

Building a typology of housing systems to inform policies in OECD and EU member States

Christophe André* and Thomas Chalaux*

Abstract – This article establishes a typology of housing systems in OECD and EU countries, using principal component and cluster analysis on housing market context and housing conditions variables from the new OECD *Affordable Housing Database (AHD)*, as well as data on household indebtedness. We identify four groups among a sample of 25 countries, subsequently extended to 32, as countries for which a more limited set of information is available are added to the baseline analysis. A group named “Northern”, as it covers mainly Northern Europe, including Germany, features extended private rental and generally high household debt. A “Western” group, which includes France and the United Kingdom, has higher homeownership rates and more social housing. “Southern-Central” and “Eastern” groups gather European countries, where outright homeownership is prevalent, but housing conditions are poorer. Both the country coverage and the set of variables considered in this article are wider than in most previous studies and findings are broadly consistent with the comparative housing literature for the countries with overlapping coverage.

JEL Classification: C38, I38, R28, R38

Keywords: housing, cluster analysis, principal components, government policy

Reminder:

The opinions and analyses in this article are those of the author(s) and do not necessarily reflect their institution's or Insee's views.

* Organisation for Economic Co-operation and Development (OECD), Economics Department (christophe.andre@oecd.org; thomas.chaloux@oecd.org).

The views expressed in this article are those of the authors and do not necessarily reflect the official views of the OECD or its member countries. The authors would like to thank Alice Pittini, Anne-Laure Samson and two anonymous referees for useful comments and suggestions.

Received on 24 June 2017, accepted after revisions on 26 February 2018

To cite this article: André, C. & Chalaux, T. (2018). Building a typology of housing systems to inform policies in OECD and EU member States. *Economie et Statistique / Economics and Statistics*, 500-501-502, 13–36. <https://doi.org/10.24187/ecostat.2018.500t.1943>

Housing is a basic need and is recognised as a human right in many national constitutions and international declarations, including the Universal Declaration of Human Rights and the Charter of Fundamental Rights of the European Union. Access to good-quality affordable housing is essential for achieving broader social policy objectives, such as reducing poverty and enhancing equality of opportunity, social inclusion and mobility, as well as health and well-being. Nevertheless, a significant number of households in OECD and EU countries still face a housing cost overburden, live in overcrowded dwellings or are even homeless. Global trends in urbanisation, rising housing prices and higher income inequality tend to exacerbate housing difficulties. Weak income growth, high unemployment and public spending cuts have further worsened the situation of the most vulnerable over recent years in many countries, where restoring access to good-quality affordable housing for all is a major challenge for policymakers.

Against this background, the OECD has developed the *Affordable Housing Database (AHD)*, which brings together cross-national information from OECD and EU member states on housing market context, housing conditions, and public policies, to help governments monitor access to good-quality affordable housing and strengthen the knowledge base for policy evaluation. The effectiveness and efficiency of housing policy measures depends on the context in which they are implemented and on interactions with broader social and economic structures and policies. Hence, assessing the outcomes and potential impact of housing policies requires a system-level approach. Housing systems vary widely across OECD and EU countries, making international comparisons and benchmarking challenging. Identifying groups of countries with broadly similar housing systems allows both assessing the relative performance of different systems in terms of housing outcomes and comparing countries with their most relevant peers. In this article, we derive from the information included in the *AHD* a typology of housing systems based on housing market features and conditions indicators, using principal component analysis (PCA) and cluster analysis. This approach allows us to get a comprehensive picture of housing outcomes across countries and to understand how different housing indicators relate to each other.

Our baseline analysis covers 25 countries and 34 variables. Seven countries, for which

fewer variables are available, are subsequently added to the analysis. Four groups of countries are identified: two groups include the most advanced OECD economies, where inhabitants benefit from relatively good housing conditions in general, even if some population segments are facing difficulties in accessing decent and affordable housing. The two groups are mainly differentiated by tenure structure and level of household indebtedness. The first, which includes most of Northern Europe (in particular Germany), as well as the United States and Switzerland, is characterised by a large share of owners with mortgages, high household debt levels and a relatively high proportion of private sector tenants. The second, which includes much of the western part of continental Europe (especially France), along with Ireland and the United Kingdom, is characterised by larger shares of outright owners and social sector tenants. The two remaining groups enjoy less favourable housing conditions. One, with intermediate housing conditions includes part of Southern and Central and Eastern Europe (CEE), while the group with the most unfavourable housing conditions is exclusively made up of CEE countries.

While quantitative information on housing market context, housing conditions and household indebtedness is available for most countries in the database, variable definitions often differ across countries and information on policies is often qualitative and patchy, which restrains the scope for systematic data analysis. Nevertheless, examining the information on policies within and across the country groups previously determined allows us to identify some similarities and differences in housing policies.

The rest of the article is organised as follows: the next section briefly reviews the literature on housing systems; the third section describes the new OECD *Affordable Housing Database*; the fourth section derives the typology of housing systems through PCA and cluster analysis and describes the main characteristics of the groups of countries obtained in terms of housing outcomes and policies; the fifth section discusses the results and concludes.

Housing systems: a brief review of the literature

This article is essentially an empirical study aimed at establishing a typology of OECD and

EU housing systems to inform policy decisions. Nevertheless, theories can shed light on the forces which have shaped housing systems and provide insights into the way they might evolve in the future. A major divide in the field of comparative housing research is between convergence and divergence theories. Convergence theories assume that countries tend to go through a similar development process and that differences in housing systems mostly reflect different stages of economic development (Donnison, 1967; Donnison & Ungerson, 1982). While industrialisation, urbanisation and the development of the welfare state enhanced the role of the government in housing and led to the emergence of a large social rental sector in many industrialised countries, post-industrial societies are generally expected to converge towards a model of dominant homeownership, with a residual social rental sector (Harloe, 1995). Nevertheless, and despite the impact of global factors (e.g. urbanisation, downward trend in interest rates, deregulation of mortgage markets and pressure on public finances) on housing markets, country specificities remain marked (Steinmetz, 2015). Divergence theories point to the role of social structures and ideological choices in shaping housing systems (Kemeny & Lowe, 1998; Van der Heijden, 2013 and references therein) and, since the 1990s, have fostered research on typologies of housing systems (Hoekstra, 2010).

Two divergence theories have been particularly influential: the welfare state regime theory of Esping-Andersen (1990) and the theory of rental systems of Kemeny (1992, 1995). Esping-Andersen distinguishes three ideal typical welfare state regimes: the liberal regime, with strong reliance on markets and limited state intervention (mainly confined to a social safety net), the social-democratic regime characterised by universal high-quality public services, and the corporatist regime, with relatively high government involvement in welfare provision (but not on an universal basis) and an important role played by the family and non-profit organisations. Examples of liberal regimes include the United States and the United Kingdom, socio-democratic regimes include the Nordic countries and corporatist regimes include France and Germany. Importantly, Esping-Andersen's typology is based on social security and pensions, health and education, but not housing, which is often considered as the “wobbly pillar” of the welfare state (Torgensen, 1987),

as for the majority of households it is provided through the market. Nevertheless, Esping-Andersen's typology has become a common reference in comparative housing research (Hoekstra, 2010; Van der Heijden, 2013). Kemeny distinguishes between integrated rental systems, where market and social rental housing compete with each other and are subject to similar regulations, and dual rental systems, where market and social segments are strictly separated, with the latter essentially catering to low-income households. Dual systems characterise Anglo-Saxon countries, but are also found in Belgium, Finland, Italy and Norway. Integrated systems include Austria, Denmark, France, Germany, the Netherlands, Sweden and Switzerland (Kemeny, 2006). Kemeny assumes that where policies encourage homeownership, the cost of buying houses will restrain possibilities of raising taxes to finance welfare. He therefore posits a negative relationship between homeownership and public welfare (Kemeny, 2005)¹. It is often assumed that the ideological and power structures shaping welfare systems would lead to similar distributional outcomes in housing and other areas of welfare. However, the housing system may either reinforce or counteract the influence of the welfare system (Stephens & Fitzpatrick, 2007) and there are serious difficulties in applying Esping-Andersen's and Kemeny's frameworks in comparative housing research, not least because systems have evolved since these typologies were established and their geographical coverage is limited (Stephens, 2016).

The typologies of Esping-Andersen and Kemeny have only seldom been confronted to housing data. Hoekstra (2003) translates the welfare state typology into housing market features and finds that Esping-Andersen's typology applies well to the Netherlands in the 1980s, but less so in the 1990s, as changes in housing policies have not matched the evolution of the welfare system between the two periods. Hoekstra (2005) extends the analysis to 12 EU countries, adding a Mediterranean group to Esping-Andersen's typology. He performs a cluster analysis, based on six variables related to tenure and housing type and quality. He finds only two clusters, of which one contains the Mediterranean countries

1. *Asset-based welfare, which assumes that households could take responsibility for their welfare (especially during retirement) by building up assets, rather than relying on state transfers, has also been widely discussed in the literature and policy circles (Doling & Ronald, 2010).*

and the second all the others, pointing to limited differences between the three original welfare regimes on the housing variables included in the analysis. Castles (1998) tested Kemeny's hypothesis of a negative relationship between homeownership and public welfare on 20 OECD countries. He found a negative correlation between the homeownership rate and various measures of public welfare, albeit somewhat weaker in 1990 than in 1960 (Kemeny, 2005). Hoekstra (2009) assesses Kemeny's typology against data on tenure distribution, housing quality, income distribution of tenants and rent levels from the European Community Household Panel (ECHP) for Belgium, Ireland and the United Kingdom (assumed to be representative of dual rental systems) and Austria, Denmark and the Netherlands (assumed to be representative of integrated rental systems)². He finds reasonable support for Kemeny's typology, even though there are signs of convergence between the two rental systems.

Dewilde (2017) investigates whether housing regimes across 15 Western-European countries can be characterised by their outcomes for low-income young and elderly people. Using ECHP data, she performs two cluster analyses, respectively for 1995 and 2012. Even though the 2012 analysis contains three more countries than the 1995 one, there are only relatively small differences between the two. In 2012, four groups of countries are identified: unitary rental market countries with high mortgage debt and a large affordable rental stock (Denmark, Netherlands, Norway, Sweden); countries with a dual rental market, but a fairly large affordable housing stock and moderate mortgage debt (Austria, Finland, Germany, United Kingdom); traditional mortgage-based homeownership countries with state support for ownership (Belgium, France, Ireland, Portugal, Spain); Mediterranean countries with high outright homeownership (Greece, Italy). Dewilde and De Decker (2016) extend the analysis to the evolution of housing outcome inequalities. They find that in countries with highly "commodified" housing regimes low income households experience more affordability problems but better housing conditions and that over time affordability has declined for low-income households and tenants in the private rental sector relative to middle-income households in Western Europe, a trend which can be explained by increased "financialisation" of housing and declining supply of private rental housing³.

The new OECD *Affordable Housing Database*

Across the OECD, low-income households are increasingly struggling with high housing costs and poor housing quality, in terms of living space available, adequacy of sanitary conditions and neighbourhood quality (Salvi del Pero *et al.*, 2016). Therefore, the OECD was mandated by its member countries to develop new tools to assess the effectiveness and efficiency of different approaches to affordable housing. The first phase of the project identified the main challenges households are facing to access good-quality affordable housing, the main housing policy instruments put in place by OECD countries and the degree to which they overlap with social policies. In a second phase, the OECD developed, with support from the European Commission, a new on-line database, the OECD *Affordable Housing Database (AHD)*, which was released in early 2017⁴. This new tool aims at helping countries measure access to good quality affordable housing and at strengthening the knowledge base needed for policy evaluation, by providing cross-country comparable indicators on housing outcomes and housing policy practices. The *AHD* includes 39 OECD and EU countries, but in many cases the information is incomplete. Limited data coverage is a particular issue for non-European countries, which restricts the possibilities for comparative analysis across continents. While the use of broad policy instruments is documented for most countries, details of policies, which are essential to ensure comparability, are often only available for a limited set of countries. Hence, different country samples are used in this paper, according to data availability (see Box).

