: *p<0.10; **p<0.05; ***<0.01.

Source: EU-SILC, 2005 and 2009.

Conclusions

The results respond affirmatively to the research hypothesis concerning housing patterns raised in this study. European countries share simultaneously similarities and diversities, which can be identified by a two-level approach.

For the homogeneous patterns, Europeans are more likely to own dwellings with appropriate quality standards in an adequate social environment. The profile of a typical European home owner is 34 years old or over, having a high income and being native to his country.

The macro level analysis identified four homogeneous groups that give to Europe a particular configuration: a north-western group formed by clusters with low and medium-low home ownership rates (3 and 1) and a south-eastern group composed of clusters with high and medium-high home ownership rates (2 and 4). Still these four clusters have distinct differences between them that cannot be explained by geographical reasons only.

In clusters with low and medium-low home ownership rates (3 and 1) to 'be owner' is a matter of the temporal and economic evolution of the household. Due to housing stock characteristics and due to a dynamic rental market, detached and semi-detached dwellings are the owner's first choice.

In clusters with high and medium-high home ownership rates (2 and 4), this tenure status is so widespread that its explanation requires information that is difficult to measure, such as the effect of public policies (high home ownership group) or family support in the provision of housing (most countries in the medium-high home ownership group). Consequently, in the access to home ownership, these features play an important role, diluting the importance of income, educational attainment and, in the medium-high home ownership group (4), also dwelling type.

In the emergence of new convergence patterns the most interesting one is the medium-high home ownership group (4), gathering southern and eastern

European countries. In the last twenty years, public policies in these countries encouraged home ownership as a means to ensure social stability, although with different approaches and objectives. Even though housing patterns in southern and eastern countries are relatively close, these countries are heterogeneous in relation to other features. Thus, it remains justified to study them as two separate blocks, yet is no less important to monitor this group to observe if they consolidate as one or take different directions in the future.

Due to historical differences in housing markets, cohort effects turned age into a major element of heterogeneity. Therefore, to perform a comparative analysis it is essential to disentangle age-period-cohort effects.

The uncertainty of the present and near future context regarding macroeconomic developments hinders any anticipation of the future dynamics of convergence and divergence.

Even though the globalized world brings about a trend that favours convergence, two questions are becoming increasingly relevant with regard to housing patterns. First, will time favour the coexistence of European subgroups with less significant differences or even fewer subgroups? Second, will time effect consolidate a two-dimension Europe demarcated by a curved line separating north-west and south-east?

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Appendix 1

Table A1. Home ownership rates, European Union, 2009

	Home ownership rates (%)
EU	**75.58**
Cluster 1	**72.43**
Belgium	68.70
Cyprus	69.73
Finland	76.45
France	63.67
Ireland	78.06
Norway	83.83
United Kingdom	71.54
Cluster 2	**88.30**
Bulgaria	86.72
Latvia	85.89
Romania	97.21
Slovenia	83.35
Cluster 3	**62.51**
Austria	54.07
Denmark	72.47
Germany	50.73
Luxembourg	65.83
Netherlands	71.02
Sweden	68.76
Cluster 4	**79.55**
Czech Republic	75.88
Estonia	86.42
Greece	75.92
Hungary	88.41
Iceland	85.46
Italy	76.11
Lithuania	94.52
Malta	74.92
Poland	68.52
Portugal	75.83
Slovak Republic	89.56
Spain	82.75

Source: EU-SILC, 2009.