Information in the *AHD* was drawn from different OECD sources, other readily available international and national databases, and, for some topics, a specific questionnaire.

2. Hoekstra (2009) does not include France in the analysis. France would belong to the dual rental system, with a clear distinction between social housing and the private rental market.

3. There is no obvious single definition of commodification in housing (Doling, 1999; Dewilde & De Decker, 2016). A possible characterisation of "commodified" housing is a regime where housing is mainly allocated through the market and access is related to ability to pay. "Financialisation" refers to the increased dependence of housing markets on globalised financial markets through mortgage finance (Aalbers, 2008).

4. <http://www.oecd.org/social/affordable-housing-database.htm>. This webpage contains information about data sources, cross-country comparability, and, where relevant, raw data or descriptive information. This is particularly important as data collected at the national level may rely on definitions that are not harmonised across countries.

Box – Coverage of the OECD Affordable Housing Database and samples in the analyses

The OECD *Affordable Housing Database* includes 39 countries. However, for some the information is sparse. Hence, various samples are used across this paper, reflecting data availability and trade-offs between

the number of countries included in the analyses and the richness of the set of variables taken into account. Table A summarises the samples used in figures, tables and statistical analyses.

Table A

Country	ISO code	Housing tenure (Fig. I)	Tenant housing cost burden (Fig. II-A)	Over-crowding rate (Fig. II-B)	Policy indicators (Fig. III, IV)	Baseline sample (Fig. V, VI, VII; Tab. 1-A, 2)	Extended sample (Fig. VIII; Tab. 1 B)	Sample with good housing conditions and policy coverage (Tab. 3)	Housing allowances (Tab. 4)
Australia	AUS	X	X		X				X
Austria	AUT	X	X	X	X	X	X	X	X
Belgium	BEL	X	X	X		X	X		X
Bulgaria	BUL	X	X	X	X				X
Canada	CAN	X	X		X				
Chile	CHL	X	X	X	X		X		X
Croatia	CRO	X	X	X	X		X		X
Cyprus ^(a)	CYP	X	X	X	X		X		X
Czech Republic	CZE	X	X	X	X	X	X	X	X
Denmark	DNK	X	X	X		X	X		X
Estonia	EST	X	X	X	X	X	X	X	X
Finland	FIN	X	X	X	X	X	X	X	X
France	FRA	X	X	X	X	X	X	X	X
Germany	DEU	X	X	X	X	X	X	X	X
Greece	GRC	X	X	X	X	X	X	X	X
Hungary	HUN	X	X	X	X	X	X	X	X
Iceland	ISL	X	X	X		X	X		X
Ireland	IRL	X	X	X		X	X	X	X
Italy	ITA	X	X	X	X	X	X		X
Japan	JPN		X	X	X				X
Korea	KOR	X		X	X				X
Latvia	LVA	X	X	X	X	X	X	X	X
Lithuania	LTU	X	X	X	X		X		X
Luxembourg	LUX	X	X	X	X		X		X
Malta	MLT	X	X	X	X		X		X
Mexico	MEX	X	X	X	X		X		
Netherlands	NLD	X	X	X	X	X	X	X	X
New Zealand	NZL				X				X
Norway	NOR	X	X	X	X	X	X	X	X
Poland	POL	X	X	X	X	X	X	X	X
Portugal	PRT	X	X	X	X	X	X	X	X
Romania	ROM	X			X				X
Slovak Republic	SVK	X	X	X	X	X	X	X	X
Slovenia	SVN	X	X	X	X	X	X	X	X
Spain	ESP	X	X	X	X	X	X	X	X
Sweden	SWE	X	X	X	X	X	X	X	X
Switzerland	CHE	X	X	X	X	X	X	X	X
United Kingdom	GBR	X	X	X	X	X	X	X	X
United States	USA	X	X	X	X	X	X	X	X
Number of countries		37	36	35	35	25	32	21	37

(a) Cyprus refers to the area under the effective control of the Government of the Republic of Cyprus, i.e. the southern part of the island. Sources: OECD, *Affordable Housing Database (AHD)*.

More precisely, data were extracted from the OECD National Accounts Database, the Housing Prices Database, the Social Expenditure Database (SOCX) and Tax-Benefit models. In addition, indicators on housing tenure, affordability and quality were derived from micro-data available from the European Union *Statistics on Income and Living Conditions* survey (*EU-SILC*) and national-level household surveys. Finally, indicators on housing policy instruments and related levels of public support, as well as on homelessness, were developed using both quantitative and qualitative information collected through a questionnaire submitted to ministry officials and experts in all OECD member countries, as well as Bulgaria, Croatia, Cyprus⁵, Lithuania, Malta and Romania⁶. Thirty-five countries answered the questionnaire, at least partially.

The *AHD* includes indicators covering three main dimensions: housing market context; housing conditions; and public policies towards affordable housing. The first part includes data on the total housing stock, the number of dwellings per thousand inhabitants, the distribution of housing in urban versus rural areas, the share of vacant homes and residential construction, for selected years (2000, 2010, 2013 and 2015 or latest year available). Housing prices, rents and price-to-income ratios are available, but only in the form of indices, not actual levels. The distribution of households across tenures is also available (Figure I), even though differences in definitions limit the data comparability across countries, notably with respect to rental. In particular, there are great differences in the extent private rental dwellings are allocated through market forces (Crook & Kemp, 2014). In countries with integrated rental systems and a large housing stock owned by housing associations, like Denmark and the Netherlands, all tenants are classified as renting in the private sector, because the data from *EU-SILC* do not allow a distinction by type of tenant. Similarly, the large Swedish stock of municipal rental housing is not classified as social housing, as it is generally allocated on the basis of waiting lists rather than according to needs-related criteria, even though it plays an important role in housing low-income households (Pittini & Laino, 2012). Regulations and the dominance of non-profit landlords in these integrated rental systems tend to lower rent levels and increase security of tenure compared to markets dominated by private providers. Data by

income quintiles are also included in the database. Finally, household structure and living arrangements across different age groups are described. Given the scope of this article, in particular its cross-sectional approach, and data availability and comparability, we only use, from this part of the *AHD*, data on tenure and the percentage of 15-29 year-olds living with their parents.

Data from the second part of the *AHD* look at living conditions in terms of affordability, quality of dwellings and housing exclusion. Affordability is measured by the housing cost burden (relative to income) and housing overburden rates (share of households spending more than 40% of their income on housing) for different types of households. Figure II shows a high housing cost burden for tenants in the bottom quintile of the income distribution, as well as high overcrowding rates for the same category of households in many countries. Household debt-to-income ratios derived from the OECD National Accounts Database complement housing cost measures, which for homeowners are affected by differences in mortgage repayment structures⁷. Indicators of housing quality in the *AHD* include dwellings physical characteristics, amenities (e.g. flushing toilet), living space available (e.g. number of rooms) and housing deprivation⁸. These measures help identify the incidence of the poorest housing conditions, but more indicators would be needed to compare housing quality more widely in advanced economies, for example along the dimensions of building quality and maintenance, energy efficiency, noise insulation, neighbourhood quality and distance to public amenities. Housing affordability and quality indicators require not only detailed information regarding the dwelling but also household income and composition (such as the age and number of household members). These indicators were found in household surveys: *EU-SILC* for European countries, except Germany, where a national survey is used, as for non-European

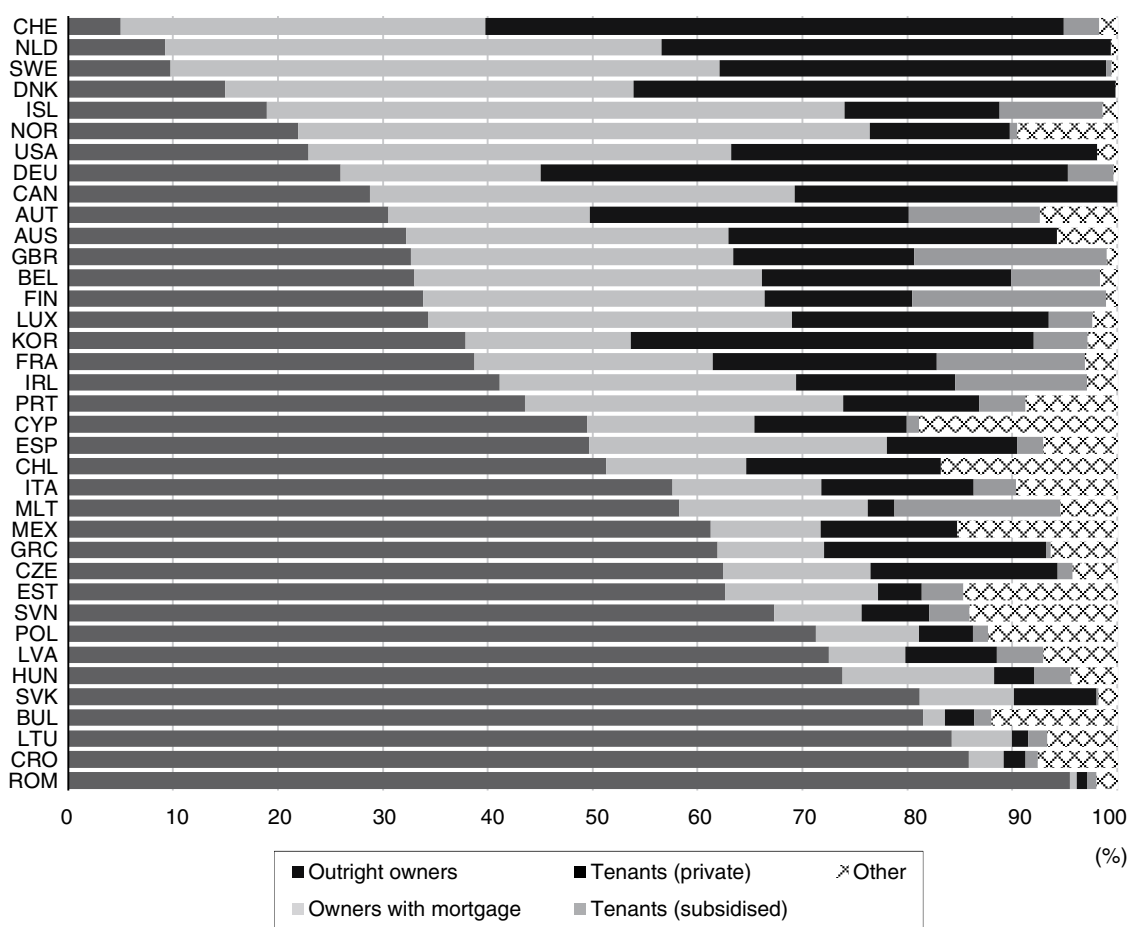
5. In this article, Cyprus refers to the area under the effective control of the Government of the Republic of Cyprus, i.e. the southern part of the island.

6. The European Commission Social Policy Committee sub-group on indicators (ISG) also helped to collect information for non-OECD members of the European Union.

7. The data refer to total household debt rather than mortgage debt. However, the latter accounts on average for about two-thirds of household liabilities in OECD countries.

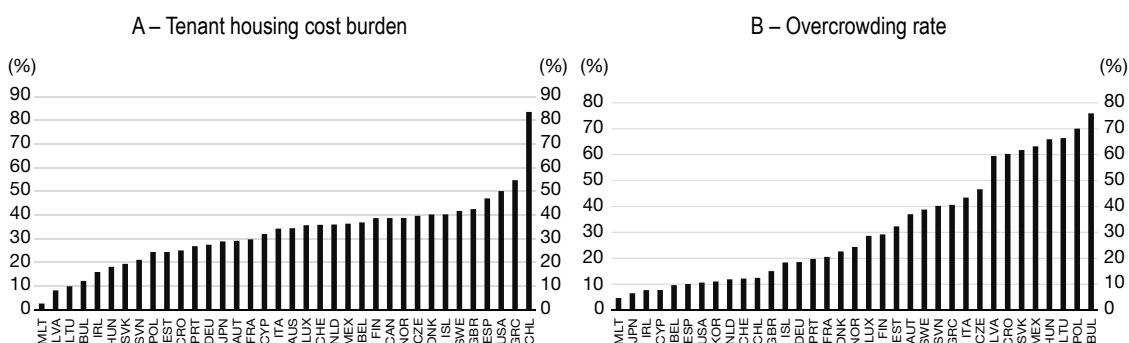
8. Housing deprivation occurs if the dwelling: has a leaking roof, damp walls, floors or foundation, or rot in window frames or floor; has neither a bath nor a shower; has no flushing toilet for exclusive use of the household; is considered too dark.

Figure I
Housing tenure distribution, 2014 or latest year available



Note: OECD calculations based on European Survey on Income and Living Conditions (*EU-SILC*) and national surveys. In countries with integrated rental systems and a large housing stock owned by housing associations, like Denmark and the Netherlands, all tenants are classified as renting in the private sector, because the data from *EU-SILC* do not allow a distinction by type of tenant. Similarly, the large Swedish stock of municipal rental housing is not classified as social housing. For details, see <http://www.oecd.org/social/affordable-housing-database.htm>.
Reading note: In Switzerland, the housing tenure distribution is 5% of outright owners, 35% of owners with mortgage, 55% of private tenants, 3% of subsidised tenants and 2% of other categories.
Coverage: 37 countries (cf. Box).
Sources: OECD, *Affordable Housing Database (AHD)*.

Figure II
Housing costs and overcrowding rate of low-income households



Note: The housing cost burden refers to the median rent burden as a share of disposable income in the bottom quintile of the income distribution. The overcrowding rate refers to the share of overcrowded tenant households in the bottom quintile of the income distribution. OECD calculations based on European Survey on Income and Living Conditions (*EU-SILC*) and national surveys. For details, see <http://www.oecd.org/social/affordable-housing-database.htm>.
Coverage: 36 and 35 countries for panel A and B respectively (cf. Box).
Sources: OECD, *Affordable Housing Database (AHD)*.

countries⁹. The percentage of homeless people is available for some countries, but definitions of homelessness vary widely across countries, making international comparisons difficult.

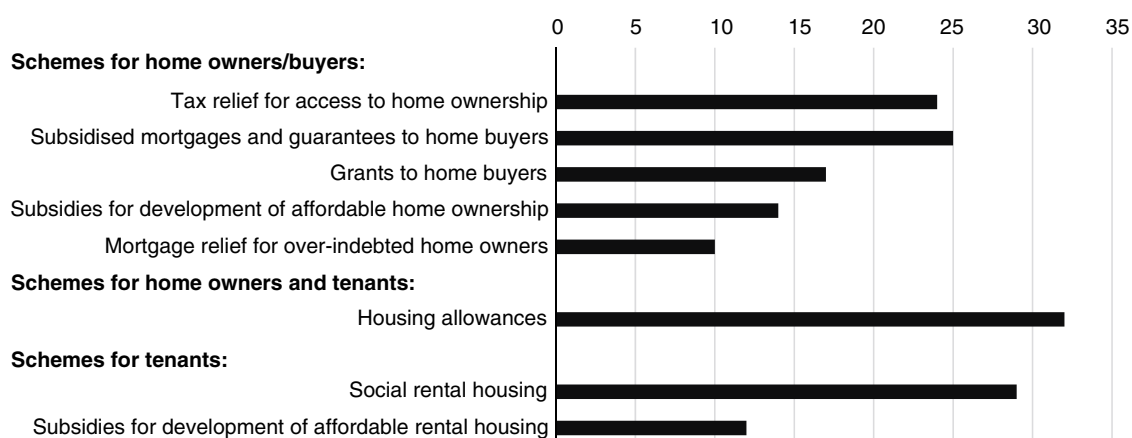
The third part of the *AHD* gives an overview of policy measures that directly support access to affordable housing. The policy indicators are based on the country expert responses to the 2016 OECD Questionnaire on Social and Affordable Housing (QuASH). They contain a wide range of information on policy measures and details of national schemes, different types of support for homeowners, housing allowances eligibility criteria and payment rates, social housing stock and new construction, and agencies and governance of the social housing sector. Figure III provides an overview of the use of housing policy instruments across countries. Most countries have housing allowances, as well as social rental housing. In addition, many support homeownership, in particular through tax advantages.

Policy instruments may either be complements or substitutes. For example, housing allowances to tenants in the private rental sector and social housing can, to some extent, be seen as substitutes. Since the 1980s, governments in many OECD countries have favoured housing allowances over social housing, in particular to lower capital costs, enhance equality in access to housing and reduce disincentives to housing mobility. Mortgage relief schemes and instruments encouraging borrowing for homeownership, like mortgage interest deductibility or subsidised mortgages, can be complements, as higher indebtedness generates vulnerability

of households to economic shocks, increasing the relevance of relief schemes. To investigate associations between housing policy instruments, we perform a multiple correspondence analysis (MCA) on the eight binary indicators showing the presence or absence of specific policies in each country (Figure IV). The correlations between the factors obtained and the principal components derived from housing market features and housing condition indicators will be subsequently examined to assess relationships between housing policies and outcomes. The first factor, which explains nearly 30% of the variance of the dataset, is associated with the variety of policy instruments used. Countries using the most policy instruments feature on the left side of the axis, while those using few instruments stand on the right side. The second factor, which explains about 18% of the variance, is more difficult to interpret. The top part is associated with the presence of mortgage relief for over-indebted homeowners and the absence of subsidies for the development of affordable homeownership and of subsidised mortgages and guarantees to homebuyers. The bottom part is associated with the absence of social housing, tax relief for access to homeownership and mortgage relief for over-indebted homeowners, as well as with the presence of subsidies for the development of affordable homeownership. Hence, the countries at the upper end of the chart tend to provide tax relief and a safety net to homeowners, but no subsidies. Those at the bottom

9. For details, see <http://www.oecd.org/social/affordable-housing-database.htm>; Dewilde (2015) provides a useful assessment of strengths and weaknesses of EU-SILC data for housing research.

Figure III
Overview of housing policy instruments. Number of reporting countries adopting each policy type



Sources: OECD, *Affordable Housing Database (AHD)*.

end tend to be characterised by the absence of social housing, but use subsidies to promote affordable homeownership. Altogether, associations between housing policy instruments do not show clear patterns.

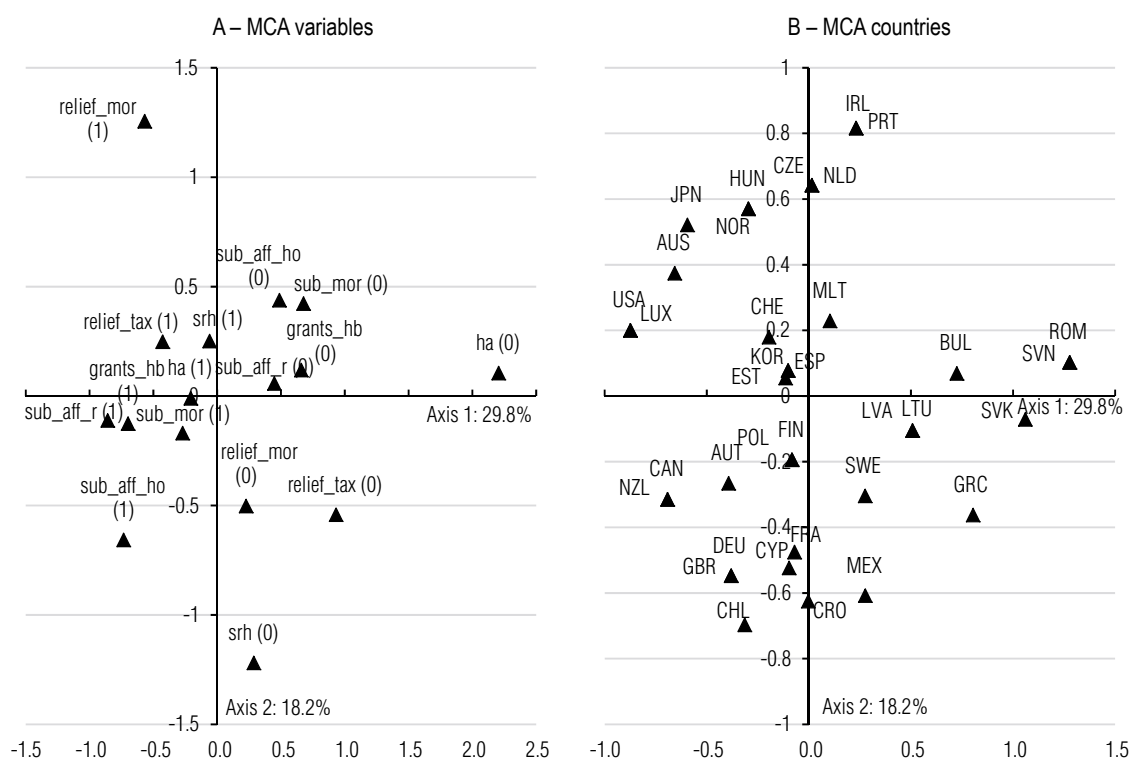
A limitation of this analysis is that it only uses binary variables, which account for the availability of instruments, but not for the intensity of their use and differences in design across countries. Unfortunately, the country coverage of quantitative indicators is too narrow to allow a systematic analysis of correlations. In many countries, the data currently available do not allow a reliable evaluation of the share of public spending directed towards different policies. While information on some instruments, like housing allowances, covers a large sample of countries, other data, like spending on

social housing, are patchy. Another reason for the lack of clear pattern in the policy mix may be the presence of overlapping policy instruments, notably linked to path dependency and the persistence of old instruments when new ones are introduced.

A typology of housing systems

To reveal the main features of housing systems, a PCA is performed on variables representing housing market context, housing conditions and household indebtedness. To avoid scale-related distortions, the variables are standardised to zero mean and unit variance. Next, cluster analysis is used to group countries with similar profiles. Finally, in order to shed light

Figure IV
Multiple correspondence analysis on policy instruments



Description of variables	Label
Grants to homebuyers	grants_hb
Subsidised mortgages and guarantees to homebuyers	sub_mor
Mortgage relief for over-indebted homeowners	relief_mor
Tax relief for access to homeownership	relief_tax
Subsidies for development of affordable homeownership	sub_aff_ho
Housing allowances	ha
Social rental housing	srh
Subsidies for development of affordable rental housing (other than social housing)	sub_aff_r

Reading note: (0) and (1) refer to the absence/existence of the policy in the country. For example, ha(0) means that housing allowances are absent. The percentage indicated on each axis refers to the percentage of variance explained by the axis.

Coverage: 35 countries (cf. Box).

Sources: OECD, *Affordable Housing Database (AHD)*; authors' calculations.

on the main characteristics of housing systems, we test for differences in the means of the indicators included in the analysis across country groups. We also look at the values of policy indicators across country groups, albeit in a less systematic way, as the information is less comprehensive than for the variables included in the PCA. Our baseline analysis includes 25 countries, for which 34 variables, covering the most important characteristics of a housing system, are available. Further analysis, based on a narrower set of variables, allows us to assign, albeit more tentatively, seven countries to the groups identified in our baseline analysis. Seven of the 39 countries included in the *AHD* are discarded, as data are too patchy to allow meaningful analysis (cf. Box).

The PCA reveals a very strong first principal component (horizontal axis), which explains nearly 60% of the variance of the dataset and opposes high outright homeownership, but with relatively poor housing conditions, to more indebtedness and private rental, but with overall better housing conditions. The correlation circle (Figure V) shows that most variables are strongly correlated with the axis.

On the right side of the axis, we find high overcrowding and deprivation rates, a high proportion of youth living with their parents, as well as a high share of outright owners, even in the bottom part of the income distribution. On the left side of the axis, dwellings have more rooms, a large share of households are owners with mortgages – often with large debt – or tenants in the private rental sector – often with a high housing cost burden. The second principal component (vertical axis) explains slightly less than 10% of the overall variance. It essentially differentiates countries where low income households are mainly housed in the private rental sector from those where a substantial share of low income households is housed in social rental housing. Unsurprisingly, a high share of low-income households lodged in the private rental sector tends to be associated with higher overcrowding rates. Other principal components explain too small a share of the variance to yield significant insights into the analysis.

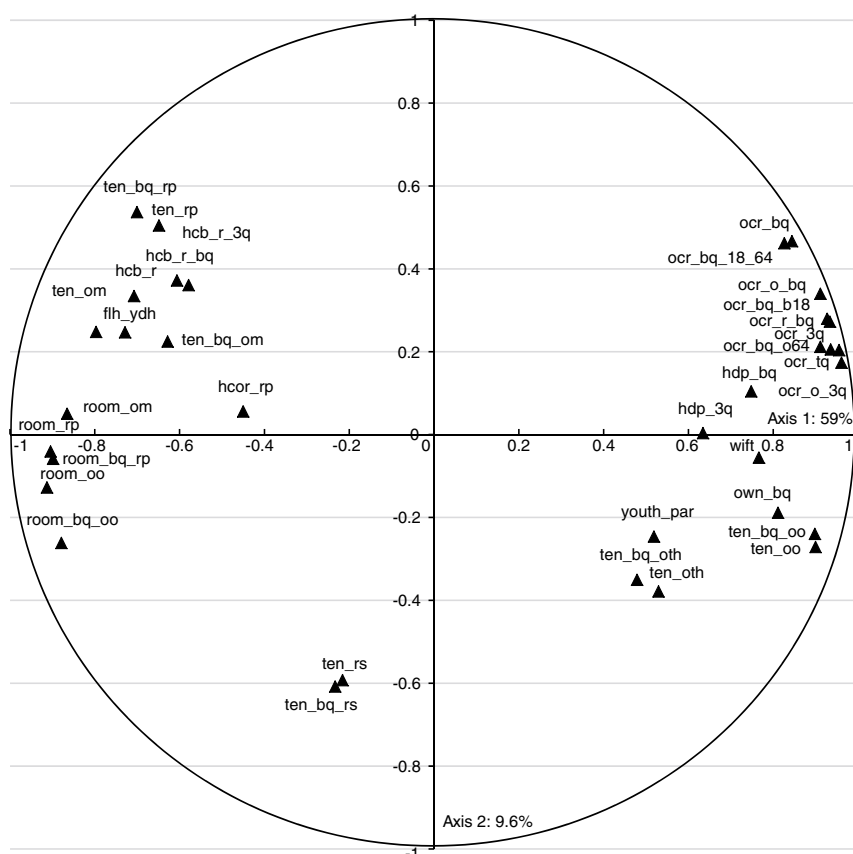
Plotting the countries on the map defined by the first two principal components reveals clear patterns (Figure VI). Four Eastern Europe countries feature on the right end of the first axis, which is associated with relatively poor housing conditions and a high

share of outright owners. This is consistent with relatively low income by OECD and EU standards and with the fact that policies following the transition from socialist to market economies have allowed most households to access homeownership. However, a large part of the housing stock was of poor quality and few households had the means to invest in renovation. Moving left on the horizontal axis, we find other Eastern Europe countries, as well as some Mediterranean countries, with intermediate housing conditions and high homeownership rates, except for the Czech Republic, whose transition path has diverged from that of other Eastern Europe countries, resulting in a higher share of tenants compared to other countries in the region (Hegedüs *et al.*, 2011). The wealthiest OECD countries are located to the left of the vertical axis, which is associated with larger homes and a more diversified tenure structure, with more owners with mortgages and tenants in the private rental sector. The upper left quadrant groups the Nordic countries – except Finland – and the Netherlands, as well as Germany, Switzerland and the United States. The Nordics and the Netherlands, beyond their socio-economic similarities, share some common housing and mortgage market characteristics, in particular high mortgage debt and a fairly large rental stock. Germany and Switzerland have the largest proportion of private sector tenants in Europe. Despite its fairly high homeownership rate, the United States houses a significant portion of its population in the private rental market and has a high average income level, which explains its position on the chart¹⁰. Countries in the bottom left quadrant – and Austria, which is near the border – look a bit more heterogeneous. Consistent with the interpretation of the second principal component (vertical axis) as mainly opposing social to private renting, most of these countries have a significant social housing stock, although this is not the case in Portugal and Spain.

Going one step further, we use cluster analysis to sort countries into homogeneous groups. The same standardised variables as in the PCA are included and the Ward method, which maximises the between-group of countries

10. Australia, Canada and New Zealand's housing systems share some similarities with that of the United States, particularly in terms of tenure structure. Unfortunately, it was not possible to include these countries in the analysis, because too many variables are unavailable in the *AHD*. The other Anglo-Saxon countries included in the analysis, Ireland and the United Kingdom, differ significantly from the United States, notably by their relatively large social rental housing stock.

Figure V
Principal component analysis on housing systems: Correlation circle



Description of variables	Label
<i>Households' housing cost burden as a share of disposable income, tenants</i>	
Overall	hcb_r
Bottom quintile	hcb_r_bq
Third quintile	hcb_r_3q
Housing cost overburden rate among low-income private sector tenants	hcor_rp
<i>Average number of rooms per household member</i>	
Outright owners	room_oo
Owners with mortgage	room_om
Tenants (private)	room_rp
Outright owners, bottom quintile	room_bq_oo
Tenants (private), bottom quintile	room_bq_rp
<i>Overcrowding rates</i>	
Bottom quintile	ocr_bq
Third quintile	ocr_3q
Top quintile	ocr_tq
Low and middle-income households, owners, bottom quintile	ocr_o_bq
Low and middle-income households, owners, third quintile	ocr_o_3q
Low and middle-income households, tenants, bottom quintile	ocr_r_bq
Bottom quintile, age below 18	ocr_bq_b18
Bottom quintile, age 18-64	ocr_bq_18_64
Bottom quintile, age over 64	ocr_bq_064
Share of poor households without exclusive flushing toilet	wift
<i>Housing deprived population</i>	
Bottom quintile	hdp_bq
Third quintile	hdp_3q
<i>Tenure structure</i>	
Outright owners	ten_oo
Owners with mortgage	ten_om
Tenants (private)	ten_rp
Tenants (subsidised)	ten_rs
Others	ten_oth
Owners, bottom quintile	own_bq
Outright owners, bottom quintile	ten_bq_oo
Owners with mortgage, bottom quintile	ten_bq_om
Tenants (private), bottom quintile	ten_bq_rp
Tenants (subsidised), bottom quintile	ten_bq_rs
Others, bottom quintile	ten_bq_oth
Share of 15-29 living with their parents	youth_par
Household liabilities as a share of disposable income	flh_ydh

Reading note: The variable hdp_3q (housing deprived population in the third quintile) presents a correlation of 0.64 with the first principal component and a null correlation with the second principal component. The percentage indicated on each axis refers to the percentage of variance explained by the axis.

Coverage: 25 countries (cf. Box).

Sources: OECD, *Affordable Housing Database (AHD)*; authors' calculations.

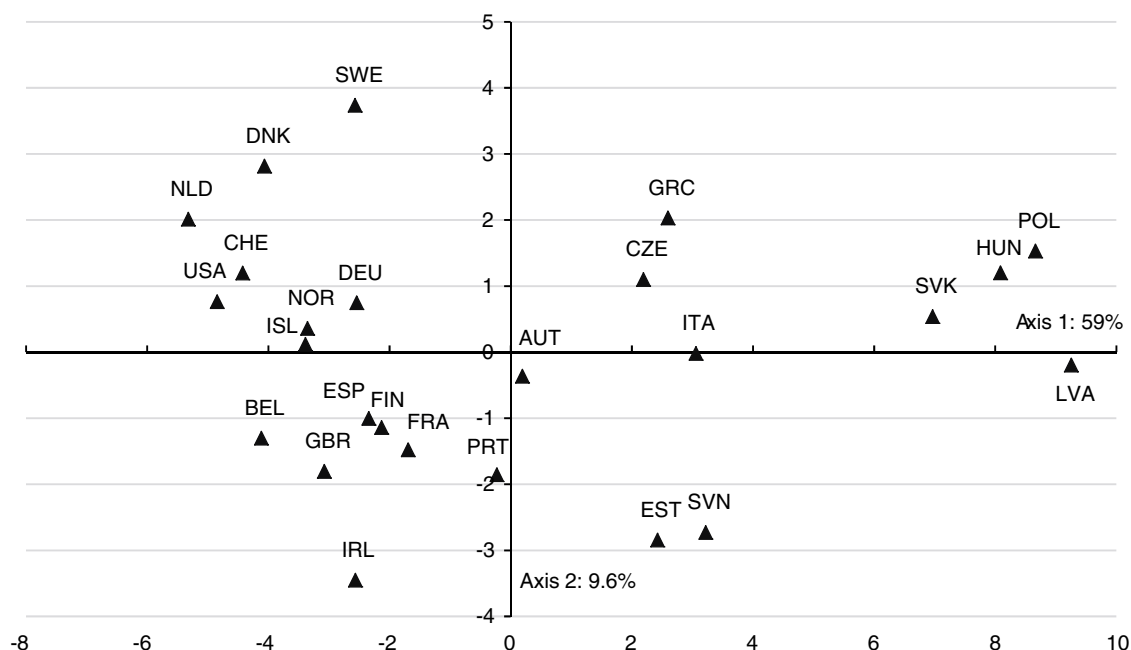
variance relative to the within-group of countries variance is used. The dendrogramme (Figure VII) suggests that the sample can be divided into four groups of countries. The first group includes a large part of the western side of continental Europe (Austria, Belgium, France, Portugal and Spain), Ireland and the United Kingdom, as well as Finland. The rest of Northern Europe is classified in the second group, which includes Denmark, Iceland, Norway and Sweden, as well as Germany and the Netherlands, together with Switzerland and the United States. The third group includes the Mediterranean countries which are not in the first group (Italy and Greece) and part of Central and Eastern Europe (Czech Republic, Estonia, Slovenia), the rest of which forms the fourth group (Hungary, Latvia, Poland and the Slovak Republic). To facilitate the presentation of the results, in what follows we will name the country groups, respectively, “Western”, “Northern”, “Southern-Central” and “Eastern”. Overall, the classification is broadly in line with our priors, based on housing market and institutional information. Nevertheless, a few remarks on specific cases are in order before moving to more detailed analyses. Finland is classified in the first group

rather than with the other Nordic countries because it has more outright owners, a lower household debt-to-income ratio and more social rental housing than these countries¹¹. Mediterranean countries are split into two groups. This mainly reflects a lower average number of rooms and higher overcrowding rates in Greece and Italy than in Portugal and Spain, as well as somewhat higher proportions of owners with mortgages and levels of household debt in the latter two. CEE countries are mainly sorted into two different groups on the basis of the average number of rooms and overcrowding rates.

In order to gain further insight into the factors which differentiate country groups, we test for the significance of differences in the means of housing market context, housing conditions and indebtedness variables across groups, using standard Student tests. Table 1 displays variable means by country group and Table 2

11. As noted above, dwellings owned by Swedish municipalities and Danish and Dutch housing associations are not classified as social housing, even though they play an important role in housing low-income households.

Figure VI
Principal component analysis on housing systems: Mapping of countries



Reading note: LVA (Latvia) is located far on the right of the first axis and close to the second axis, implying relatively poor housing conditions and a relatively high share of outright owners (the main determinants of the first axis) and an average position in term of the mix between private and social rental housing (the main determinant of the second axis).
Coverage: 25 countries (cf. Box).
Sources: OECD, *Affordable Housing Database (AHD)*; authors' calculations.

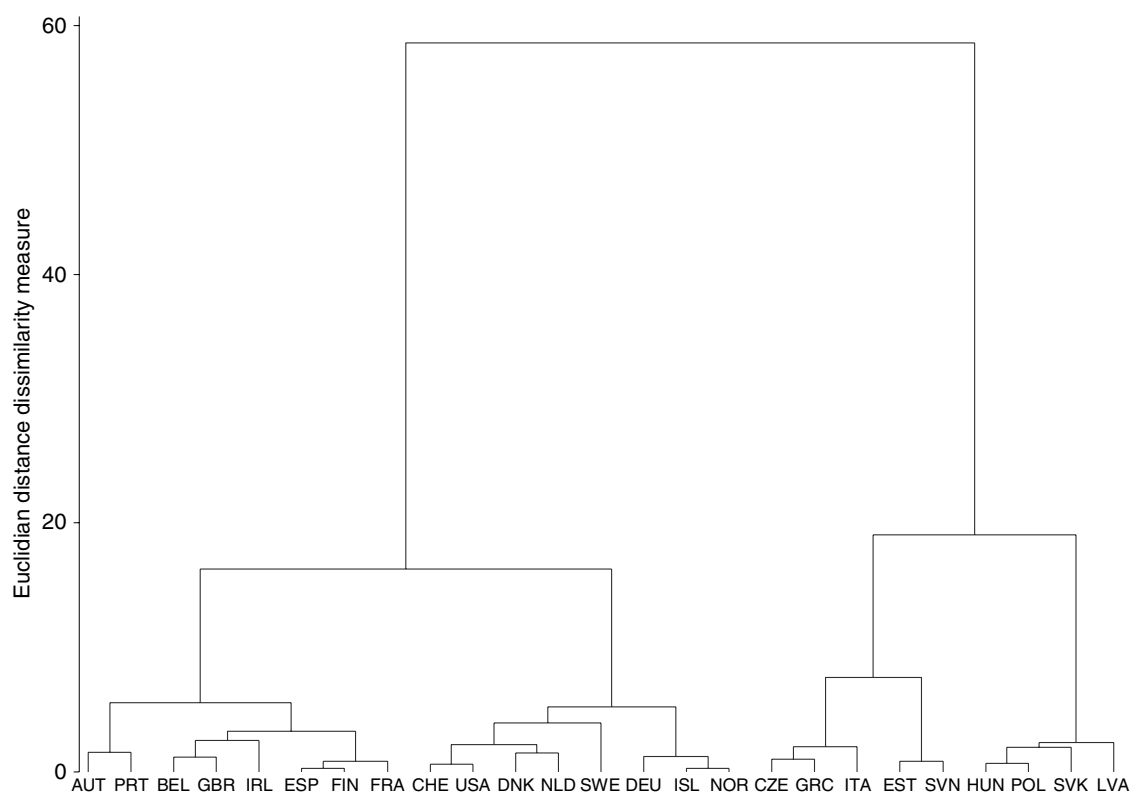
shows the test results for each variable and pair of country groups.

The “Western” and “Northern” groups, which include the most advanced OECD economies, are clearly differentiated by tenure structure and level of household indebtedness, but differences in housing conditions are generally insignificant. Only the number of rooms for owners with mortgages is significantly higher in the “Northern” than in the “Western” group, although only at the 10% confidence level. Conversely, differences in tenure variables are generally significant at least at the 5% level and often at the 1% level. The “Northern” group has more owners with mortgages, higher household debt levels and more private sector tenants than the “Western” group, which has more outright owners and social sector tenants. The same differences in tenure

patterns between the two groups of countries are observed in the whole population and in the bottom quintile of the income distribution. The share of youth living with their parents is lower in the “Northern” group (at the 10% level), which may, to some extent, reflect easier access to mortgages and wider rental options. Differences in the means of housing conditions variables across groups other than the “Western” and “Northern” are generally significant, most often at the 1% level. The number of rooms per dwelling is lower in all tenures in the “Southern-Central” group than in the “Western” and “Northern” groups and even lower in the “Eastern” group.

Overcrowding shows a consistent picture, with the highest rates in the “Southern-Central” group and particularly in the “Eastern” group. The situation is particularly acute for bottom

Figure VII
Cluster analysis of housing systems on baseline sample: Dendrogramme



Note: In countries with integrated rental systems and a large housing stock owned by housing associations, like Denmark and the Netherlands, all tenants are classified as renting in the private sector, because the data from *EU-SILC* do not allow a distinction by type of tenant. Similarly, the large Swedish stock of municipal rental housing is not classified as social housing.

Reading note: The dendrogramme shows the hierarchical clustering of the countries, using Ward's method and Euclidian distances. Hungary, Poland, the Slovak Republic and Latvia share strong similarities and the most comparable other group is made of the Czech Republic, Greece, Italy, Estonia and Slovenia.

Coverage: 25 countries (cf. Box).

Sources: OECD, *Affordable Housing Database (AHD)*; authors' calculations.

Table 1
Variable means by country group

Variables	A. Baseline sample					B. Extended sample				
	Overall (25)	Western (8)	Northern (8)	Southern-Central (5)	Eastern (4)	Overall (32)	Western (9)	Northern (9)	Southern-Central (7)	Eastern (7)
<i>Households' housing cost burden as a share of disposable income, tenants</i>										
Overall	0.23	0.24	0.27	0.22	0.13	0.22	0.22	0.27	0.22	0.14
Bottom quintile	0.33	0.33	0.39	0.35	0.17	0.33	0.30	0.38	0.41	0.20
Third quintile	0.19	0.20	0.21	0.20	0.12	-	-	-	-	-
Housing cost overburden rate among low-income private sector tenants	0.37	0.44	0.38	0.40	0.18	0.38	0.42	0.38	0.42	0.27
<i>Average number of rooms per household member</i>										
Outright owners	2.41	2.72	2.89	1.90	1.50	2.34	2.71	2.92	1.94	1.53
Owners with mortgage	1.82	1.95	2.25	1.43	1.19	1.78	1.99	2.23	1.53	1.19
Tenants (private)	1.74	1.93	2.06	1.44	1.09	1.75	2.10	2.04	1.51	1.15
Outright owners, bottom quintile	2.68	3.04	3.14	2.19	1.66	2.60	3.07	3.18	2.20	1.68
Tenants (private), bottom quintile	1.69	1.85	2.05	1.36	1.09	-	-	-	-	-
<i>Overcrowding rates</i>										
Bottom quintile	0.19	0.11	0.14	0.21	0.40	0.19	0.08	0.15	0.20	0.36
Third quintile	0.11	0.04	0.04	0.15	0.32	0.12	0.03	0.04	0.13	0.31
Top quintile	0.07	0.02	0.01	0.09	0.25	0.07	0.02	0.01	0.08	0.23
Low and middle-income households, owners, bottom quintile	0.11	0.03	0.05	0.14	0.33	0.12	0.03	0.05	0.12	0.31
Low and middle-income households, owners, third quintile	0.08	0.02	0.02	0.12	0.28	0.09	0.02	0.02	0.10	0.28
Low and middle-income households, tenants, bottom quintile	0.31	0.19	0.20	0.41	0.64	0.32	0.14	0.21	0.36	0.64
Bottom quintile, age below 18	0.29	0.17	0.17	0.39	0.67	0.30	0.12	0.17	0.36	0.65
Bottom quintile, age 18-64	0.26	0.16	0.19	0.31	0.52	0.26	0.11	0.19	0.29	0.49
Bottom quintile, age over 64	0.09	0.04	0.03	0.12	0.27	0.09	0.03	0.03	0.11	0.23
Share of poor households without exclusive flushing toilet	0.05	0.02	0.01	0.05	0.19	0.07	0.02	0.01	0.05	0.25
<i>Housing deprived population</i>										
Bottom quintile	0.02	0.01	0.00	0.01	0.11	0.03	0.00	0.00	0.01	0.14
Third quintile	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00	0.00	0.05
<i>Tenure structure</i>										
Outright owners	0.42	0.38	0.16	0.62	0.75	0.46	0.42	0.18	0.56	0.76
Owners with mortgage	0.27	0.28	0.43	0.12	0.10	0.24	0.27	0.42	0.13	0.09
Tenants (private)	0.21	0.18	0.37	0.13	0.06	0.19	0.15	0.35	0.16	0.06
Tenants (subsidised)	0.05	0.11	0.02	0.03	0.02	0.05	0.11	0.03	0.04	0.02
Others	0.05	0.04	0.02	0.10	0.06	0.06	0.06	0.02	0.10	0.08
Owners, bottom quintile	0.51	0.46	0.36	0.63	0.78	0.54	0.49	0.36	0.57	0.79
Outright owners, bottom quintile	0.39	0.34	0.15	0.57	0.73	0.43	0.38	0.16	0.51	0.76
Owners with mortgage, bottom quintile	0.12	0.12	0.20	0.05	0.05	0.11	0.12	0.20	0.06	0.04
Tenants (private), bottom quintile	0.31	0.27	0.56	0.17	0.08	0.28	0.22	0.56	0.21	0.06
Tenants (subsidised), bottom quintile	0.09	0.20	0.04	0.04	0.04	0.08	0.19	0.04	0.05	0.03
Others, bottom quintile	0.08	0.07	0.04	0.16	0.10	0.10	0.09	0.04	0.16	0.12
Share of 15-29 living with their parents	0.61	0.60	0.50	0.71	0.70	-	-	-	-	-
Household liabilities as a share of disposable income	1.32	1.34	1.97	0.83	0.57	-	-	-	-	-

Reading note: The numbers indicated in the table are the averages of each indicator for the identified group of countries. Coverage: 25 countries for the left part, 32 countries for the right part (cf. Box). Sources: OECD, *Affordable Housing Database (AHD)*; authors' calculations.

Table 2
Test of differences in variable means across clusters

	Western vs Northern	Western vs Southern-Central	Western vs Eastern	Northern vs Southern-Central	Northern vs Eastern	Southern-Central vs Eastern
<i>Households' housing cost burden as a share of disposable income, tenants</i>						
Overall			***		***	**
Bottom quintile			**		***	**
Third quintile			**		***	**
Housing cost overburden rate among low-income private sector tenants			**		**	**
<i>Average number of rooms per household member</i>						
Outright owners		***	***	***	***	*
Owners with mortgage	*	***	***	***	***	
Tenants (private)		***	***	***	***	**
Outright owners, bottom quintile		***	***	***	***	*
Tenants (private), bottom quintile		***	***	***	***	
<i>Overcrowding rates</i>						
Bottom quintile		**	***		***	***
Third quintile		***	***	***	***	***
Top quintile		***	***	***	***	***
Low and middle-income households, owners, bottom quintile		***	***	***	***	***
Low and middle-income households, owners, third quintile		***	***	***	***	***
Low and middle-income households, tenants, bottom quintile		***	***	***	***	***
Bottom quintile, age below 18		***	***	***	***	***
Bottom quintile, age 18-64		***	***	**	***	***
Bottom quintile, age over 64		***	***	***	***	***
Share of poor households without exclusive flushing toilet			***		***	***
<i>Housing deprived population</i>						
Bottom quintile			***		***	***
Third quintile			***		***	***
<i>Tenure structure</i>						
Outright owners	***	***	***	***	***	***
Owners with mortgage	***	***	***	***	***	
Tenants (private)	***		*	***	***	
Tenants (subsidised)	***	***	***			
Others		**		***	*	
Owners, bottom quintile	**	***	***	***	***	**
Outright owners, bottom quintile	***	***	***	***	***	***
Owners with mortgage, bottom quintile	**	*	*	***	***	
Tenants (private), bottom quintile	***		**	***	***	
Tenants (subsidised), bottom quintile	***	***	***			
Others, bottom quintile		**		***		
Share of 15-29 living with their parents	*	*		***	***	
Household liabilities as a share of disposable income	**	*	**	***	***	

Note: *, **, *** respectively denotes a 10%, 5% and 1% probability of means equality.

Reading note: The table displays the significance of the mean equality tests between groups of countries; for example, the average overall households' housing cost burden of the Western countries is not significantly different from the one of the Northern countries, but significantly different at the 1% threshold from the one of the Eastern countries.

Coverage: 25 countries (cf. Box).

Sources: OECD, *Affordable Housing Database (AHD)*; authors' calculations.

quintile income earners. In the “Eastern” group, close to one in five dwellings has no flushing toilet, while this proportion is negligible in countries of other groups, except Estonia. The housing deprivation rate is also relatively high in the “Eastern” group, where it exceeds 10% in the bottom income quintile, whereas it is below 1% in other country groups¹². The housing cost burden for private sector tenants is similar across country groups, except in the “Eastern” group, where it is lower, although this may be of limited relevance given the low share of private rentals in the countries of this group. Indeed, about 85% of households are homeowners in these countries and most of them own outright. The tenancy structure is relatively similar in the “Southern-Central” group, although the share of outright owners is somewhat lower.

A number of countries were not incorporated in our baseline typology, as this would have restrained the set of indicators which could have been included in the analysis. Nevertheless, for seven of these countries, the variables available allow a meaningful classification of their housing system. Hence, we now perform our PCA and cluster analysis on a restricted set of variables, dropping the household debt-to-income ratio, the household housing cost burden for tenants in the third income quintile, the average number of rooms per household member for private sector tenants in the bottom income quintile and the proportion of youth living with their parents, but including seven additional countries, namely Chile, Croatia, Cyprus, Lithuania, Luxembourg, Malta and Mexico. The omission of variables has only a minor impact on the results for the initial set of countries, with only Austria changing clusters, moving from “Western” to “Southern-Central”, mainly because of the removal of the share of youth living with their parents. The assignment of the additional countries to the groups identified in the baseline analysis looks plausible: Croatia, Lithuania and Mexico join the “Eastern” group, Chile joins the “Southern-Central” group, Luxembourg joins the “Northern” group, and Cyprus and Malta join the “Western” group (Figure VIII).

We now turn to the links between housing market structures and housing conditions on the one hand and housing policies on the other. The correlation between the first principal component of the PCA, which can be interpreted as measuring housing conditions (with

negative values indicating better standards), and the first two factors of the multiple correspondence analysis (MCA) on policy indicators shown on Figure IV are only about 0.3 and 0.2 respectively and are not statistically significant, which suggests that relations between policy settings and housing outcomes are weak (Table 3). As the first factor of the MCA can be interpreted as an indicator of the variety of policy instruments used by a country (with negative numbers implying a greater variety), the positive correlation with the first principal component would suggest a relation between the scope of housing policies and housing conditions, but it is not statistically significant. Interestingly, the correlation between housing conditions and GDP per capita is close to 0.8 and highly significant, highlighting the influence of general living standards on housing conditions. This summary analysis of relations between housing conditions and policy settings based on factor analysis reveals a somewhat fuzzy picture and the need for more qualitative analysis.

The binary nature of availability indicators for the eight types of housing policy instruments included in the MCA is a strong limitation, as the extent and amount spent on similar policy measures can vary greatly across countries. Unfortunately, most quantitative indicators included in the OECD *Affordable Housing Database* are only available for a relatively small set of countries, the only exception being variables related to housing allowances. This precludes a systematic quantitative analysis. Therefore, we proceed in a more qualitative manner, trying to analyse policy features across the country groups identified above, even if the small sample size makes statistical comparisons of proportions of countries implementing each housing policy measure irrelevant¹³.

On the four housing policy instruments used in the vast majority of the countries in the sample, we note some differences across groups. Only the Slovak Republic and Slovenia have no housing allowances. The countries of the “Eastern” and “Southern-Central” group spend a very small fraction of their GDP on housing allowances, with the exception of the

12. Homelessness rates were not included in the analysis because the data are patchy and definitions are not homogenous across countries. The data available show no clear pattern across our country groups. However, relatively high homelessness rates tend to prevail in Anglo-Saxon countries.

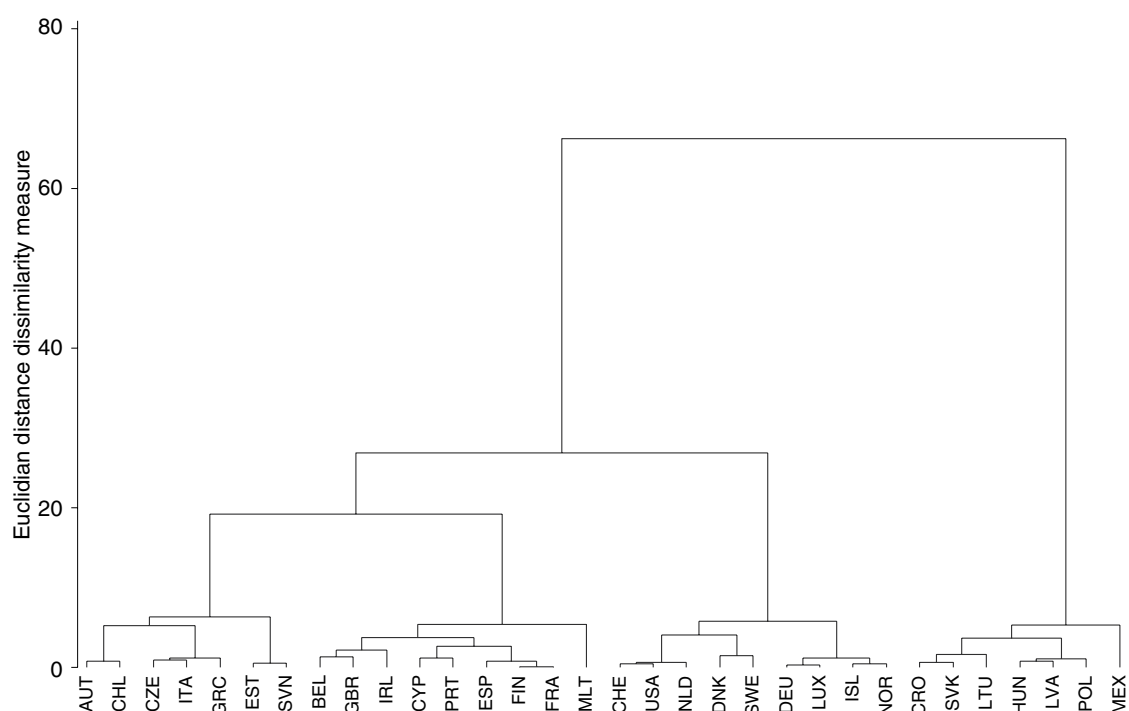
13. Indeed, Fisher tests are unable to detect statistically significant between-group differences in the proportion of countries using any particular policy instrument.

Czech Republic (Table 4)¹⁴. While all countries of the “Western” and “Northern” group have housing allowances, the amounts spent differ widely. Despite recent cuts in housing benefits, the United Kingdom spends 1.4% of GDP on housing allowances, by far the largest amount in the OECD. Factors behind this high number include high rents, a relatively high share of private sector tenants,

wide income inequality, rent-setting mechanisms for affordable housing (more than 70% of housing allowance recipients are tenants in the subsidised sector) and the design of government support for low-income households.

14. Relatively high spending on housing allowances in Croatia largely reflects significant allowances for utility costs.

Figure VIII
Cluster analysis of housing systems on extended sample: Dendrogramme



Note: In countries with integrated rental systems and a large housing stock owned by housing associations, like Denmark and the Netherlands, all tenants are classified as renting in the private sector, because the data from *EU-SILC* do not allow a distinction by type of tenant. Similarly, the large Swedish stock of municipal rental housing is not classified as social housing.

Reading note: The dendrogramme shows the hierarchical clustering of countries, using Ward's method and Euclidian distances.

Coverage: 32 countries (cf. Box).

Sources: OECD, *Affordable Housing Database (AHD)*; authors' calculations.

Table 3
Correlations between housing conditions, policies and GDP

	Housing conditions axis 1	Housing conditions axis 2	Policy instruments axis 1	Policy instruments axis 2
Policy instruments axis 1	0.326	0.039		
Policy instruments axis 2	0.210	-0.104		
GDP per capita, PPP (current international \$)	-0.784***	0.025	-0.279	-0.318
GDP per capita (current US \$)	-0.800***	0.107	-0.308	-0.245

Note: *** denotes non-zero correlation at the 99% confidence level. The correlations have been computed on the set of countries for which both housing conditions and policy indicators are available. The Housing conditions axes are the first two axes from the PCA on variables representing housing market context, housing conditions and household indebtedness. The policy instruments axes are the first two axes of the MCA on the eight binary indicators showing the presence or absence of specific policies in each country.

Coverage: 21 countries (cf. Box).

Sources: OECD, *Affordable Housing Database (AHD)*; authors' calculations.

Finland and France spend around 0.8% of GDP on housing allowances, partly on support for social sector tenants. The Mediterranean countries of the “Western” group, which have high homeownership rates, spend a negligible amount on housing allowances. Austria

and Ireland are in an intermediate position¹⁵. Half of the countries of the “Northern” group, namely Denmark, Germany, the Netherlands

15. Data for Belgium are not available.

Table 4
Features of housing allowances across countries

Country	Total government spending (2015 or latest, in % of GDP)	Share of households receiving housing allowance (2014, in %)		Tenure shares of low-income households receiving housing allowances (2014, in %)				
		Bottom quintile	3 rd quintile	Outright owners	Owners with mortgage	Tenants (private)	Tenants (subsidised)	Others
Australia	0.27							
Austria	0.16	16.40	1.15	0.00	0.00	70.52	23.44	6.04
Belgium		0.82	0.06					
Bulgaria	0.10	0.00	0.00					
Chile	0.01							
Croatia	0.24	5.43	0.21	54.10	0.63	10.12	6.51	28.64
Cyprus	0.02	3.93	3.34					
Czech Republic	0.27	13.76	1.24	28.42	2.17	60.44	6.93	2.05
Denmark	0.48	35.43	9.35	6.42	0.00	93.58	0.00	0.00
Estonia	0.04	5.57	1.35	56.74	0.00	9.19	5.30	28.77
Finland	0.82	53.18	8.66	7.10	2.72	34.35	55.01	0.82
France	0.83	49.43	17.77	1.24	6.88	57.29	33.92	0.67
Germany	0.48							
Greece		0.00	0.07					
Hungary	0.00	28.05	5.55	67.16	15.43	1.67	8.14	7.60
Iceland		37.02	31.29	0.47	43.27	28.02	28.25	0.00
Ireland	0.21	49.50	24.96	47.51	6.44	14.10	29.88	2.07
Italy		2.94	1.14	7.62	7.38	42.02	35.20	7.77
Japan	0.12							
Korea	0.06							
Latvia	0.08	23.02	4.63	62.26	0.40	12.28	14.49	10.58
Lithuania	0.06	6.83	1.45	78.45	4.35	0.00	8.40	8.80
Luxembourg		9.69	12.38	2.96	64.57	0.00	32.47	0.00
Malta	0.01	34.89	11.48	40.41	8.19	3.26	39.95	8.20
Netherlands	0.47	44.65	1.80	0.18	0.00	99.69	0.00	0.13
New Zealand	0.48							
Norway	0.09	11.16	0.35	8.36	19.09	53.43	2.34	16.78
Poland	0.05	7.13	0.84	35.83	2.47	12.69	2.28	46.73
Portugal	0.01	3.63	10.32					
Romania		0.00	0.00					
Slovak Republic		0.66	0.00					
Slovenia		3.89	0.33					
Spain	0.01	1.79	0.90					
Sweden	0.45	32.75	1.47	6.87	9.73	80.16	0.77	2.47
Switzerland		1.87	0.55					
United Kingdom	1.41	29.06	13.23	0.00	0.27	28.50	71.23	0.00
United States	0.10							

Coverage: 37 countries (cf. Box).

Sources: OECD, *Affordable Housing Database (AHD)*; authors' calculations.

and Sweden have relatively high spending on housing allowances, close to 0.5% of GDP. This is consistent with extensive welfare states and integrated rental markets catering to a large share of the population. Spending on housing allowances is low in Norway and the United States, to some extent because of high homeownership rates¹⁶.

After housing allowances, the most widely used policy instruments are social housing, tax relief for access to homeownership, and subsidised mortgages and guarantees to homebuyers. Mortgage interest can be deducted from taxable income in all countries of the “Northern” group, except Germany. The associated forgone tax revenue can be substantial, amounting to 0.5% of GDP in the United States and more than 2% of GDP in the Netherlands¹⁷. Mortgage interest deductibility is also available in countries of the “Western” group, except France and the United Kingdom¹⁸. In other groups, mortgage interests are tax deductible in only about half of the countries. Subsidised mortgages and guarantees do not show a clear pattern across groups, although they are usual in CEE countries and often absent in Mediterranean countries. Most countries have social rental housing, even though this tenure has declined over recent decades. As construction has been relatively limited in most countries, the size of the social housing stock mainly reflects historical developments. Within our sample, only Austria and France spend significantly more than 0.1% of GDP on public support to social rental housing (respectively 0.4% and 0.3%)¹⁹.

The four remaining policy instruments are used by less than half of the countries. Grants to homebuyers are the largest in Chile (0.45% of GDP) and to a much lesser extent in Austria, Cyprus and Malta (around 0.1% of GDP). Subsidies for the development of affordable homeownership and rental housing are largely absent from the “Southern-Central” and “Eastern” groups. No clear pattern is discernible in other groups, although these subsidies are found in most Anglo-Saxon countries (including Australia, Canada and New Zealand). Half of the countries in the “Northern” group have mortgage relief schemes for over-indebted homeowners, while the proportion is close to one fourth in other groups. Although relief schemes are most prevalent in the “Northern” group, spending on such schemes is highest in Hungary, which has suffered an acute mortgage crisis following the depreciation of

its currency in 2008, as a large share of loans were denominated in euros or Swiss francs.

Discussion and scope for future research

The classification of housing systems based on indicators from the *AHD* identifies clearly four groups of countries. The sorting of countries largely occurs along the two dimensions of housing conditions and tenure structure. Housing conditions are strongly correlated with GDP per capita and tend to be relatively poor in Central and Eastern Europe, even though there are significant differences within the region, which are reflected in different groupings in our analysis²⁰. Our classification of some CEE countries with Southern European countries is consistent with similarities in housing and welfare structures across these countries identified by Mandič and Mrzel (2017), albeit with the exception of the Czech Republic. The case of CEE countries also seems to be another illustration of the inverse relationship between housing conditions and affordability for low-income households found by Dewilde and De Decker (2016) across Western Europe. On average, relatively poor housing conditions are matched by relatively good affordability in CEE countries, partly because many households are outright owners²¹. Due to policies implemented during the transition from socialist to market economies, homeownership largely prevails in these countries, but the housing stock is generally of poor quality and households tend to have limited resources to invest in renovation. Hence, raising housing standards remains a major challenge in this region (Rosenfeld, 2015)²².

16. In addition, the amount spent on housing vouchers in the United States is limited by the fact that they are not entitlements. Spending data are not available for Iceland and Switzerland, but shares of recipients suggest relatively high spending in the former and low spending in the latter.

17. Since 2013, interest deductibility on new loans in the Netherlands is restricted to mortgages with regular repayment of the principal over a maximum period of 30 years. In addition, the rate of tax relief is being gradually reduced on both existing and new loans (Kierzenkowski et al., 2014).

18. Since 2013, Spain removed interest deductibility for new mortgages (IMF, 2015).

19. Australia, Korea and New Zealand, which are not in our data analysis because of insufficient data availability, also spend significant amounts on social housing (respectively 0.3%, 0.5% and 0.3% of GDP).

20. Our clustering of CEE countries is slightly different from the groups identified by Soaita & Dewilde (2017), who find that the Baltic states form a separate cluster and all the other CEE countries included in our study form another single cluster.

21. Affordability is, however, an issue for tenants in many of CEE largest cities.

22. An important dimension which is not included in our analysis, but reinforces the diagnosis is energy efficiency, which is particularly low in CEE countries and can result in high energy costs for households.

Our clustering of other countries is broadly consistent with findings of the literature, even though both our country sample and our number of variables are wider than in most other studies. Our “Northern” cluster includes Esping-Andersen’s social-democratic group, but also a number of more disparate countries with relatively large private rental markets. A common characteristic of these countries is that their rental markets are largely integrated in the sense of Kemeny. In these systems, rents tend to be moderate and security of tenure high, generally leading to better housing conditions for tenants than in dual markets. At first glance, it is somewhat surprising to find the United States in this group. A reason may be the limitations of the tenure variable already mentioned, which hide differences between tenants in the private and subsidised sectors in some countries²³. Another reason may be that because of data limitations, we were not able to include other countries that share some common housing characteristics with the United States, like Australia, Canada and New Zealand. The inclusion of data on the quality of dwellings and neighbourhoods in which they are located would presumably also help differentiate the United States from the other countries of the “Northern” cluster. Further work will be needed in that respect. Nevertheless, one should also note that beyond similarities in welfare regimes, the United States and the United Kingdom have different housing systems (e.g. large social housing stock and high spending on housing allowances in the United Kingdom; generous tax relief on mortgage interest in the United States). Hence, it is not surprising that these countries belong to different clusters.

While the split between the “Northern” and the “Western” group is largely consistent with Kemeny’s typology, there are some differences. In Kemeny’s typology, Austria and France have integrated rental markets, while Norway has a dual rental market. However, the case for classifying the French rental market as unified is weak at the current juncture. The shares of households in private and subsidised rental housing are respectively around 24% and 14%, and the private market is not very tightly regulated. Austria is difficult to classify, in particular given the strong specificities of the municipality of Vienna’s housing policy, compared to the rest of the country (Reinprecht, 2007). On the 15 Western-European countries common to the two studies, we find similarities between our clusters and those of Dewilde

(2017) based on 2012 data, including the identification of a Scandinavian group, which also includes the Netherlands and a split in Mediterranean countries, with Portugal and Spain grouped with Belgium, France and Ireland, while Greece and Italy form a separate cluster. Interestingly, the cluster analysis performed by Dewilde on 1995 data groups all Mediterranean countries together, as does the classification of Hoekstra (2005), which uses data from 2000 and 2001. This suggests that Mediterranean countries have diverged since the early 2000s. Dewilde’s classification differs from ours in several ways. Germany is grouped with Austria, Finland and the United Kingdom, rather than with Scandinavian countries. This cluster is distinguished from another group containing countries from our “Western” cluster (Belgium, France, Ireland, Portugal and Spain). The split within our “Western” group in Dewilde’s analysis is driven by better housing conditions and a lower housing cost burden for young and elderly households in Dewilde’s second group (which includes Germany). Dewilde’s focus on young and elderly households seems to explain a slightly different clustering from ours, with one more cluster for comparable country coverage. Conversely, Hoekstra (2005), using six more general variables related to tenure and housing type and quality, only distinguishes two groups among 12 European countries, one grouping the Mediterranean countries and the other including countries pertaining to both our “Northern” and “Western” groups.

The analysis of policies is constrained by more data gaps than for housing market context, housing conditions and household indebtedness, as well as by the qualitative nature of a large part of the information available. This limits the scope for systematic statistical analysis. Nevertheless, the data from the *AHD* provide a useful, albeit partial, picture of housing policy settings across OECD and EU countries. First, the groups of countries we have identified on the basis of housing market context, housing conditions and household indebtedness do not show clear specificities in their policy mix. Most countries use a large variety of policy instruments. This may be due to path dependency, as some instruments are difficult to remove when new ones are introduced, to the diversity of issues to address, which may require multiple instruments or to

23. Particularly Denmark, the Netherlands and Sweden.

inconsistencies in housing systems, with overlapping policies. Further data collection and research will be needed in that area. Second, the most widely used policy instruments are demand-side instruments, in particular housing allowances and support for homebuyers through tax relief and other types of mortgage subsidies. Most countries have social housing, but the stock has recently been expanding only in few OECD countries (Salvi del Pero *et al.*, 2016)²⁴. Demand-side instruments have advantages over supply-side subsidies, in particular in terms of impact on residential and labour mobility, equity of access and ease of administration. However, if the increase in demand for rental housing induced by the housing allowance is not matched by an increase in housing supply, rents will increase. This may particularly occur in areas where physical or regulatory constraints to homebuilding are tight. Indeed, international evidence suggests that demand-side subsidies have generally not prompted the supply response policymakers expected. The focus on housing allowances to support low-income households in Australia, Canada, New Zealand and the United Kingdom since the 1980s or 1990s has been accompanied by growing difficulties for low-income households to access adequate housing, as policies may have paid too little attention to supply-side issues (MacLennan, 2005). Policies favouring demand-side support have generally been unable to stimulate supply, exacerbating affordability problems and social segregation in many advanced economies (Lawson & Milligan, 2007)²⁵. Studies find that housing allowances increase rents in Finland (Kangasharju, 2010; Viren, 2013), France (Laferrère & Le Blanc 2004; Fack 2005), the United Kingdom (Gibbons & Manning 2006), and the United States (Susin, 2002). Notwithstanding, housing vouchers in the United States seem to have provided equally good housing at a much lower cost than project-based housing assistance (Olsen & Zabel, 2014). Evidence of capitalisation of tax relief on mortgage interests into housing prices is found in a panel of 17 OECD countries²⁶ (Andrews, 2010), a sample of European countries²⁷ and the United States (Damen *et al.*, 2016) and country-specific studies on the Netherlands (Brounen & Neuteboom, 2008), Sweden (Berger *et al.*, 2000) and the United States (Capozza *et al.*, 1996). Tax relief on mortgage interests tends to be regressive, as homeownership rates generally increase with income (Andrews *et al.*, 2011), and to push up household debt, which

has risen markedly over the past two decades, creating vulnerabilities for households, the financial system and the wider economy (André, 2016). Finally, the US subprime crisis has shown the limitations of policies trying to promote homeownership among low-income households by relaxing credit standards. More generally, the widely assumed superiority of owning over renting in monetary terms in the United States has been challenged (Beracha & Johnson, 2012). The *AHD* provides a knowledge base for further research to improve the design and evaluation of housing policies. In particular, it can be used to examine how policy measures affect various housing outcomes (e.g. housing conditions, affordability, housing price volatility, mortgage debt and housing wealth) in different housing systems. Widening its indicator and country coverage would allow more systematic statistical analysis. Given the long-lasting impact of policies on housing affordability and quality, the snapshot of housing policies at a point in time provided in the *AHD* would need to be expanded in the time dimension to allow a full evaluation of housing policies. Other avenues for further research include studying links between the dimensions included in the *AHD* and mortgage market structures, as well as factors affecting housing supply, especially land-use planning. □

24. Between 2000 and 2015, the number of social rental housing dwellings increased in Austria, the Czech Republic, Estonia, France, Japan (2000-2013), the Netherlands, New Zealand (2000-2013) and Norway. In half of these countries, the share of social rental housing still declined as a share of the total housing stock. Increases were strong in the Czech Republic and Estonia, but from very low starting levels (OECD Affordable Housing Database).

25. The study covers Belgium, Canada, Denmark, France, Germany, Ireland, Netherlands, New Zealand, Switzerland, United Kingdom and United States.

26. Australia, Canada, Denmark, Finland, France, Germany, Italy, Ireland, Japan, Netherlands, New Zealand, Norway, Spain, Sweden, Switzerland, United Kingdom and United States.

27. Belgium, Denmark, Finland, Netherlands, Norway, Sweden and United Kingdom.

BIBLIOGRAPHY

- Aalbers, M.B. (2008).** The Financialization of Home and the Mortgage Market Crisis. *Competition & Change*, 12(2), 148–166.
<https://doi.org/10.1179%2F102452908X289802>
- André, C. (2016).** Household debt in OECD countries: Stylised facts and policy issues. *OECD Economics Department Working Papers* N° 1277.
<https://doi.org/10.1787/5jm3xgkkl1f2-en>
- Andrews, D. (2010).** Real House Prices in OECD Countries: The Role of Demand Shocks and Structural and Policy Factors. *OECD Economics Department Working Papers* N° 831.
<http://dx.doi.org/10.1787/5km33bqzhbzr-en>
- Andrews, D., Caldera Sánchez, A. & Johansson, Å (2011).** Housing Markets and Structural Policies in OECD Countries. *OECD Economics Department Working Papers* N° 836.
<https://doi.org/10.1787/5kgk8t2k9vf3-en>
- Beracha, E. & Johnson, K.H. (2012).** Lessons from Over 30 Years of Buy versus Rent Decisions: Is the American Dream Always Wise? *Real Estate Economics*, 40(2), 217–247.
<https://dx.doi.org/10.1111/j.1540-6229.2011.00321.x>
- Berger, T., Englund, P., Hendershott, P. H. & Turner, B. (2000).** The Capitalization of Interest Subsidies: Evidence from Sweden. *Journal of Money, Credit and Banking*, 32(2), 199–217.
<https://doi.org/10.2307/2601239>
- Brounen, D. & Neuteboom, P. (2008).** De Effectiviteit van Hypotheekrenteaftrek (Effectivity of mortgage interest deductibility). *Economisch-Statistische Berichten*, 93(4529), 120–121.
<https://www.historischnieuwsblad.nl/nl/artikel/10741/geschiedenis-van-de-hypotheekrenteaftrek.html>
- Capozza, D.R., Green, R.K. & Hendershott, P.H. (1996).** Taxes, Mortgage Borrowing, and Residential Land Prices. In: Aaron H.A. & Gale W.G. (Eds.). *Economic Effects of Fundamental Tax Reform*, 171-210. Washington, D.C.: Brookings Institution Press.
- Castles, F. G. (1998).** The Really Big Trade-Off: Home Ownership and the Welfare State in the New World and the Old. *Acta Politica*, 33(1), 5–19.
<https://doi.org/10.1080/14036090510032727>
- Crook, T. & Kemp, P.A. (Ed.) (2014).** *Private Rental Housing, Comparative Perspectives*. Cheltenham: Edward Elgar publishing.
- Damen, S., Vastmans, F. & Buyst E. (2016).** The Effect of Mortgage Interest Deduction and Mortgage Characteristics on House Prices. *Journal of Housing Economics*, 34, 15–29.
<https://doi.org/10.1016/j.jhe.2016.06.002>
- Dewilde, C. (2015).** What Have ECHP and EU-SILC to Contribute to the Comparative Study of Housing? *Critical Housing Analysis*, 2(2), 19–26.
<https://doi.org/10.13060/23362839.2015.3.3.238>
- Dewilde, C. (2017).** Do housing regimes matter? Assessing the concept of housing regimes through configurations of housing outcomes. *International Journal of Social Welfare*, 26(4), 384–404.
<https://doi.org/10.1111/ijsw.12261>
- Dewilde, C. & De Decker, P. (2016).** Changing Inequalities in Housing Outcomes across Western Europe. *Housing, Theory and Society*, 33(2), 121–161.
<https://doi.org/10.1080/14036096.2015.1109545>
- Doling, J. (1999).** De-commodification and Welfare: Evaluating Housing Systems. *Housing, Theory and Society*, 16(4), 156–164.
<https://doi.org/10.1080/14036099950149884>
- Doling, J. & Ronald, R. (2010).** Home ownership and asset-based welfare. *Journal of Housing and the Built Environment*, 25(2), 165–173.
<https://doi.org/10.1007/s10901-009-9177-6>
- Donnison, D. (1967).** *The Government of Housing*. London: Penguin Books.
- Donnison, D. & Ungerson, C. (1982).** *Housing Policy*. London: Penguin Books.
- Fack, G. (2005).** Pourquoi les ménages à bas revenus paient-ils des loyers de plus en plus élevés ? *Économie et Statistique*, 381-382, 17–40.
<https://www.insee.fr/fr/statistiques/fichier/1376573/es381-382b.pdf>
- Esping-Andersen, G. (1990).** *The Three Worlds of Welfare Capitalism*. Princeton: Princeton University Press.
- Gibbons, S. & Manning, M. (2006).** The incidence of U.K. housing benefit: Evidence from the 1990s reforms. *Journal of Public Economics*, 90(4-5), 799–822.
<http://doi.org/10.1016/j.jpubeco.2005.01.002>
- Harloe, M. (1995).** *The People's Home? Social Rented Housing in Europe and America*. Oxford: Basil Blackwell.

- Hegedüs, J., Lux, M. & Sunega, P. (2011).** Decline and Depression: The Impact of the Global Economic Crisis on Housing Markets in Two Post-Socialist States. *Journal of Housing and the Built Environment*, 26(3), 315–333.
<https://doi.org/10.1007/s10901-011-9228-7>
- Hoekstra, J. (2003).** Housing and the welfare state in the Netherlands, An application of Esping-Andersen's typology. *Housing, Theory and Society*, 20(2), 58–71.
<https://doi.org/10.1080/14036090310000634>
- Hoekstra, J. (2005).** Is there a connection between welfare state regime and dwelling type? An exploratory statistical analysis. *Housing Studies*, 20(3), 475–495.
<https://doi.org/10.1080/02673030500062509>
- Hoekstra, J. (2009).** Two types of rental system? An exploratory empirical test of Kemeny's rental system typology. *Urban Studies*, 46(1), 45–62.
<https://doi.org/10.1177%2F0042098008098636>
- Hoekstra, J. (2010).** Divergence in European welfare and housing systems. *Sustainable Urban Areas* N° 38. Amsterdam: Delft University Press, IOS Press BV.
- IMF (2015).** IMF Multi-Country Report Housing Recoveries: Cluster Report on Denmark, Ireland, Kingdom of The Netherlands – The Netherlands, and Spain. *IMF Country Report* N° 15/1.
https://www.imf.org/~media/Websites/IMF/imported-full-text-pdf/external/pubs/ft/scr/2015/_cr1501.ashx
- Kangasharju, A. (2010).** Housing Allowance and the Rent of Low-income Households. *The Scandinavian Journal of Economics*, 112(3), 595–617.
<https://dx.doi.org/10.1111/j.1467-9442.2010.01615.x>
- Kemeny, J. (1992).** *Housing and Social Theory*. London: Routledge.
- Kemeny, J. (1995).** *From Public Housing to the Social Market. Rental Policy, Strategies in comparative perspective*. London: Routledge.
- Kemeny, J. & Lowe, S. (1998).** Schools of Comparative Housing Research: From Convergence to Divergence. *Housing Studies*, 13(2), 161–176.
<https://doi.org/10.1080/02673039883380>
- Kemeny, J. (2005).** “The Really Big Trade-Off” between Home Ownership and Welfare: Castles' Evaluation of the 1980 Thesis, and a Reformulation 25 Years on. *Housing, Theory and Society*, 22(2), 59–75.
<https://doi.org/10.1080/14036090510032727>
- Kemeny, J. (2006).** Corporatism and Housing Regimes. *Housing, Theory and Society*, 23(1), 1–18.
<https://doi.org/10.1080/14036090500375423>
- Kierzenkowski, R., Havrylchyk, O. & Beynet, P. (2014).** Making the Banking Sector More Resilient and Reducing Household Debt in the Netherlands. *OECD Economics Department Working Papers* N° 1156.
<https://doi.org/10.1787/5jxz9z0fhcwj-en>
- Laferrère, A. & Le Blanc, D. (2004).** How do housing allowances affect rents? An empirical analysis of the French case. *Journal of Housing Economics*, 13(1), 36–67.
<https://doi.org/10.1016/j.jhe.2004.02.001>
- Lawson, J. & Milligan, V. (2007).** International trends in housing and policy responses. *AHURI Final Report* N° 110.
https://www.ahuri.edu.au/_data/assets/pdf_file/0012/2136/AHURI_Final_Report_No110_International_trends_in_housing_and_policy_responses.pdf
- Maclennan, D. (2005).** *Housing policies: New times, new foundations*. York: Joseph Rowntree Foundation.
<https://www.jrf.org.uk/report/housing-policies-new-times-new-foundations>
- Mandič, S. & Mrzel, M. (2017).** Home ownership in post-socialist countries: the negative impact of the transition period on old-age welfare. In: Dewilde, C. & Ronald, R. (Eds.), *Housing wealth and welfare*, chap. 8, pp. 189–213. Cheltenham: Edward Elgar publishing.
<https://doi.org/10.4337/9781785360961.00018>
- Olsen, E. O. & Zabel, J. E. (2015).** US Housing Policy. In: Duranton, G., Henderson, J. V. & Strange, W. C. (Eds.), *Handbook of Regional and Urban Economics*, vol. 5, chap. 14, pp. 887–986. Amsterdam: North Holland.
<https://doi.org/10.1016/B978-0-444-59531-7.00014-4>
- Pittini, A. & Laino, E. (2012).** *Housing Europe Review 2012*. Bruxelles: CECODHAS Housing Europe.
- Reinprecht, C. (2007).** Social Housing in Austria. In: Whitehead C. & Scanlon K. (Eds.), *Social Housing in Europe*, chap. 5, pp. 35–43 London: London School of Economics and Political Science.
- Rosenfeld, O. (2015).** *Social Housing in the UNECE Region: Models, Trends and Challenges*. Geneva: United Nations, Economic Commission for Europe.
https://www.unece.org/fileadmin/DAM/hlm/documents/Publications/Social_Housing_in_UNECE_region.pdf
- Salvi del Pero, A., Adema, W., Ferraro, V. & Frey, V. (2016).** Policies to Promote Access to Good-Quality

Affordable Housing in OECD Countries. *OECD Social, Employment and Migration Working Papers* N° 176.
<https://doi.org/10.1787/5jm3p5gl4djd-en>

Soaita, A. M. & Dewilde, C. (2017). A Critical-Realist View of Housing Quality within the Post-Communist EU States: Progressing towards a Middle-Range Explanation. *Housing, Theory and Society*, 1–32.
<https://doi.org/10.1080/14036096.2017.1383934>

Steinmetz, H. (2015). Les politiques du logement en Europe: comparaisons. *Cahiers français*, 388, 8–14.
http://www.ladocumentationfrancaise.fr/var/storage/libris/3303330403884/3303330403884_EX.pdf

Stephens, M. (2016). Using Esping-Andersen and Kemeny's Welfare and Housing Regimes in Comparative Housing Research. *Critical Housing Analysis*, 3(1), 19–29.
<https://doi.org/10.13060/23362839.2016.3.1.250>

Stephens, M. & Fitzpatrick, S. (2007). Welfare Regimes, Housing Systems and Homelessness: How

are they linked? *European Journal of Homelessness*, 1, 201–211.
https://www.feantsaresearch.org/download/ejh_vol1_thinkpiece15730722341054309703.pdf

Susin, S. (2002). Rent Vouchers and the Price of Low-Income Housing. *Journal of Public Economics*, 83(1), 109–152.
[https://doi.org/10.1016/S0047-2727\(01\)00081-0](https://doi.org/10.1016/S0047-2727(01)00081-0)

Torgersen, U. (1987). Housing: The Wobbly Pillar under the Welfare State. In: Turner, B., Kemeny, J. & Lundqvist, L. J. (Eds.), *Between State and Market: Housing in the Post-Industrial Era*, pp. 116–126. Göteborg: Almqvist & Wiksell.

Van der Heijden, H. (2013). West European Housing Systems in a Comparative Perspective. *Sustainable Urban Areas* N° 46. Amsterdam: Delft University Press, IOS Press BV.

Viren, M. (2013). Is the housing allowance shifted to rental prices? *Empirical Economics*, 44(3), 1497–1518.
<https://doi.org/10.1007/s00181-012-0589-x>